This credit rating methodology is retired and no longer used to determine or monitor ratings.
For current methodologies that are in use by Scope Ratings to determine credit ratings see

Methodologies | Scope Ratings | European Rating Agency

CRE Loan and CMBS Rating Methodology

Structured Finance

06/10/2022

Retired Methodology

Contacts

Florent Albert
Director
+49 30 27 891 164
f.albert@scoperatings.com

Mathias Pleissner
Senior Director
+49 69 66 77 389 39
m.pleissner@scoperatings.com

David Bergman
Managing Director
+34 02 30315 838
d.bergman@scoperatings.com

CRE Loan and CMBS Rating Methodology

Structured Finance

Table of Contents

1. Executive summary 3
1.1 Definitions and applicability 3
1.2 Methodology highlights 3
2. Analytical framework 3
2.1 Methodology summary 3
2.1.1 Introduction 3
2.1.2 Default risk framework 4
2.1.3 Recovery rate framework 4
2.1.4 Analytical framework 4
2.1.5 Stochastic modelling approach 5
2.1.6 Cash flow framework 6
2.2 Detailed framework 7
2.2.1 Sponsor and business plan analysis 7
2.2.2 Tenancy analysis 8
2.2.3 Collateral analysis 10
2.2.4 CRE loan analysis 12
2.2.5 CMBS analysis 13
2.2.6 Counterparty risk analysis 14
2.2.7 Legal and tax analysis 15
3. Complementary analysis 15
3.1 Integration of ESG factors 15
3.2 Data adequacy, data guidelines and portfolio data template 15
3.3 Rating sensitivity analysis 15
3.4 Monitoring 16
4. Appendix 17
4.1 Typical real estate financing scheme 17
4.2 Liability analysis and structural features 18
4.3 Legal analysis 20
4.4 Illustrative rental value haircut 21
4.5 Illustrative ranges of property and vacancy costs 21
4.6 Illustrative capitalisation rates 22
4.7 CRE loan all-in refinancing rate calculation 23
4.8 Interest rate stress framework 25
4.9 Foreclosure analysis 26
4.10 Notes backed by CRE debt funds 27
4.11 Leasehold considerations 27
4.12 Credit tenant lease 28
4.13 Environmental, social and governance (ESG) 29
4.14 Indicative CRE loan and CMBS data template 30
4.15 CRE loan and CMBS data guidelines 32
4.16 CRE loan and CMBS credit rating process 33

Retired Methodology

1. Executive summary

1.1 Definitions and applicability

The methodology applies to debt instruments secured by commercial real estate (CRE). This includes direct exposure to CRE loans or securitisations of CRE loans, i.e., commercial mortgage-backed securities (CMBSs), collateralised loan obligations (CRE CLOs), asset-backed securities (CRE loan ABSs), CRE debt funds or similar CRE debt structures. In this document, we refer to these jointly as CRE instruments and use CMBSs when referring to specific analytical elements which apply to securitisation only.

This methodology applies to both the initial ratings and the monitoring of granular and non-granular CRE instruments, primarily of income-generating CRE. It can also be applied to operating businesses housed in real estate (e.g., hospitality), assets under development, which imply business risks beyond the cash flow projected for existing or future lease contracts, or non-European assets. The methodology does not apply to unsecured debt instruments or risks that we assess to be not commensurate with this methodology.

This methodology complements our General Structured Finance Rating Methodology and should be read in conjunction with our Counterparty Risk Methodology, both available at www.scoperatings.com.

Scales and definitions of ratings are available separately on www.scoperatings.com

1.2 Methodology highlights

- **Cornerstone cash flow analysis.** Cash flows of underlying collateral are key in determining the term default risk and refinancing default risk of CRE loans. Projected cash flows determine the probability of default of CRE instruments, while discounted projected cash flows determine the secured collateral value and, ultimately, the estimated recovery value.
- **Yield-driven refinancing default risk.** The exit debt yield[1] compared to our estimate of the all-in refinancing rate drives our assessment of the refinancing default risk. The all-in refinancing rate is a function of financing conditions, the cost of equity, the expected loss, the asset type, potential transaction-specific factors and collateral diversification.
- **No mechanistic caps.** We do not mechanistically limit a transaction's maximum achievable rating as a function of sovereign, counterparty, tenant or liquidity considerations. We assess the likelihood that credit events associated with these risks will occur, their severity and their marginal contribution to expected loss.
- **Transaction-specific assumptions.** We tailor our assumptions to the asset type, micro location, sponsor capabilities and tenants. This enhances credit risk differentiation between transactions.
- **ESG factors.** We assess quantitative and qualitative ESG factors that affect CRE instruments' creditworthiness.

2. Analytical framework

2.1 Methodology summary

2.1.1 Introduction

Figure 1 summarises our CRE and CMBS analytical framework. Our analysis centres on the asset's ability to generate cash flow, driven by: i) the quality of the sponsor and its business plan; ii) the tenancy profile and rent roll; and iii) the characteristics of the collateral. We complement the analysis by examining the transaction's liability structure of iv) the CRE loan(s) and subsequently v) the CMBS where applicable. We also incorporate legal, tax and counterparty considerations.

Figure 2 illustrates our expected loss rating framework. We derive the rated instrument's expected loss and the expected weighted average life of cash flows generated. We compare the two results to our idealised expected loss table to establish the quantitative rating outcomes[2]. Expected loss rates reflect the present value of projected interest and principal payments, discounted at the instrument's rate promised to the investor, divided by the rated instrument's initial value.

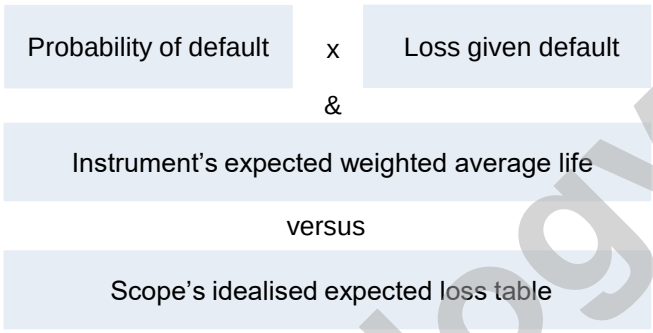
Retired Methodology

[1] Calculated as the ratio of total annualised cash flows generated by collateral and available for debt servicing relative to the outstanding principal balance of a CRE loan.
[2] Please refer to the Scope Ratings Idealised Tables for more detail.

Figure 1. Analytical framework summary



Figure 2. Expected loss framework



2.1.2 Default risk framework

Our modelling of the probability of default on a CRE loan is function of:

i) The probability of a term default, which relates to the borrower's failure to service its contractual interest and principal obligations during the CRE loan's term. We do not quantitatively consider other default covenants, because we believe that if default covenants are breached and cash flows can still service the loan, a consensual solution would still be more likely than liquidation.

ii) The probability of a refinancing default, which relates to the borrower's failure to refinance at CRE loan maturity. We assume a refinancing default if the CRE loan's exit debt yield is lower than our estimated all-in refinancing rate of the rated instrument, or the stressed loan-to-value of the CRE loan exceeds 100% (see 4.7 CRE loan all-in refinancing rate calculation for further details).

2.1.3 Recovery rate framework

We calculate recovery proceeds after foreclosure as the estimated collateral value net of liquidation costs. A maximum recovery applies for CRE loans with a high recovery rate, which is a function of the rating category and the CRE loan-to-value upon default (see 4.9 Foreclosure analysis for further details).

2.1.4 Analytical framework

Figure 3 details our analytical framework, which is based on a bottom-up process of up to five steps:

1) **Sponsor and business plan analysis.** We assess the sponsor's quality, willingness and ability to support the transaction and we evaluate the business plan (see 2.2.1 Sponsor and business plan analysis for further details).

2) **Tenancy analysis.** In this step, we determine the expected gross cash flow. It results from the sum of: i) the transaction's expected contractual gross income, which is a function of tenant creditworthiness and the contractual lease terms for tenants open for business; and ii) the rating-conditional estimated gross income for units following a tenant's default or lease expiry. We simulate tenant defaults using a Monte Carlo simulation under a tenant default correlation framework (see 2.2.2 Tenancy analysis and 2.2.2.3 Tenant default correlation framework for further details).

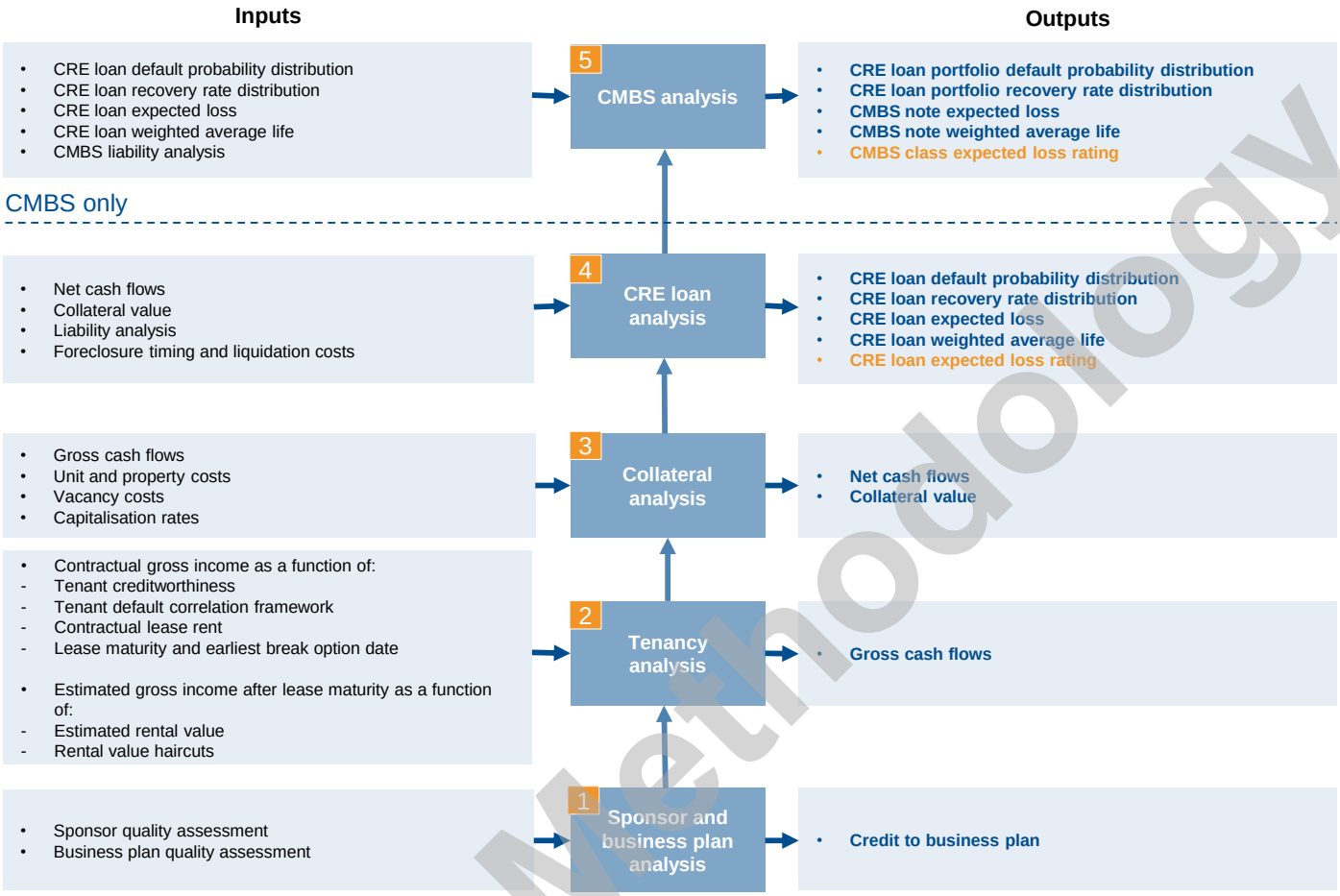
3) **Collateral analysis.** We calculate the net cash flow and determine the collateral value. The net cash flow equals the gross cash flow net of property-level, unit-level and vacancy costs. The collateral value equals the capitalised net cash flow based on an income valuation approach (see 2.2.3 Collateral analysis for further details).

4) **CRE loan analysis.** We model the CRE loan's liability structure and determine its expected loss rate distribution, which ultimately determines the CRE loan rating. We derive the probability distribution for both the term default and the refinancing default as well as the recovery rate distribution (see 2.2.4 CRE loan analysis for further details).

5) **CMBS analysis.** When applicable, we extend the analysis to CMBS to determine the respective tranche's probability of default and recovery rate and, ultimately, the tranche's expected loss rating (see 2.2.5 CMBS analysis for further details).

Retired Methodology

Figure 3. Analytical framework



2.1.5 Stochastic modelling approach

We use Monte Carlo simulations[3] on tenant defaults to derive the rating-conditional cash flow and collateral value. Our stochastic approach determines the tenant's solvency based on the individual creditworthiness and our tenant default correlation framework.

As illustrated in Figure 4, a CRE loan's cash flow is driven by:

Contractual income prior to tenant default. Contractual income generally expires upon either a tenant's default or the earliest of the lease maturity and the first lease break option.

Void period when the unit is vacated or the tenant defaults. We apply a rating-conditional re-letting void period.

1) Estimated income after void period. Estimated income is the estimated rental value reduced by rating-conditional stresses applied on i) rental value; ii) property costs; and iii) vacancy costs.

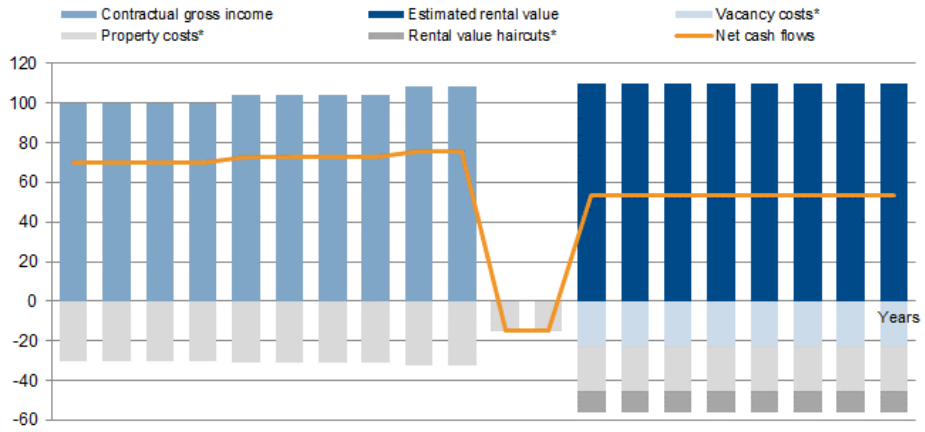
Our analysis determines: i) cash flow over a 10-year rolling period subject to rating-dependent stresses; and ii) cash flow at year 10 in perpetuity, which is not subject to rating-conditional haircuts. The results capture the long-term average rental value expectation for the respective asset.

We calculate cash flows to determine a CRE loan's probability of default either during the loan's term or at refinancing.

Retired Methodology

[3] Please refer to our General Structured Finance Rating Methodology for more details.

Figure 4. Illustrative multiple units property net cash flow



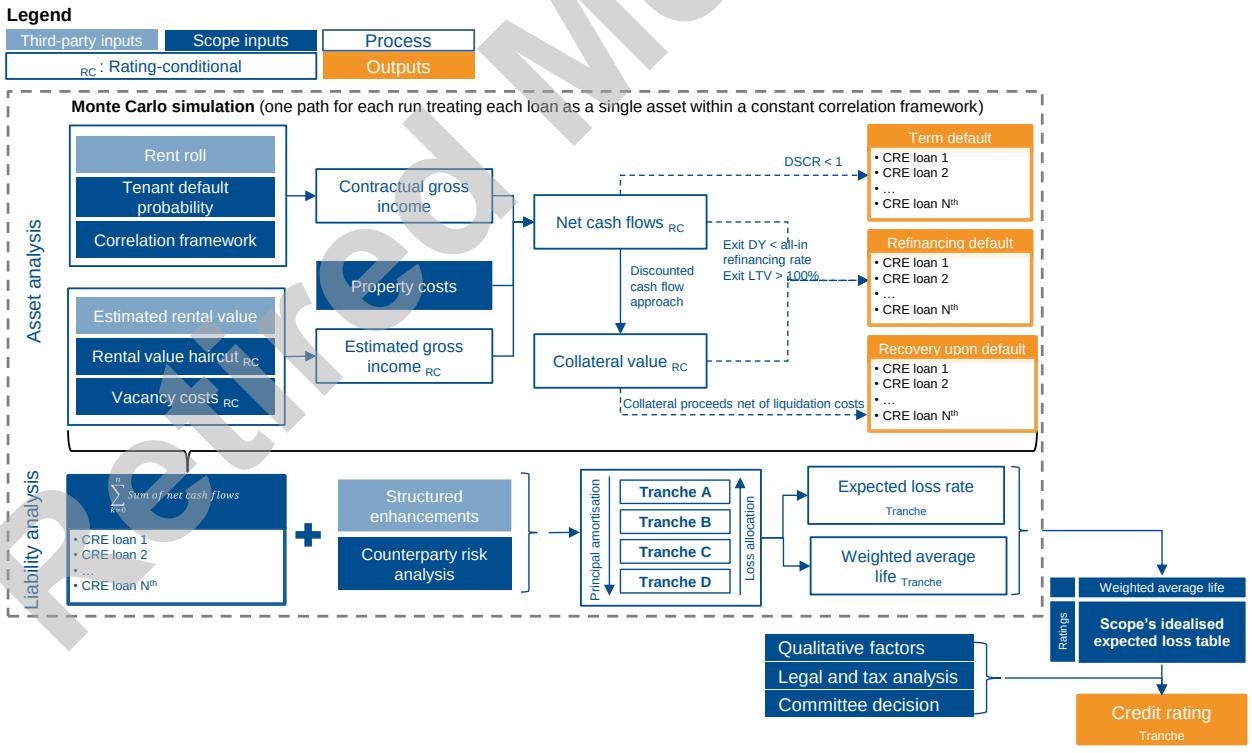
*: rating-conditional assumptions

For highly granular CRE portfolios, like residential assets, we do not use our stochastic framework. Instead, we apply a structural vacancy embedding our rating-conditional void period as well as rental value haircuts to the estimated rental value at specific point in time of the transaction. However, we may deviate from this approach, for example, when portfolios are exposed to rental seasonality or rental concentration risks.

2.1.6 Cash flow framework

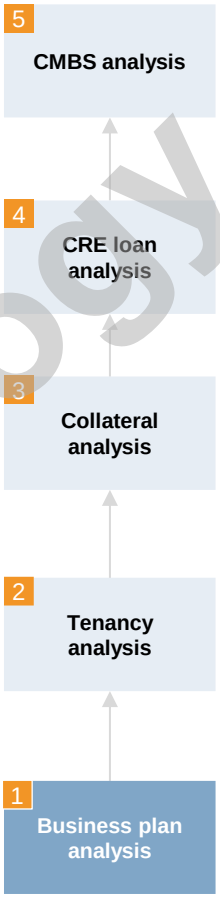
Figure 5 summarises our credit risk analysis framework. We use a bottom-up approach focusing on CRE net cash flows, through five steps performed in the following order: i) contractual gross income analysis; ii) estimated gross income analysis; iii) collateral value analysis; iv) CRE loan structure analysis; and v) CMBS structure analysis if applicable.

Figure 5. CMBS cash flow process diagram



Retired Methodology

2.2 Detailed framework



2.2.1 Sponsor and business plan analysis

Firstly, we perform a qualitative assessment of the sponsor, examining its likelihood of supporting the transaction and its ability to ensure refinancing. Secondly, we assess the quality of the business plan (see 4.1 Typical real estate financing scheme for further details about key participants in CRE).

2.2.1.1 Sponsor quality

We assess the sponsor's quality based on: i) financial capacity and market position; ii) investment experience and risk management; and iii) willingness to support the transaction.

Our analysis also considers other stakeholders in terms of their quality, experience and track record as well as how well their interests align with those of the sponsor. Examples of stakeholders are asset managers, collateral managers and special servicers.

Scope Ratings or its affiliates perform a full analysis of the sponsor's expertise when the sponsor's quality has a material impact on the CRE loan, for example, through a material sponsor's equity injection or the sponsor's material, explicit guarantee. We may deviate from this approach under circumstances such as a lack of information.

Figure 6. Sponsor quality assessment

Sponsor strength	Metrics
Financial capacity and market position	Market positioning: coverage, assets under management, unique selling points; income analysis and source of return; leverage and cash analysis
Investment experience and risk management	Management's experience; financial performance and track record; investment and risk management
Willingness to support transaction	'Skin in the game'; and current net equity contribution; strategic importance of transaction; cure rights and exit options

2.2.1.2 Business plan

We analyse existing business plans where relevant. However, our analysis emphasises the business plan for construction projects, operational CRE and/or non-stabilised CRE[4]. We simulate various scenarios regarding the business plan's time to completion and profitability to assess their respective impact on the rated CRE instrument.

2.2.1.3 Construction phase

Development plans must be realistic in terms of costs and timing. We expect debt servicing to be either covered upfront by pre-funded interest reserves, interest capitalisation or solvent guarantors, or covered by income-generating assets. We also look at any timing and cost buffer that allows for unexpected events as well as the priority of disbursement between equity and debt.

We simulate development delays and cost overruns within rating-conditional boundaries. Cost overruns and non-serviced debt interest may be capitalised and added to the outstanding CRE loan notional or deducted from any outstanding interest reserve.

We test a sponsor's willingness to support the transaction. To this end, we assume a CRE loan default during construction if the CRE loan's outstanding notional relative to net market value reflects negative net equity. We perform the analysis irrespective of interest reserves available or interest capitalisation.

2.2.1.4 Operational CRE and/or non-stabilised CRE

In our cash flow analysis, we adjust estimated rental values provided by either property valuers or the sponsor based on our own rental value assessment. We also apply rating-conditional stresses to expected occupancy (i.e. stabilisation delays) that impact default probability and, ultimately, loss given default.

[4] Non-stabilised CRE refer to transitional CRE that are exposed to non-stabilised income streams. They are generally exposed to development / repositioning risks and business plan risks (letting risks, cost controlling risks, etc.).

Retired Methodology

2.2.2 Tenancy analysis

Our tenancy analysis estimates gross cash flows consisting of i) contractual gross income followed by a temporary void period after lease termination; and ii) estimated gross income with rental value haircuts applied. Contractual gross income is a function of the rental contract's terms and conditions and the tenant's credit quality.

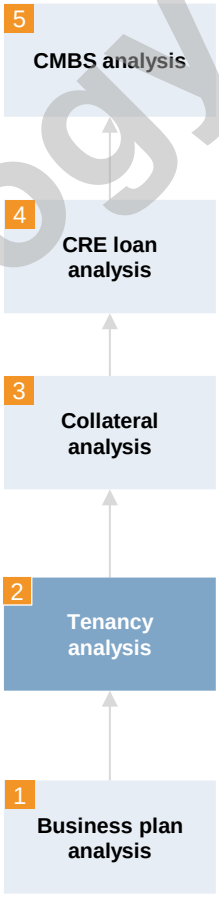
2.2.2.1 Contractual gross income

Contractual gross income is based on the contractual rent and service charges as long as: i) the lease is yet to reach either the first break option date or maturity; and ii) we deem the tenant to be solvent based on our stochastic analysis.

For each period, we determine tenant solvency using a stochastic approach based on the tenant's creditworthiness and our tenant default correlation framework.

We may give credit to contractually agreed rent indexation, near-term rent adjustments or recently executed leases unless we have concerns around their applicability or legal validity. We consider whether short-term or rolling rents are in line with market standards and are supported by historical performance and whether the tenant is open for business and not an affiliate of the sponsor.

We may consider contractual gross income beyond the first break option if, for example, a tenant has multiple leases with break options on the same dates and a sound business case to pursue its activity, or there are infinite leases subject to evergreen break notification periods (e.g., residential leases).



2.2.2.2 Tenant credit quality

We assign a default probability to each in-tenancy tenant, based on the credit rating we have assigned on the tenant, if available. We also consider credit assessments, scores and public ratings assigned by external ECAIs, Scope Ratings or its affiliates, or third-party credit providers which we deem competent.

When no such rating or assessment is available on a tenant, our credit quality assessment is based on available data on comparable benchmarks. This includes an estimated average credit quality on small- and medium-sized enterprises based on observed values in their respective countries. Illustratively, Western European small- and medium-sized enterprises' probabilities of default tend to be commensurate with a non-investment grade rating.

We complement our analysis by testing the sensitivity of the CRE instrument's expected loss to various tenant credit quality assumptions (see 3.1 Rating sensitivity for further details).

We conduct a dedicated tenant analysis for CRE instruments highly dependent on one tenant or a few tenants (i.e. anchor tenants), particularly for CRE loans that are credit-linked to the lease agreements (see 4.12 Credit tenant lease).

We do not model individual tenants for highly diversified CRE tenancies (e.g., in residential properties).

2.2.2.3 Tenant default correlation framework

We employ a pair-wise tenant default correlation framework to create tenant default dependencies. This framework focuses on four common market risk factors (Figure 7).

The weights attributed to each factor are used to determine the interdependence among the tenants, which leads to the portfolio's tenant default rate distribution[5].

We adjust the correlation framework or its components if a transaction deviates significantly from market standards or if information is insufficient.

Retired Methodology

5 Factors are defined as the square root of the respective correlation parameters.

Figure 7. Indicative correlation parameters for a diversified CRE loan

Market risk factor	Parameter	Objective
Global	**2.0%**	Common dependency to macroeconomic shocks
Asset location (macro – country)	**5.0%**	Common dependency on domestic economic and political developments
Asset location (micro – region/city)	**10.0%**	Common dependency on local economic and political developments
Tenant industry	**10.0%**	Common dependency on business cycles and sector outlooks

We choose the most appropriate market risk factors based on available information (e.g., relevant region NUTS 1 code, tenant industry SIC or NACE section codes)

2.2.2.4 Estimated gross income

A unit's void period starts once contractual gross income is no longer available. Units generate no income during this time. We calculate gross income following the void period by applying haircuts to estimated rental values.

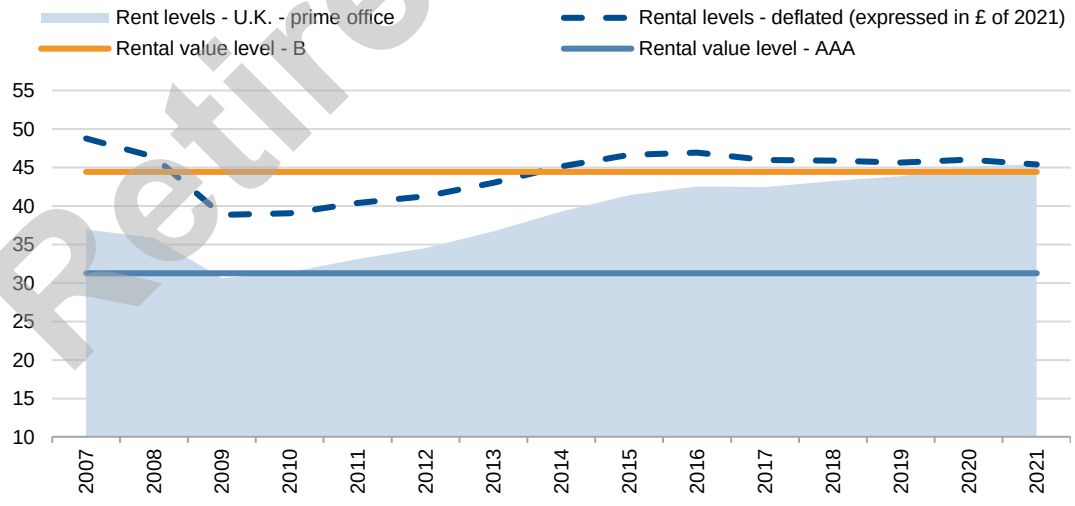
Our estimates of rental value and service charges are based on information provided by recognised valuers. We adjust the estimated rental value by the valuer if it differs significantly from our expectations derived from third-party research or illustrative rental benchmarks.

2.2.2.5 Rental value haircuts

Rental value haircuts (RVH) are a function of: i) the property's macro and micro locations and condition relative to the market; ii) the asset type; and iii) the rating category (see 4.4 4.4Illustrative rental value haircut for further details). We ideally use valuer data featuring at least one economic cycle.

We determine a B rating-conditional RVH by taking recent market rent plus a volatility buffer equal to half a standard deviation of the annual deflated rental change over a six-month period. Our AAA rating-conditional RVH reflects the highest stresses related to long recession with continuously falling rents. RVH_{AAA} is based on a three-year downturn with rents falling at three times their historical annual standard deviation, with the floor set at the average volatility of the relevant jurisdictions[6]. In exceptional cases, we adjust the multiplier to the standard deviation if rental volatility in the observed period differs significantly from average observations. We apply a linear interpolation between RVH_B and RVH_{AAA}.

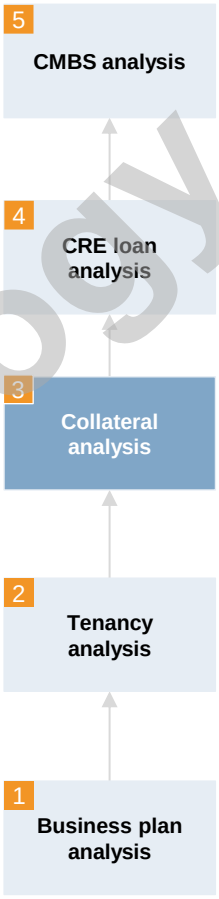
Figure 8. Illustrative UK prime office rent vs our estimated rental values



[6] For certain jurisdictions and asset types, rental value changes in recent history were benign. We address this characteristic by applying a floor to volatility using to the peer average volatility.

Retired Methodology

2.2.3 Collateral analysis



The collateral analysis is based on the gross rental income derived from our tenancy analysis. It results in: i) net cash flows; and ii) the collateral value.

Net cash flows are a function of gross rental income minus property-level, unit-level and vacancy costs.

The collateral value follows an income valuation approach. The collateral value equals the rating-conditional net cash flows capitalised at appropriate rating-conditional discount rates[7] plus the terminal value (see 2.2.3 Collateral analysis for further details). When the applied inflation scenario is the same the one implied by its market valuation, the discount rate equals the implied capitalisation rate. In this document, we refer to these jointly as capitalisation rates.

Capitalisation rates differ between non-stabilised and stabilised CRE. We use an initial capitalisation rate during the estimated non-stabilised phase and a reversionary capitalisation rate from the estimated stabilisation date.

For brownfield projects, we reflect ongoing property refurbishment by taking the CRE market value net of the remaining investment to be spent.

The terminal value follows the Gordon Growth Model (see 2.2.3.4 Collateral value for further details). Net cash flows deemed sustainable are capitalised at an appropriate rating-conditional capitalisation rate, reduced for annual inflation if applicable.

Sustainable rental cash flows reflect a rating-independent, sustainable and through-the-cycle rental level. We apply a sustainable rental value haircut to current rent to normalise rental levels to a deflated, long-term average and to embed our long-term view in asset type-specific rental levels.

2.2.3.1 Property costs

Asset-specific property costs are composed of: i) non-recoverable operating costs; ii) maintenance capital expenditures; and iii) management and letting costs.

Non-recoverable operating costs generally include real estate taxes, insurance and utility expenses. They depend on the lease and asset type and are determined based on valuation reports, lease agreements and our internal illustrative benchmarks. For vacant units, we apply either a floor on operating costs at 30% of full-occupancy operating costs including recoverable expenses, or vacancy costs as a function of lettable area.

Maintenance capital expenditures are generally based on the latest collateral valuations and technical due diligence reports. We estimate higher expenditures if we deem maintenance capital expenditure insufficient.

Management, letting and tenant improvement costs are function of the relevant contractual agreements as well as our internal illustrative benchmarks (see 4.5 Illustrative ranges of property and vacancy costs for further details).

2.2.3.2 Vacancy costs

CRE vacancy costs are: i) structural; or ii) temporary (void periods).

Temporary and structural vacancies, which are inputs in our collateral value calculation, reduce net cash flows over the property's life. Void periods limit rental income only after the initial lease ends. A structural vacancy, in contrast, reflects a vacancy that structurally limits a property's occupied area in its respective market and during subsequent void periods after a unit is relet.

The structural vacancy reflects a through-the-cycle rate that is a function of: i) the location; and ii) the property type. Void periods reflect the temporary vacancy, which is a function of: i) the property type; ii) the location; and iii) rating category (see 4.5 Illustrative ranges of property and vacancy costs for further details).

We may adjust the structural vacancy rate to account for actual vacancies, lease concentration risk, insufficient capital expenditure, flexible lease contracts, and fundamental changes to the asset type. We assume units with prolonged vacancies to remain vacant unless we are comfortable with any asset management strategy (e.g., substantial capital expenditure undertaken).

[7] Capitalisation rate equals discount factor minus inflation.

Retired Methodology

Void periods reflect temporary vacancies following a lease discontinuation event. They represent a reletting period including the marketing period and a rent-free period. They significantly alter available cash flows for concentrated tenancy bases but have less of an impact for highly diversified tenancy bases. B stresses are anchored at the current market level and include our short to medium-term expectations. We generally derive stress levels using the same method as for our rating-dependent rental value haircuts and capitalisation rates. If data is unavailable, we use our illustrative range of void periods (see 4.5 Illustrative ranges of property and vacancy costs for further details).

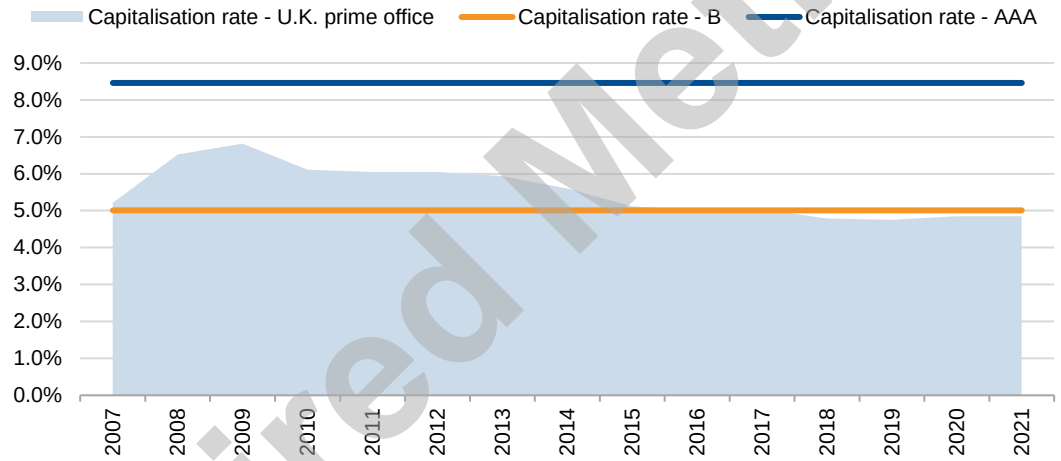
Structural vacancy is an input in our collateral value calculation. It reflects a vacancy that structurally limits a property's occupied area in its respective market and reduces net cash flows over the property's life. Void periods, in contrast, limit rental income only after the lease ends.

2.2.3.3 Capitalisation rates

Capitalisation rates are a function of: i) the macro/micro location; ii) the asset type and asset quality; and iii) the rating category. (see 4.6 Illustrative capitalisation rates for further details).

We generally derive the B rating-conditional capitalisation rate using the latest market level of the capitalisation rate plus a volatility buffer equal to half a standard deviation of the annual capitalisation rate change over a six-month period. The AAA capitalisation rate reflects a three-year downturn with capitalisation rates rising at three times their historical annual standard deviation (with a floor based on the average volatility of the comparable jurisdictions[8]). We adjust the multiplier to the standard deviation if the capitalisation rate volatility in the observed period differs significantly from average observations. We apply a linear interpolation between B and AAA capitalisation rates for the other rating levels.

Figure 9. Illustrative UK prime office capitalisation rates vs our illustrative capitalisation rates



2.2.3.4 Collateral value

The collateral value is calculated using the formula below.

$$Collateral\ value = \sum_{i=1}^{10}\left(\frac{Net\ cashflow_i}{(1+discount\ rate)^i}\right) + \frac{1}{(1+discount\ rate)^{10}} \cdot \frac{Sustainable\ net\ cash\ flow}{exit\ capitalisation\ rate}$$

where 'exit capitalisation rate' equals either capitalisation rate or discount factor minus inflation (if any).

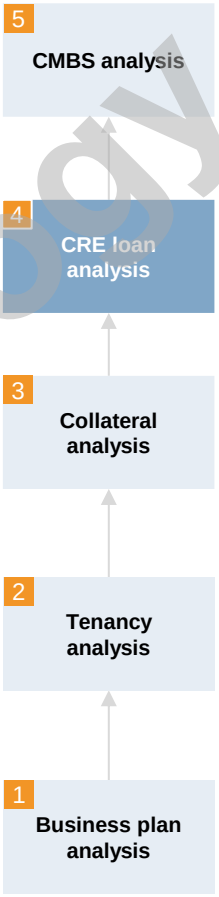
[8] For certain jurisdictions and asset types, recent changes in capitalisation rates were benign. We address this characteristic by applying a floor to volatility based on the peer average volatility.

Retired Methodology

2.2.4 CRE loan analysis

2.2.4.1 Expected loss rating framework

Our expected loss rating reflects a CRE loan's expected loss rate and expected weighted average life based on cash flows generated. The distribution of the expected loss rate is a function of the default probability distribution – over the term or at refinancing – and the recovery rate upon default.



In our stochastic model framework, we run rating scenarios with several iterations determining each tenant's solvency in each period over the term. We test the CRE loan's term default probability and refinancing default probability for each iteration of a rating scenario.

We calculate an expected loss and a weighted average life derived from the multiple iterations. The two values are compared to our idealised expected loss table[9] and provide a quantitative rating outcome for the CRE loan.

2.2.4.1.1 Default probability distribution

2.2.4.1.1.1 Term default probability

We define a CRE loan term default as a borrower's failure to service interest or principal obligations during the loan's term. We do not quantitatively consider default covenants, because we believe that when default covenants are breached but cash flows remain sustainable, consensual solutions remain more likely than liquidation.

2.2.4.1.1.2 Refinancing default probability

We define a CRE loan refinancing default as when the loan's debt yield at maturity is lower than our estimated all-in refinancing rate of the rated instrument, or when the stressed loan-to-value of the CRE loan exceeds 100%.

Our transaction-specific all-in refinancing rate is a function of: i) the lender's debt funding rate; ii) the lender's cost of equity; iii) the risk premium; iv) the asset amortisation premium; v) any transaction-specific discount or premium; and vi) the collateral diversification discount rate (see 4.7 CRE loan all-in refinancing rate calculation for further details).

We closely monitor the sponsor's refinancing strategy when the CRE loan is nearing maturity and will reflect scenarios under which an exit solution becomes less likely. In case of an unforeseen loan extension, we will evaluate whether i) the loan was extended to prevent a likely default; and ii) the new terms lead to less favourable refinancing terms or a loss of value[10].

2.2.4.2 Recovery rate

We determine an effective collateral liquidation value upon default considering: i) foreclosure timing; ii) foreclosure and liquidation costs; and iii) a maximum recovery rate.

Foreclosure timing is a function of i) the assets' jurisdiction; and ii) the rating category stress. Foreclosure and liquidation costs are based on servicing agreements or internal illustrative benchmark assumptions. The maximum recovery rate is a function of i) the CRE loan-to-value upon liquidation; and ii) the rating category stress.

We estimate maximum recovery proceeds after a foreclosure period to be equal to the estimated collateral value net of liquidation costs. We apply a maximum recovery for CRE loans with a very high recovery rate (see 4.9 Foreclosure analysis for further details).

2.2.4.2.1 Foreclosure process

We assume recovery upon default following a jurisdiction-specific foreclosure period or a legal period if contractually considered. We usually consider the secured collateral to continue servicing the debt[11] including an interest penalty upon default.

[9] Please refer to Scope Ratings Idealised Tables for more details
[10] Please refer to Scope Credit Rating Definitions for more details.
[11] We partially or fully disregard debt servicing upon default for owner-occupied or partially owner-occupier CRE.

Retired Methodology

2.2.4.2.2 Foreclosure costs and liquidation costs

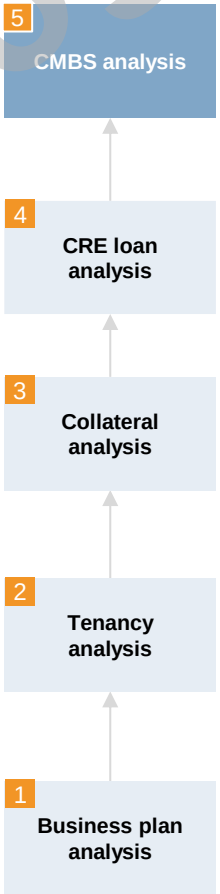
Foreclosure costs are a function of the foreclosure agreements and our assumptions when these are unavailable.

Liquidation costs are function of: i) the asset's jurisdiction; ii) the asset type; iii) the CRE loan size and complexity; and iv) existing hedging agreements.

2.2.4.2.3 Maximum recovery rate

We calculate the maximum rating-conditional recovery rate upon default based on the CRE loan-to-value at liquidation. We only deviate from this approach if warranted by transaction features (e.g., a collateral value with a floor, or forward sale with locked price). Ultimately, we distribute the estimated loss amount according to liability seniority.

2.2.5 CMBS analysis



2.2.5.1 Expected loss rating framework

Our CMBS class ratings are a function of a CMBS's expected loss rate for each rated class and its expected weighted average life based on cash flows generated. The CMBS expected loss rate distribution is a function of the CRE loan cash flow analysis.

2.2.5.2 Default probability distribution

We consider a CMBS class default to occur only when the issuer fails to service relevant class interest or principal obligations. We do not quantitatively consider CMBS class default covenants because CMBSs are securitisations of non-recourse CRE loans, which means liquidations are less likely than a consensual solution should default covenants be breached.

In our stochastic model framework, we run rating scenarios with several iterations determining the tenants' solvency within each secured CRE over its term. We test the securitised CRE loan's term default probability and refinancing default probability for each iteration of a rating scenario. We allocate a securitised CRE loan's net cash flows and principal proceeds net of special servicing costs and liquidation costs to the CMBS tranche as per the CMBS priority of payments.

2.2.5.3 Recovery rate

CMBS recovery equals the effective recovery proceeds of the underlying CRE loan net of special servicing costs and liquidation costs.

2.2.5.4 Asset analysis (CRE loans)

Our CMBS asset analysis follows the CRE loan analysis framework. The level of analytical detail required for each CRE loan depends on the CRE loan concentration.

We perform a line-by-line securitised CRE loan analysis for CMBSs secured by a single loan or a limited number of loans, in line with the historical pattern in the European CMBS market.

We apply our General Structured Finance Rating Methodology for granular CMBSs or for CMBSs with limited available asset data.

We test the two approaches for CMBSs that do not adhere to one of the above categories (e.g., medium-granular CMBS) and consider which is the most appropriate.

2.2.5.5 Liability analysis

We assess CMBS liabilities using our CRE loan analysis framework together with an assessment of CMBS-specific characteristics as described below.

2.2.5.6 Ramp-up and replenishment

CMBSs may embed a ramp-up or reinvestment period. During this time, the collateral manager can use principal proceeds from committed and undrawn note principal, scheduled loan amortisation or loan prepayments to buy additional loans, whether these are pre-identified or not. We analyse the risk of portfolio quality migration by considering the track record and strategy of both the

Retired Methodology

originator and the collateral manager, the characteristics of the asset type, and the (re)investment guidelines and covenants in the structure. We assess the credit quality of the initial portfolio as well as an expected portfolio post ramp-up/reinvestment maturity date. We may assume portfolio performance deterioration of up to the investment guideline limits.

2.2.5.7 CMBS protection tests

We quantitatively consider non-default financial CMBS covenants that we deem effective and non-discretionary. These covenants are usually based on cash flow performance (e.g., interest, debt servicing coverage or debt yield) or leverage performance (e.g., over collateralisation or loan-to-value). These covenants generally accelerate a reduction in liabilities, add credit enhancement for senior notes and, in some instances, prevent reinvestment in new collateral interest.

2.2.5.8 Collateral manager, servicer and special servicer analysis

CMBSs rely on collateral managers and/or loan servicers to oversee and manage loan servicing and rely on the special servicer to manage any distressed CRE loans. We may perform operational reviews to assess stakeholders' quality, experience, operating schemes and authorised activities as per the servicing agreement. We review their authorised activities including selection of eligible loans during the ramp-up or replenishment period, disposal of credit impaired and defaulted loans, loan modifications and workout of impaired loans. We adjust our assumptions on servicing fees, recovery timing and recovery levels if our reviews reveal weaknesses in the track record, processes or alignment of interests[12].

2.2.5.9 Loan modification

A CMBS may allow administrative securitised and criteria-based modifications on performing loans. Loan modifications provide the sponsor with more flexibility to amend certain loan terms without requiring the refinancing of the loan and its exclusion from the CMBS. Loan modifications may weaken loan-level and pool-level credit metrics as well as reduce available excess spread. We assess the allowed scope of loan modifications as well as the quality and robustness of measures to prevent credit-quality migration, including interest coverage ratio (ICR[13]) and overcollateralisation (OC[14]) test maintenance, minimum loan-to-value (LTV[15]) levels, loan eligibility criteria and limits to the number of loan modifications. We assess the credit impact of modified loan portfolios as part of our sensitivity analysis.

2.2.5.10 Exchange of default or impaired loans

CMBS collateral managers or special servicers can buy out, subject to conditions, defaulted or impaired loans from the securitised pool to privately work out distressed assets while preventing a complex work-out process involving class holders. We assess the conditions of exchange including the existence of a maintenance or improvement of note protection tests and the value disposal limitation thresholds.

2.2.5.11 CRE loan prepayments

Our base case usually considers loans to not prepay before their scheduled fully-extended scheduled maturity date. For multi-loan CMBSs, we perform sensitivity analysis based on loan prepayment scenarios.

2.2.5.12 Synthetic transactions

Our synthetic CMBS class ratings reflect the risk that the credit protection seller will make payments with respect to credit events under the terms of the CMBS credit protection deed. We focus on the loss determination and loss allocation mechanism following a credit event of default. Unfunded synthetic transactions are also less exposed to counterparty risks such as with the account bank or liquidity provider.

2.2.6 Counterparty risk analysis

Our evaluation of counterparty exposures relies on our Counterparty Risk Methodology.

[12] See Counterparty Risk Methodology for further details.
[13] Calculated as the ratio of total annual cash flows generated by secured collateral and available for debt servicing to the amount of interest a borrower is required to pay in any given period.
[14] Calculated as the secured collateral value over its outstanding debt principal balance.
[15] Calculated as the outstanding CRE loan principal balance over its secured collateral value.

Retired Methodology

2.2.7 Legal and tax analysis

We review available legal and tax documentation and opinions and consider credit-linked legal aspects as per our General Structured Finance Rating Methodology. We focus on the CRE loan package, bank account mechanisms and corporate structure, while considering securitisation law when applicable. We expect opinions to strongly express the following: i) borrowers are duly incorporated and validly exist; ii) the documentation reflects valid, legally binding and enforceable obligations of the parties and their capacity and authorisation to execute the documentation; iii) perfection and effectiveness of the SPV's bankruptcy remoteness and asset transfer; and iv) tax implications and the perfection of the security interest and asset enforceability.

We expect legal documentation to conform to Loan Market Association standards. If they do not, we reconsider the instrument's rateability.

3. Complementary analysis

3.1 Integration of ESG factors

Our credit analysis integrates environmental, social and governance (ESG) factors. We incorporate the risks arising from a transaction's exposure to ESG factors based on the analytical approach detailed in this methodology (see 4.13 Environmental, social and governance (ESG) for further details).

3.2 Data adequacy, data guidelines and portfolio data template

We can provide our CRE loan and CMBS multi-layered data template with information related to the units, the tenancy, the properties and the liabilities (see 4.14 Indicative CRE loan and CMBS data template for further details).

We also welcome originator/sponsor data templates and can generally process any standard format (Excel and database formats are preferred for quantitative data).

For CMBSs, we expect reports on agreed-upon procedures to be performed by reputable and independent auditors and to highlight any differences between data supplied to us by the issuer/arranger and the paper-based or digital data provided to the auditors by the originator/seller.

Conference calls, operational review visits and property visits complement the information we receive.

While our credit risk analysis provides some flexibility, conservative assumptions are required if information is insufficient.

3.3 Rating sensitivity analysis

We test the resilience of the credit analysis based on information available until closing.

This sensitivity analysis has the sole purpose of illustrating the sensitivity of our credit analysis levels to input assumptions and is not indicative of expected or likely scenarios[16]. We perform further sensitivity analysis relevant for each credit analysis according to its characteristics.

Figure 10. Illustrative sensitivity test

Illustrative stress input	Illustrative stress level
Top tenants' credit quality	Joint default scenario of the two largest tenants by gross rental income contribution if not rated by Scope Ratings or an external ECAI. Joint default scenario for all tenants modelled BB- or higher, contributing more than 10% of portfolio gross rental income, and not rated by Scope Ratings or an external ECAI.
Tenancy credit quality	Tenant ratings stressed by one rating category
Structural vacancy haircut	120%
Rental value haircut	120%
Capitalisation rate	120%
Foreclosure period	Immediate recovery upon CRE loan default
CRE loan	No extension option; waiver of cash trap/cash sweep covenants

[16] See General Structured Finance Rating Methodology for further details.

Retired Methodology

3.4 Monitoring

Monitored credit services are reviewed at least once a year or earlier if warranted by events, while point-in-time credit services are updated on demand[17].

We expect to receive timely monitoring information, including payment date and management reports, compliance certificates, up-to-date business and capex plans, up-to-date CRE valuations and rental schedules (see 4.15 CRE loan and CMBS data guidelines for further details).

CRE is an operationally intensive and dynamic asset class. Material changes in a CRE portfolio's composition or a CRE loan's structure are thus common. We are sometimes requested to provide a rating agency confirmation, which is an analytical review that determines whether specific changes in the transaction's documentation affect the instrument's rating.

We disseminate an announcement of the rating agency confirmation in the same way as the original rating was disseminated when the change in and of itself has no impact on the instrument's rating.

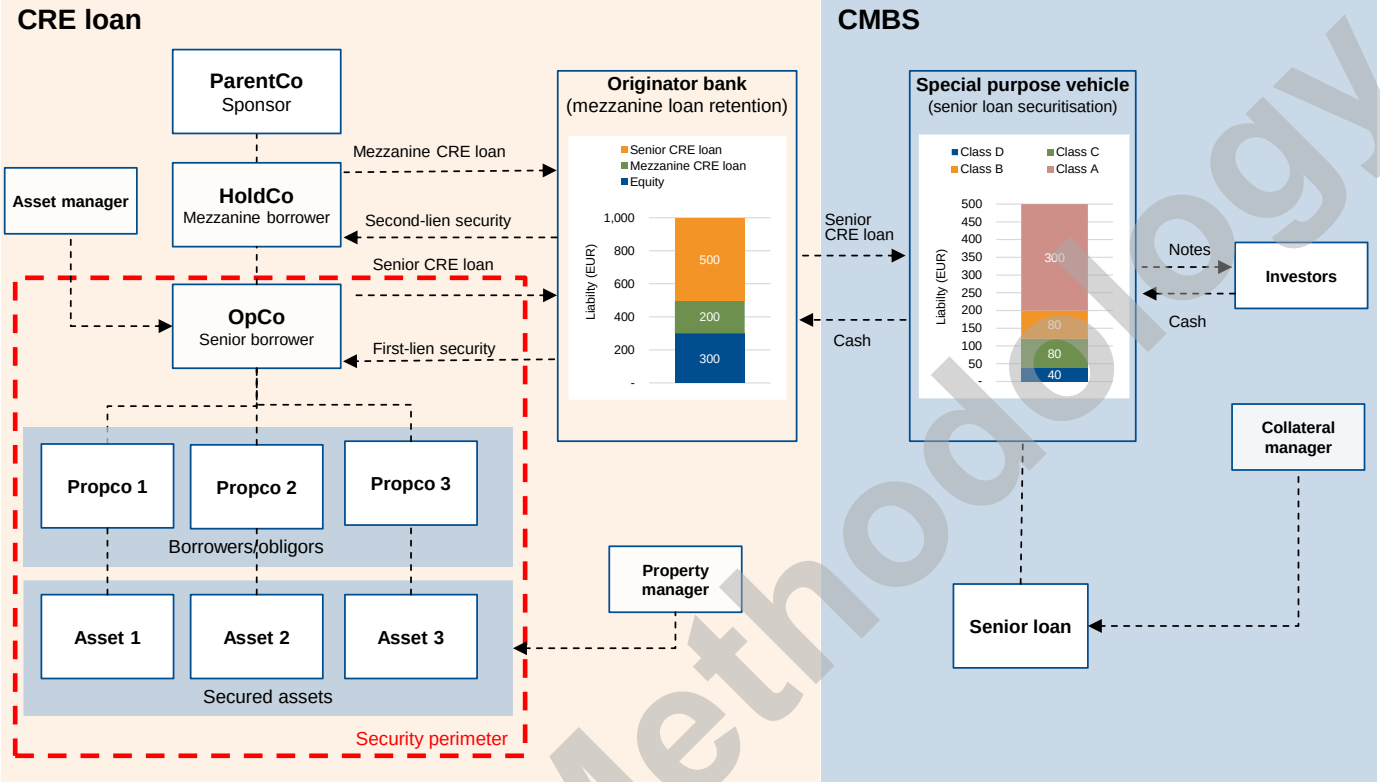
We continuously monitor our assumptions and review them thoroughly at least once a year, or earlier if warranted by market events.

Retired Methodology

[17] See the Scope Service List for further details.

4. Appendix

4.1 Typical real estate financing scheme



Retired Methodology

4.2 Liability analysis and structural features

We analyse and model structural features when possible, complemented with a qualitative analysis when they cannot be fully captured through our quantitative analysis.

CRE loans

Priority of payments. We allocate interest and principal proceeds as well as losses on the relevant rated instruments in line with the priority of payments.

Interest. We consider interest on drawn principal, commitment fee on undrawn principal, as well as step-up interest and default interest.

Refinancing liability. We assess the debt amount to be refinanced subject to the amortisation profile and the debt structure. We focus on the specific debt instrument to be refinanced for senior/mezzanine financing and the full debt to be refinanced for an A/B structure or whole loan. Unlike senior/mezzanine financing, class A/B structures are less favourable for senior lenders because: i) B loan lenders are not structurally subordinated as they are for senior/mezzanine financing; ii) B loan lenders have a direct lien on the mortgage and borrower collateral; and iii) a default on the B loan generally triggers a default on the A loan. We calculate the exit CRE loan-to-value and debt yield on a CRE loan based on the total outstanding liability for whole loans and A/B loans and on the specific tranche for senior/mezzanine loans.

Dual recourse. Dual recourse refers to CRE loans for which a junior creditor has legal recourse to cure a senior event of default. It provides an effective second cure recourse since a capable junior creditor will not want a senior creditor to enforce the senior CRE loan because it risks diluting the junior value. We give credit to such a mechanism if i) interests are aligned; ii) the junior creditor has good creditworthiness; and iii) we deem the mechanism effective under our legal documentation analysis**.**

Interest rate risk. CRE instruments are exposed to: i) interest rate risk arising from the mismatch between fixed-rate assets and floating-rate liabilities; or ii) term structure risks from the different interest rate reset dates between the underlying CRE loans and the CMBS liabilities. We assess the rated instrument for both risks, any mitigants and the effectiveness of these mitigants by applying rating-conditional interest rate stresses as set out in our General Structured Finance Rating Methodology and CRE-specific interest rate framework (see Section 4.8 Interest rate stress framework). We review all derivative agreements in terms of their terms and conditions, rating triggers, substitution rights, and costs. We may also size for hedge break costs. We expect highly rated instruments (AA or above) to be fully hedged against interest rate risk, foreign currency risk and basis rate risk.

Foreign exchange risk. CRE loans are exposed to foreign exchange risks if assets are located in jurisdictions with different currencies or if assets and liabilities are denominated in different currencies. We assess the CRE loan's foreign exchange risk, any mitigants and the effectiveness of these mitigants by applying rating-conditional foreign-exchange stresses. Natural hedges (e.g., multicurrency CRE loans secured by CRE denominated in the respective local currencies) are imperfect if the security is enforced or liquidated into another currency to service the debt.

Senior expenses. We consider head leases, taxes and counterparty senior expenses to rank senior to the rated debt instruments. The transaction's legal documentation generally defines senior expenses. Examples are fees paid to the trustee, corporate services providers, paying agents, calculation agents and asset managers. We adjust senior expenses that are well below market standard or assumed null and void due to the arranger performing the service. Taxes can relate to properties or to services such as VAT on management expenses or capital expenditure. Such taxes are usually specific to the property's jurisdiction and are included in our cash flow calculation.

Extension option. We calculate an expected loss over the entire scheduled lending period including extension periods subject to extension covenants being clear, non-discretionary. We also assume that any extension on the CRE loan's term is subject to the renewal of initial structural protections.

Covenants. CRE loans feature negative covenants (prevent from taking actions) and/or positive covenants (require action). We only model financial non-default covenants that we deem effective. We consider other covenants only qualitatively.

First loss reserve funds. These provide additional credit enhancement by providing extra cash to cover any future losses. We review how they are funded[18], whether they are pre-funded or guaranteed, how they are triggered, their loss coverage ratio, and which instruments benefit from them.

[18] See Scope's Counterparty Risk Methodology for further details.

Retired Methodology

Cure mechanisms. CRE sponsors or lenders can cure underperforming CRE loans via prepayment, extra collateral or discretionary equity injections. We consider cure mechanisms only qualitatively, unless sponsors or lenders are committed to providing them as demonstrated by legal and historical evidence.

Coupon conditions. Our quantitative analysis only considers non-discretionary coupon step-down/up triggers that are legally and clearly documented. We assess the rating feasibility of coupon mechanisms with unclear legal clauses or discretionary deferral mechanisms.

Insurances and guarantees. We review insurance and guarantees covering cash flow disruptions from unexpected events. We expect force majeure risks (e.g., natural disasters, explosions, floods, earthquakes, windstorms, vandalism and terrorism), loss of rent and replacement value to be covered. We adjust our assumptions if they are not.

ESG principles. Our overall credit risk approach includes ESG metrics and performance. We may adjust our assumptions if needed (see 4.13 Environmental, social and governance (ESG) for further details).

CRE portfolio disposal strategy. The sponsor's or asset manager's business plan determines the portfolio disposal strategy, which relies on assumptions around asset valuation and the time of disposal. The disposal profile is generally driven by metrics including allocated loan amounts (i.e percentage thereof), loan to cost[19], and loan to value. The business plan disposal profile usually forms our base case. We stress the value of assets to be disposed of and their expected time of disposal. We derive stressed portfolio disposal profiles based on our assumptions and the financial covenants mentioned above.

Liquidity coverage. Liquidity enhancement ensures coverage of unexpected short-term shortfalls due to temporarily underperforming CRE, unexpected costs or counterparty disruption. It provides a liquidity buffer that allows the issuer to continue meeting payment obligations to class holders and counterparties. We expect highly rated instruments to have enough liquidity to cover senior costs and debt servicing, as shown in Figure 11. We do not penalise CRE loans with lower coverage if effective structural liquidity risk mitigants are embedded. Such mitigants could be supported by a highly diverse and covenanted tenancy base, a strong legal framework, frequent payment, low complexity with few counterparties, external and implicit support, high tenant and CRE diversity, and high financial ratios. We expect liquidity enhancement to be higher for CMBS than for CRE loans due to differing complexities as well as the counterparties which can step in quickly if a CMBS underperforms.

Figure 11. Expected liquidity coverage

Minimum debt servicing coverage (years)[20]	CRE loan	CMBS
AAA	1.5	2.5
AA	1.0	2.0
A	0.0	1.0

CMBS

Controlling class. The most junior CMBS class holders are usually the controlling class, with preventive rights towards the special servicer as well as work-out strategies. CMBS class holders may have a different opinion on which work-out strategy is the most suitable depending on their seniority in the capital structure. We analyse whether the controlling class' mechanisms maximise overall recovery. We assess whether the most senior class holders are protected via the controlling class' control valuation events that prevent the most junior class holders from retaining control when the senior class holders' value is endangered. We also determine whether special servicer agreements require special servicers to maximise the present value of total recoveries.

Available fund cap. CMBSs may limit interest payable by the most junior class holders when interest proceeds are temporarily insufficient to meet total capital structure interest obligations. Such caps are usually structured via an available fund cap or a deferrable interest mechanism. We quantitatively account for this more senior class protection to the extent possible.

[19] Calculated as the CRE loan principal balance over the cost of a development project.
[20] Including senior costs

Retired Methodology

Equity leakage and interest-only strip. Sponsors or originators may seek to optimise their investment by trapping excess spread available to class holders based on timing and financial performance thresholds. We quantitatively assess these structural elements to the extent possible.

Foreclosure period floating rate. We expect interbank base rates to be capped during the legal period to mitigate the risk of further liability cost pressures. If the transaction has no such cap, we apply our interest rate stresses for the work-out period.

4.3 Legal analysis[21]

Bankruptcy remoteness. CRE loans seek to de-link the underlying CRE risks from the idiosyncratic originator and seller risks. For cash deals, the underlying assets are usually held by a special purpose vehicle (SPV) independent and separate from the originator/seller. We expect such segregation to be clear and effective and to cause no complications. Segregation is usually achieved via: i) a declaration of trust in which the assets are legally and economically transferred to an orphan vehicle, with the originator remaining the lender of record; ii) an outright sale where all legal, economic and servicing rights are transferred; or iii) a synthetic economic transfer right via a derivative instrument or guarantee.

Security package. CRE loans are secured through arrangements including a security over property mortgages, land charges, assignment of intra-group debt, insurance, accounts, leases, hedging, the subordinated creditor's securities, pledges over accounts and borrower shares. We expect senior rated instruments to have first-ranking security rights.

Enforceable assets. Upon a default, debt holders are usually entitled to enforce the underlying CRE. However, laws may challenge the existence and enforceability of claims and obligations from the assets, prohibiting certain transactions, granting certain counterparties extraordinary termination rights or stipulating formal prerequisites (e.g., encumbrances). We expect legal opinions to cover such enforceability scenarios.

Commingling risks. For cash transactions, the issuer is exposed to commingling risks arising from the relations among: i) the account bank; ii) the cash flow-collecting entity; and iii) itself. A third party is usually appointed as the account bank tasked with collecting cash flows, ringfencing part of them into segregated account. The servicer collects most of these cash flows and is usually the original lender that maintains the customer relationship. The market has developed several mitigants to minimise the extent and duration of the issuer's cash flow exposure. Examples are: i) the transfer of the account bank role to an identified back-up servicer when the agent triggers a certain rating level; ii) timeline and deadlines for cash transfer; iii) netting agreements; and iv) daily cash sweeps. Our cash flow analysis includes any commingling exposure we deem to be not fully mitigated.

Set-off risk. Set-off may be invoked by a debtor that holds a monetary cross-claim against the seller or originator. In this case, the debtor may be absolved from honouring the creditor's claim up to the amount of the cross-claim. CRE set-off risk typically arises if the originator is holding the obligors' deposits. These obligors may exercise set-off rights if they lose access to their deposits (e.g., upon the originator's insolvency), which could substantially reduce or nullify the enforceable claim payable to the issuer. To determine the extent of set-off risk, we consider: i) the probability of the originator's insolvency; ii) existing structural protections such as a dedicated reserve or undertaking by the originator not to open accounts with the securitised debtors; iii) the existence of country deposit scheme guarantees; and iv) whether the notice of assignment of the portfolio transfer to the issuer 'crystallises' the amount an obligor may set off against the issuer's claims (equal to the amount credited to the debtor's bank account at the time of the notice).

Events of default. CRE loans are subject to events that trigger a transaction default. These usually relate to i) non-payment; ii) insolvency and liquidation; iii) unlawfulness and invalidity; iv) repudiation; v) breach of hard default covenants; vi) misrepresentation; vii) cross-default; viii) the cessation of business or a merger; ix) financial indebtedness; x) disposal of CRE, xi) major damage; and xii) a breach of certain obligations. We review such legal clauses, and our analysis incorporates any non-market-standard events of default while modelling non-payment as the only event of default.

Non-petition. All creditors of an SPV issuer (including the investor) typically agree not to file, initiate or take part in any insolvency, liquidation, bankruptcy, reorganisation or winding-up proceedings against the SPV issuer. As such clauses may be invalid in some jurisdictions, the non-petition clause may be limited to a certain period.

Recourse. CRE loans and CMBSs usually contain a clause of limited recourse, which limits investor claims to the secured assets but not to the issuer's other assets. As CRE owners, SPVs have to be independent from the originator/seller for their assets to be ringfenced. Neither directors, shareholders nor agents of the issuer is further liable to repay investors. In exceptional cases, CRE

[21] See General Structured Finance Rating Methodology for further details.

Retired Methodology

loan debtholders have full recourse to third parties, either the sponsor, guarantor or other counterparties. In such cases, we expect losses to be lower. As such, the rating of CRE loans backed by such a fully valid and enforceable recourse from an investment-grade rated entity shall have a floor at the guarantor's rating.

Final maturity. We may consider a rated instrument to be in default if it is still outstanding close to scheduled maturity. This could happen if we deem CRE loan performance metrics insufficient to refinance or if the refinancing leads to significantly less favourable terms or a loss of value compared to the original terms of the debt[22]. Another instance is if no sound refinancing plan has been presented prior to the maturity date. We incorporate such instances by deviating from the highest quantitative rating achievable during our monitoring process.

Representations and warranties. True-sale transactions involve various representations and warranties related to the secured CRE loans and associated CRE. We expect them to cover i) CRE-related statuses, titles, rights of use and permits; ii) mortgages, leases, and insurance coverage; iii) CRE loans and liens; and iv) the nature of the sale transaction.

4.4 Illustrative rental value haircut

Figure 12 illustrates our rental value haircuts derived from market rental value declines observed through a full economic cycle. They correspond to properties which are in good condition, fit for purpose and in a prime location. We deviate from such levels depending on the property's micro location and specific quality as well as market conditions.

Figure 12. Illustrative rental value haircut benchmark

RVH (%)	Netherlands		Germany		UK		France		Spain		Italy	
	B	AAA	B	AAA	B	AAA	B	AAA	B	AAA	B	AAA
Office	2	31	2	31	2	31	2	31	3	38	2	31
Retail	5	36	4	31	4	31	4	31	8	35	4	31
Shopping centre	5	36	4	31	4	31	4	31	8	35	4	31
Industrial	2	28	2	26	2	29	2	26	2	37	2	26

4.5 Illustrative ranges of property and vacancy costs

Figure 13 represent illustrative ranges of property costs observed in Europe for the main CRE asset types. They correspond to properties which are in good condition and fit for purpose. Transaction-specific and precise property costs may deviate from such levels based on property specificities, due diligence reports or local market surveys. We expect rent rolls to contain gross rental income by unit and the associated costs at either unit, property or portfolio level.

Figure 13. Illustrative ranges of property costs

Property costs	Application level	Metric	Retail	Office	Industrial	Residential	Hospitality	Healthcare
Asset and property management fee	Property	% GRI[23]	2%-5%	2%-5%	2%-5%	2%-5%	8%-14%	2%-5%
Maintenance capex	Property	%CV* [24]	0.1%-2.50%	0.1%-2.50%	0.1%-2.50%	0.1%-1.30%	0.1%-2.50%	0.1%-2.50%
Leasing commission[25]	Unit	% GRI[26]	3%-5%	3%-5%	3%-5%	3%-5%	N/A	N/A

* As a percentage of our point-in-time gross rental income.
** Alternatively, as a percentage of our point-in-time collateral value.

[22] Please refer to Scope Credit Rating Definitions for more detail.
[23] As a percentage of our point-in-time gross rental income.
[24] Alternatively, as local currency amount per leased area.
[25] We deduct leasing commissions spread over a conventional 5-year lease period.
[26] As a percentage of our point-in-time gross rental income.

Retired Methodology

Figure 14 presents illustrative ranges of vacancy costs in Europe for the main asset types. They correspond to properties which are in good condition, fit for purpose and in a prime location. Transaction-specific and precise vacancy costs may also deviate from such levels based on property specificities, due diligence reports or local market surveys.

Figure 14. Illustrative ranges of vacancy costs

Vacancy costs	Application level	Metric	Retail	Office	Industrial	Residential	Hospitality	Healthcare
Structural vacancy	Property	% GRI	5%-15%	5%-15%	2%-10%	5%-10%	5%-10%	5%-10%
Void period[27]	Unit	Months	6-24	6-24	6-36	3-18	3-24	6-24

4.6 Illustrative capitalisation rates

Figure 15 presents an illustration of capitalisation rates observed in Europe for the main asset classes through a full economic cycle. They correspond to properties which are in good condition and fit for purpose. We may deviate from such levels based on the property's micro location, its specific quality and market conditions.

Figure 15. Illustrative stressed capitalisation rates

Stressed capitalisation rates (%)	Netherlands		Germany		UK*		France		Spain		Italy	
	B	AAA	B	AAA	B	AAA	B	AAA	B	AAA	B	AAA
Office – prime	4.0	8.0	3.0	6.0	5.0	8.5	3.6	7.3	3.7	7.5	3.5	6.8
Office – secondary	5.0	9.3	4.0	6.8	6.9	10.0	4.7	8.5	5.5	8.8	4.6	8.0
Office – periphery	6.7	10.8	5.5	7.5	9.1	11.3	6.0	9.8	7.6	10.3	7.0	9.8
Retail – prime	4.6	7.0	3.3	5.8	6.5	8.3	3.3	5.5	3.6	6.3	3.1	4.5
Retail – secondary	6.1	7.8	4.0	6.5	8.4	10.0	4.6	6.5	4.7	7.3	4.2	5.5
Shopping centre – prime	5.8	8.8	4.7	8.0	8.6	10.8	4.4	7.3	5.5	9.5	5.9	8.8
Shopping centre – secondary	6.0	9.0	5.3	8.3	8.9	10.3	5.4	7.5	6.5	10.8	7.1	10.3
Shopping centre – periphery	6.2	9.3	5.5	8.5	9.2	10.8	5.5	7.8	6.6	11.0	7.3	10.8
Industrial – prime	3.9	8.5	3.5	7.3	4.1	7.8	3.6	9.0	4.5	9.3	4.6	8.5
Industrial – secondary	4.9	8.8	3.9	8.0	5.3	9.0	4.2	9.8	5.4	9.8	5.7	9.0
Industrial – periphery	6.0	9.3	4.7	7.8	6.5	9.5	5.1	10.3	6.5	10.3	6.9	9.8

* UK values are based on country average. Stressed capitalisation rates applied for properties in London may substantially differ.

Figure 16. Illustrative absolute stress levels expressed as percentage of actual capitalisation rates

Absolute stress levels on actual on capitalisation rates[28]	Netherlands		Germany		UK		France		Spain		Italy	
	B	AAA	B	AAA	B	AAA	B	AAA	B	AAA	B	AAA
Office – prime	4%	108%	2%	104%	3%	75%	5%	111%	3%	109%	5%	102%
Office – secondary	2%	89%	2%	73%	3%	50%	3%	87%	4%	65%	3%	79%
Office – periphery	3%	65%	3%	40%	3%	27%	3%	67%	4%	41%	3%	44%
Retail – prime	4%	58%	3%	79%	3%	31%	5%	75%	4%	80%	3%	50%
Retail – secondary	4%	32%	3%	68%	4%	24%	4%	47%	4%	61%	4%	37%
Shopping centre – prime	3%	56%	4%	77%	4%	30%	4%	71%	3%	78%	3%	52%
Shopping centre – secondary	4%	55%	3%	60%	4%	20%	5%	46%	4%	72%	3%	48%
Shopping centre – periphery	4%	55%	4%	60%	5%	21%	4%	46%	3%	71%	3%	51%
Industrial – prime	4%	126%	3%	113%	3%	95%	4%	161%	4%	114%	2%	89%
Industrial – secondary	2%	82%	3%	112%	2%	73%	3%	139%	3%	86%	2%	61%
Industrial – periphery	3%	59%	3%	70%	2%	49%	4%	109%	3%	62%	2%	45%

[27] Rating-dependent
[28] Absolute stress levels on actual capitalisation rates = (stressed capitalisation rates / actual capitalisation rate) - 1

Retired Methodology

4.7 CRE loan all-in refinancing rate calculation

We quantitatively consider a CRE loan to be in refinancing default if: i) its exit debt yield is lower than its estimated all-in refinancing rate; or ii) its estimated stressed loan-to-value at refinancing exceeds 100%.

As shown in Figure 17, the all-in refinancing rate is mainly a function of: i) the CRE loan-to-value at refinancing; ii) the asset type; iii) our assumption for the forward curve of the relevant reference rate; and iv) the CRE loan's diversification.

Figure 17. All-in refinancing rate components

All-in refinancing rate	Drivers	Approach / background
Lender's debt funding yield	Historical volatility	Five-year forward swap curve
Lender's credit risk premium	CRE loan-to-value CRE regulations	Cost of equity[29]
CRE loan risk premium	CRE loan-to-value CRE loan tenor CRE regulations	Minimum expected loss rate
Asset amortisation premium	CRE type CRE economic life	Asset type-specific amortisation rate
Transaction-specific discount or premium	CRE type CRE tenancy CRE loan terms and conditions	Our credit view on the specific CRE type or the specific CRE[30]
Diversification discount rate	Herfindahl scores	Diversification discount rate

CRE regulations

We acknowledge the regulatory cost for CRE lending by incorporating: i) a minimum standard risk weight for capital allocation to CRE lending; and ii) a minimum expected loss rate into the all-in refinancing rate as presented in Figure 18.

Figure 18. Risk weights used to determine the optimal capital held against each CRE loan

Standard risk weights (%) / LTV bucket	LTV < 60%	60% < LTV < 70%	70% < LTV < 80%	LTV >= 80%
CRE loan tenor: less than 2.5 years	50%	70%	115%	250%
CRE loan tenor: equal to or more than 2.5 years	70%	90%	115%	250%

Figure 19. Minimum expected loss

Standard minimum expected loss (%) / LTV bucket	LTV < 60%	60% < LTV < 70%	70% < LTV < 80%	LTV >= 80%
CRE loan tenor: less than 2.5 years	0.00%	0.40%	2.80%	8.00%
CRE loan tenor: equal to or more than 2.5 years	0.40%	0.80%	2.80%	8.00%

Figure 18 and Figure 19 refer to or are based on the internal rating-based approach for specialised lending exposures from the Prudential Sourcebook for Banks, Building Societies and Investment Firms. This implements the Capital Requirements Regulation, article 95(2), for the UK. This is typical for European CRE, with the UK the most active market in Europe.

Asset type-specific refinancing premium

We expect a minimum annual CRE loan constant rate commensurate with the annual CRE asset's depreciation rate. The CRE asset's depreciation rate equals the inverse of its respective economic life as presented in Figure 20.

[29] We assume a standardised 12% return on equity for CRE business and a 12% capital adequacy ratio
[30] For example, we give credit to the latest medium to long-term CRE type-specific credit trends. We consider the latest developments including refinancing conditions, sector structural changes, credit risk perception and the supply and demand equilibrium. Further, we consider CRE-specific characteristic such as very high lease expiry or high-rated tenancy profiles.

Retired Methodology

Figure 20. Illustrative asset type-specific rate benchmark

Asset type	Asset economic life (years)[31]	Asset type-specific minimum yearly amortisation (% of CRE loan)
Residential	80	1.30%
Office	60	1.70%
Shopping mall	50	2.00%
Hospitality	40	2.50%
Healthcare	40	2.50%
Logistics	40	2.50%
Retail	30	3.30%

Diversification discount rate

We determine a diversification discount rate, which we use to reduce the refinancing rate. This acknowledges that diversification lowers refinancing default risk. It is a function of three equally weighted granularity factors: i) property number; ii) property type; and iii) property location. Figure 21 and Figure 22 show the calculation.

We calculate each diversification factor score following the inverse Herfindahl formula, with each factor capped at 0.5%: $Diversification\ score\ factor\ (floor\ at\ 0) = Min(0.5\%\ ;\ \frac{Herfindahl\ score-1}{Herfindahl\ score\ factor} * 0.5\%)$

Figure 21. Diversification discount rate factors

Diversification score factors	Credit rationale	Herfindahl score factor	Formula of Herfindahl scores
Property number	Granular CRE portfolio provides cash flow stability and mitigates idiosyncratic risks	25	$= \frac{1}{\sum_{k=1}^{n=\ number\ of\ CRE} (\frac{Allocated\ collateral\ balance}{Total\ collateral\ balance})^2}$
Property type	Granular CRE type protects from sector structural changes	2	$= \frac{1}{\sum_{k=1}^{n=number\ of\ CRE\ type} (\frac{Property\ type\ collateral\ balance}{Total\ collateral\ balance})^2}$
Property location	Granular CRE location protects from macro and micro-economic risks	10	$= \frac{1}{\sum_{k=1}^{n=\ number\ of\ CRE\ location} (\frac{Property\ location\ collateral\ balance}{Total\ collateral\ balance})^2}$

[31] Estimated asset economic lives rely on accounting standards

Retired Methodology

Figure 22. Illustrative all-in refinancing rate calculation for a five-year CRE loan

	Rating-conditional	Indicator	Calculation
Leverage (1)	Yes	exit CRE loan-to-value	60%
Debt refinancing tenor (2)	No	Initial CRE loan tenor (Y)	5
Return on equity target (3)	No	Standardised market rate	12.00%
Risk weight (4) = function (1,2)	No	CRE regulations	70.00%
Minimum expected loss (5) = function (1,2)	No	CRE regulations	0.40%
Capital adequacy ratio (6)	No	CRE regulations	12.00%
Funding yield (2,7)	Yes	Swap curve (5Y5)	2.60%
Asset type (8)	N/A	Valuation report	Office
Transaction-specific discount or premium (9)	No	Scope expertise	0.00%
Asset economic life (10)	No	Accounting rules	60.00
Asset value (11) = 1*11	No	Valuation report	1,666
Diversification discount (12)	No	Diversification score	0.75%
Illustrative CRE loan amount (13)			1,000.0
Risk weighted assets (14) = 13*4			700.0
Capital requirement (15) = 14*6			84.0
Unsecured debt (16) = 13			1,000.0
Cost of equity (17) = 3*15/13			1.01%
Minimum yearly expected loss (18) = 5/2			0.08%
Cost of unsecured debt (19) = 16*7/13			2.60%
Minimum yearly amortisation (20) = 1/10			1.67%
Asset-type premium yearly (21) = 9			0.00%
Total leverage cost (22) = 17+18+19+20+21			5.36%
Diversification discount (23) = 12			0.75%
Minimum all-in refinancing rate (24) = 22-23			**4.61%**

Retired Methodology

4.8 Interest rate stress framework

CRE loans are exposed to: i) interest rate risk from the mismatch between the fixed-rate assets and floating-rate liabilities; or ii) term structure risk related to different interest rate reset dates between the underlying CRE loans and the CMBS liabilities.

We apply a rating-conditional premium to: i) the CRE loan's floating-rate curve to stress its term default sensitivity to short-term interest rate risk; and ii) the forward-rate component of our all-in refinancing rate to stress the CRE loan's refinancing risk sensitivity to long-term interest rate risk.

Interest rate stresses are based on the historical interest rate evolution for each currency. The magnitude of stressed interest rate movements is based on quantiles derived from our idealised probability-of-default table.

4.9 Foreclosure analysis

Illustrative foreclosure timing, foreclosure costs and liquidation costs are described below according to the criteria and level of application. Our foreclosure timing assessment is based on the security package and whether lenders benefit from mortgage rights on the assets or indirect securities like a share pledge on the property company or holding company.

Figure 23. Illustrative timing to recovery benchmark

Foreclosure timing	Simple average (in years)	Jurisdictions
Creditor-friendly jurisdictions	Less than or equal to 2.0	Netherlands, United Kingdom
Neutral jurisdictions	Less than or equal to 4.0	Germany, France, Spain
Debtor-friendly jurisdictions	More than 4.0	Italy

Figure 24. Illustrative foreclosure cost benchmark

Liquidation costs	Level of application	Timing of application / criteria	Indicative range (as a % of collateral value)
Special servicer	Collateral value	During foreclosure period / jurisdiction	1%-20%

Figure 25. Illustrative liquidation costs benchmark

Liquidation costs	Level of application	Criteria	Costs (as a % of collateral value)
Legal costs*	CRE borrower	Jurisdiction & deal complexity	1%-2.5%
Notary costs	CRE value	Jurisdiction & deal complexity	0.25%-3%
Broker costs	CRE value	Jurisdiction & deal complexity	0.25%-6%
Real estate transfer taxes	CRE value	Jurisdiction & deal complexity	1%-12%
Hedge breakage costs	CRE loan	Mark-to-market value	N/A

*Capped at EUR 2m local currency equivalent

As shown in Figure 26, we estimate a maximum recovery rate as a function of the CRE loan-to-value at liquidation and the rating category. We deviate from this framework if the transaction features a recovery guarantee (e.g., floor on collateral value, or forward sale with locked price).

We calculate the CRE loan-to-value based on the total outstanding liability amount for whole loans and A/B loans and based on the specific tranche for senior/mezzanine loans. We then apply the loss amount, determined by the maximum recovery on the total liability notional, in line with the post-default event priority of payment.

Figure 26. CRE loan maximum recovery

Exit CRE loan-to-value / rating level	B	BB	BBB	A	AA	AAA
10%	100.0%	99.95%	99.91%	99.87%	99.83%	99.78%
20%	100.0%	99.91%	99.82%	99.74%	99.65%	99.56%
30%	100.0%	99.86%	99.73%	99.60%	99.48%	99.35%
40%	100.0%	99.82%	99.65%	99.47%	99.30%	99.13%
50%	100.0%	99.77%	99.56%	99.34%	99.13%	98.91%
60%	100.0%	99.73%	99.47%	99.21%	98.95%	98.69%
70%	100.0%	99.68%	99.38%	99.08%	98.78%	98.48%
80%	100.0%	99.64%	99.29%	98.95%	98.60%	98.26%
90%	100.0%	99.59%	99.20%	98.81%	98.43%	98.04%
100%	100.0%	99.55%	99.11%	98.68%	98.25%	97.82%
110%	90.9%	90.41%	89.93%	89.46%	88.99%	88.51%
120%	83.3%	82.79%	82.27%	81.75%	81.24%	80.72%

Retired Methodology

4.10 Notes backed by CRE debt funds

CRE funds provide investors with an indirect exposure to CRE via fund shares or notes issued by funds secured by CRE loans. These funds are often investment vehicles in the form of either a real estate investment trust (REIT) ultimately owned by general and limited partners or a limited company. We highlight below important considerations when assessing debt instruments issued by CRE funds.

Funds' compartments/feeders. Arrangers of CRE funds usually set up dedicated fund compartments or feeders under their umbrella fund to serve different investment strategies or customers. We consider the elements mentioned in 4.3 Legal analysis in relation to the issuing compartment and assess any additional risks and mitigants introduced by the multi-compartment structure and the staggered capital calls to the different limited partners.

Ramp-up portfolio. At inception, most CRE funds are either not yet ramped-up or only partially ramped-up. Investors are exposed to the credit quality of the existing CRE loans and future loan acquisitions. We construct a model portfolio that best represents the collateral pool's risk profile throughout the life of the transaction, building on the results of our asset manager analysis and asset analysis. Details of the portfolio at the closing date, the asset manager's ramp-up plan, and structural features such as loan eligibility criteria, maximum portfolio concentrations, trading limits and collateral quality tests also shape the model portfolio. We also assess the impact of breaches of eligibility criteria and portfolio performance-related covenants, including on future investments. We also update our portfolio as new assets are acquired.

Originator's investment style. Our view on the asset manager affects quantitative parameters and influences our overall assessment of the transaction. To appraise the manager's governance quality and ability to perform under the desired strategy, we divide our analysis into five main parts: i) corporate overview; ii) financial strength and business continuity; iii) operations; iv) strategy; and v) record.[32]

4.11 Leasehold considerations

The ownership of an asset under leasehold is split two ways: i) the right of ownership over the land (freehold interest); and ii) the right of possession and use of the land (leasehold interest). Under a leasehold agreement, the parties enter into a term lease, generally over a long tenor (30 to 999 years). The lessor (freeholder) can authorise the lessee (leaseholder) to develop, maintain, improve and manage an asset on the land during the lease tenor, in exchange for ground rent. By giving away the right of possession and use of the land, the lessor can secure a bond-like, long-dated inflation-hedging instrument that ranks super senior to all other rental and mortgage payments. In the meantime, the lessee can either free up equity, assuming the land it previously owned has been leased back or build and manage properties at a discounted investment cost.

Leasehold interest

CRE loans secured by leaseholds mainly embed cash flow risks, collateral value risk and legal risk. Firstly, the available collateral net cash flows may be impaired because of unhedged contractual ground rent escalation, a potential increase in ground rent at the leasehold extension date, legal costs to renew leasehold agreements, or general delays in leasehold extension negotiations. Secondly, the collateral value is impaired due to lower estimated operating income and higher applicable capitalisation rates. Thirdly, where appropriate, we consider legal risks and existing mitigants. We examine whether building insurance covers natural disasters, and whether the leasehold mortgagee has notice and cure rights over a freehold event of default or the right to become a borrower before the freeholder can initiate an enforcement event. All risks outlined above become more tangible as the leasehold approaches expiry.

Cash flow risks impact our default probability calculation. Collateral value risks, natural risks and legal risks impact our recovery assumptions. Our analysis generally reflects these risks through adjustments on the applicable capitalisation rates. We also reduce the estimated net operating income for unhedged cash flow risks like ground rent escalation. The risk premiums on our capitalisation rates depend on the leasehold's remaining term to maturity. We increase the risk premiums based on the legal risks mentioned above and the risk of the freeholder being fully leveraged on its freehold title. For properties whose leasehold will soon expire, we give between a zero value and a value equal to the capitalised net cash flow until leasehold maturity. For leaseholds subject to automatic renewals, we deduct the predicted renewal leasehold cost from the property value.

Freehold interest

[32] Refer to 'CLO Rating Methodology – Appendix 1 Details of the asset manager analysis' for an illustrative analysis on corporate debt and the loan manager.

Retired Methodology

CRE loans secured by freeholds embed the same main risks as leaseholds, namely cash flow risks, collateral value risks and legal risks. These risks are lower in absolute terms because of the senior lien position of freehold interest-backed CRE loans and the implied lower leverage. At the same time, their long-term horizon means the sustainability of the underlying leasehold interest cash flows is especially important.

We generally analyse freeholds under a forced administration scenario. Firstly, this approach delinks our credit analysis from the current leaseholder profile and leverage, which is important as information on this can be limited. Secondly, it implies additional senior administration costs are incurred by the special administrator. In contrast to leasehold risks, we reflect freehold risks by applying stresses to cash flows, as described in our methodology, rather than applying an additional risk premium. We estimate gross income based on an indicative tenant portfolio we deem sustainable for the collateral type and location instead of the current tenant portfolio. The properties' capacity to generate sustainable cash flows over the CRE loan's life also depends on clauses in the leasehold agreement. These clauses may stipulate minimum expenditure on maintenance and insurance and include covenants such as a maximum leverage on the financed property.

We simulate an event of default once stressed cash flows net of additional administration costs can no longer service contractual debt payments on time. Liquidation is triggered upon an event of default. We generally assess risks over a shorter period than the tenor of the freehold interest by front-loading the applicable stresses on cash flows. Refinancing risk does not drive our freehold analysis because the refinancing loss rate makes a limited contribution to our expected loss rate. Freehold mortgages benefit from a super senior position and low leverage, which limit refinancing probability of default. Upon a refinancing default, the present value loss is minor due to the long freehold tenor. Its contribution to the total expected loss is therefore limited. We generally expect high recoveries, aligned with our CRE loan maximum recovery, upon default for freehold mortgages because they benefit from low leverage and a first-lien mortgage on the land and the property. For high ratings we expect a remote probability of missed payments, irrespective of the terms and conditions, in line with our General Structured Finance Rating Methodology.

4.12 Credit tenant lease

Credit tenant leases (CTLs) are CRE loans secured by CRE let to single tenants under triple net leases. CTLs usually result from sale and long leaseback transactions and embed a tenant call option to purchase or repurchase the CRE at a set price or at market value.

The credit risk of CTLs is similar to that of a senior secured bond issued by the tenant: tenant creditworthiness determines term default probability and the CRE value determines the recovery rate. We may apply a floor at tenant creditworthiness for rating on fully amortising CTLs as opposed to non-fully amortising CTLs exposed to refinancing risk.

We expect CTLs to embed the following factors:

1) Obligor economic exposure and lease agreement. Here, the tenant takes on debt servicing obligations and other economic burdens of ownership. A triple net lease is underwritten, covering all costs and expenses related to the CRE ownership including taxes, insurance, repair, maintenance, and rental servicing of the CRE loan. We expect the tenant to pay these costs directly without set-off or counterclaims.

2) Master lease agreement. Obligors may sublet part of their CRE to third parties. We expect obligors to continue to be fully liable for all lease obligations.

3) Guarantor. Obligors may benefit from parent company guarantees, including for obligations such as timely lease payment. We review guarantee agreements, focusing on waivers of defence or provisions that limit liabilities. The rating benefits from the guarantor's credit quality when we consider the guarantee and the recourse to the guarantor to be fully effective.

4) Tenant credit quality. Tenant creditworthiness drives CTL default probability. We assess the creditworthiness of CTL tenants or of their guarantor in case a guarantee is foreseen.

5) Security package. Securities usually include a first-lien pledge to the secured CRE and the related CRE leases.

6) Purchase call option. Tenants may be able to purchase the CRE at a set price or market value at a point in time. We expect transaction documents to foresee a purchase price higher than the outstanding debt amount.

7) Insurance. Lease payments must not be interrupted by damage on any part of the leased collateral. We expect the tenant to directly apply collateral and casualty insurance on the CRE. Insurance proceeds should cover repair costs up to its previous

Retired Methodology

fair market value as well as rental loss. We accept insurers' ratings from external ECAIs and we expect insurers' ratings to at least equate to the rating of the CTL tenant or of its guarantor.

8) Specialised insurance. Insurers have developed policies that specifically cover lease cancellation rights following a casualty or condemnation event, or balloon payment risk at maturity. We give credit to policies that provide credit enhancement.

9) Lease and liability maturity. We expect the lease break to go beyond the debt's maturity, otherwise our assessment of vacant CRE value drives our calculation of recovery upon default.

10) Amortisation schedule. We give credit to a non-discretionary scheduled amortisation profile and may disregard refinancing risk in cases of scheduled full amortisation.

4.13 Environmental, social and governance (ESG)

CRE investors are increasingly focused on ESG factors. ESG-friendly CRE have historically outperformed comparable assets for both rental value and capital value appreciation.

We consider credit-relevant ESG factors that affect the CRE's net cash flow, value and, ultimately, default probability and recovery. Such factors may affect relevant assumptions including capitalisation rates, rental values, property costs, business plan costs and timing.

Our analysis gives credit for certifications or scores on the CRE. These include Scope's ESG scores, the Global Real Estate Sustainability Benchmark, the UK Energy Performance Certificate, the Building Research Establishment Environmental Assessment Method (BREEAM), Leadership in Energy and Environmental Design (LEED), and Haute Qualité Environmentale (HQE).

We also consider benefits or disbenefits from regulations, in addition to ESG-linked lending terms and conditions.

Environmental

Our analysis on the environmental aspect involves the examination of factors such as: i) the presence of asbestos; ii) abandoned underground storage tanks; iii) ground contamination; iv) water contamination; v) presence of polychlorinated biphenyl; vi) lead paint; vii) capex plan in energy efficiency and retrofitting; viii) borrower's climate change policies; and ix) sourcing of plant and material.

We review capital expenditure plans, insurance liabilities against acute climate changes, third-party technical environment reports, including Phase I and Phase II reports when available. We expect relevant reports to provide an estimated budget and time to resolve major findings.

We expect major findings to be accounted for in sponsors' business plans and reserved upfront.

Social

The social aspect analysis focuses on i) insurance liabilities against human-caused disasters like terrorism or wars; and ii) societal changes affecting consumer behaviour (e.g., e-commerce, working from home), demography and living preferences (e.g., employment and affordability).

We review insurance agreements and consider information on societal changes when available.

Governance

The major focus for governance is determining the existence of: i) simple and transparent priorities of payment in allocating CRE loan proceeds and losses; ii) standard and transparent financial covenant formulas and collateral valuation assumptions; iii) ESG-linked lending criteria; iv) rights, obligations, independence, and the alignment of interests and potential conflicts of interest among stakeholders; v) ramp-up provisions and investment guidelines; and vi) non-discretionary terms and conditions upon default.

We review CRE loan agreements, servicing agreements, collateral management agreements, stakeholder liabilities and third-party reports when available.

Retired Methodology

Figure 27. Illustrative CRE credit-relevant ESG factors

Environmental	Social	Governance
• Environmental contamination • Natural disasters • Energy efficiency • Environmental certifications • Energy performance certificates	• Insurance against human-caused disasters • Impact on consumer behaviour • Demographic changes • Living preferences • Local community engagement	• Transaction structure • Conflicts of interest • Representations and warranties • ESG performance-linked transaction • Guarantees • Reporting

4.14 Indicative CRE loan and CMBS data template

The information below is neither exhaustive nor required. Other types of information may be more relevant for a given collateral pool. We therefore encourage originators, sponsors, asset managers and arrangers to contact us if alternative information is available for the rating analysis. [to be updated as per the Scorecard]

Borrower/sponsor information

Borrower name

Borrower country of incorporation

Borrower rating

Recourse to borrower

Sponsor name

Sponsor rating

Recourse to sponsor

Sources and uses

Development information

Developer and construction manager information

Procurement strategy

Capital expenditure disbursement schedule

Construction time schedule

Contingency plan

Interest reserve / interest capitalisation

Unit-level line-by-line information

Tenant ID

Associated property ID

Vacancy status

Net lettable area

Lease start date, break date and end date

Lease type

Contractual gross rental income

Contractual service charges

Indexation information (level of reference, hurdle rate, etc.)

Estimated gross rental value

Estimated recoverable expenses (service charge, utilities, insurance, etc.)

Estimated rent free and tenant incentives

Estimated void period and void rate

Estimated irrecoverable expenses

Tenant-level line-by-line information

Tenant ID

Tenant name

Tenant rating

Tenant main country of operations

Tenant main region of operations

Tenant main industry

Retired Methodology

Property-level line-by-line information

Property ID

Associated loan ID

Location (address, NUTS code, region, country)

Property type

Property interest type

Property size

Year built / renovated

Cross-collateralisation

Property values (market value, vacant property value, etc.)

Property valuer and valuation date

Valuation assumptions (capitalisation rates, vacancy rate, estimated rental value, irrecoverable costs, etc.)

Anticipated fees and expenses (asset manager, property manager, etc.)

Anticipated maintenance costs and leasing commission

Liability information

Class ID

Notional

Currency

Scheduled and legal maturity

Payment frequency

Reference rate

Margin information (margin, step-up/down, default interest margin, etc.)

Priority of payments and triggers (interest, principal, loss allocation)

Hedging arrangement information (instrument type, strike rate, etc.)

Financial and cash trap covenants

Structural features (type, protected notes, protection percentage, etc.)

Senior fees (category, amount / percentage)

Loan-level line-by-line information

Loan ID

Loan type and currency

Loan balances (current, committed and undrawn)

Loan amortisation schedule

Loan seniority and syndication features

Schedule and legal maturity dates

Cross collateralisation details

Hedging arrangement information (instrument type, strike rate, etc.)

Reference rate

Margin information (margin, step-up/down, default interest margin, etc.)

Arrangement, commitment, and monitoring fees

Priority of payments and triggers (interest, principal, loss allocation)

Allocated loan amount and release pricing multiple

Payment frequency

Fund reserve information (type, notional, replenishable, etc.)

Financial and cash trap covenants

Tax rate

Scheduled drawdown and loan amortisation profile

Retired Methodology

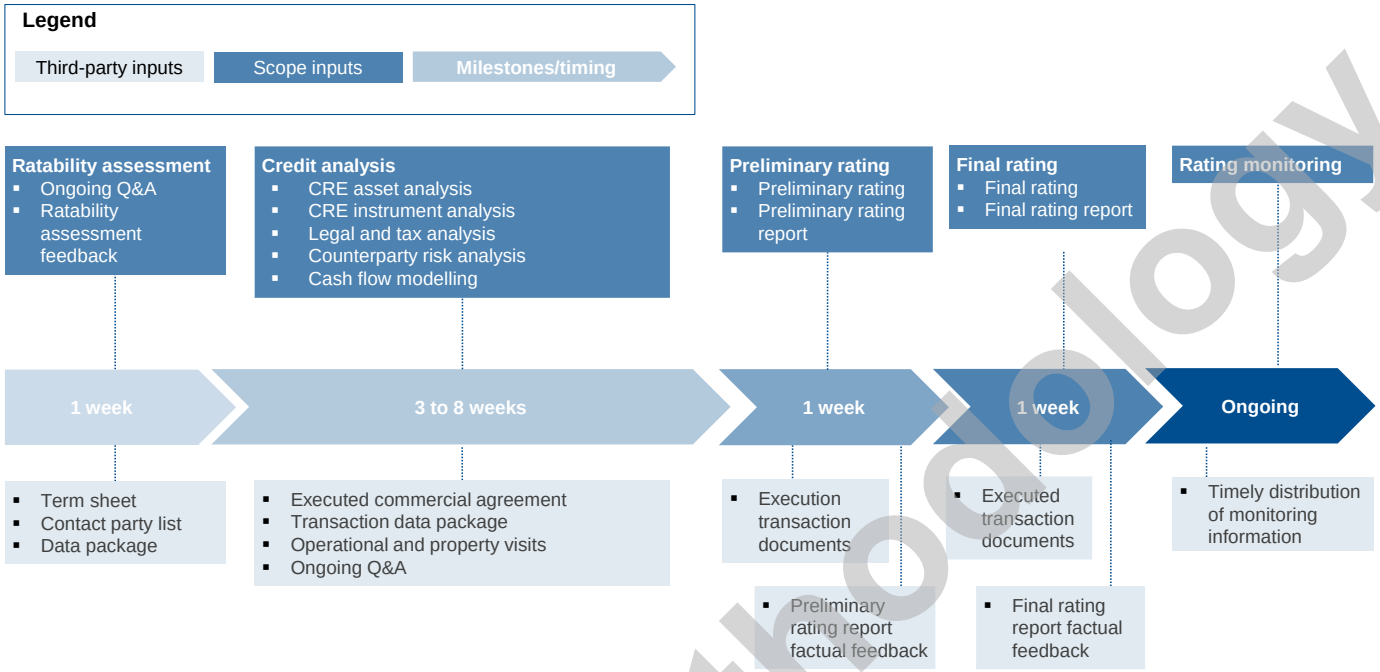
4.15 CRE loan and CMBS data guidelines

Transaction data package (expected data package)	CRE loans - Credit rating services	CRE loans - Other services	Non-granular CMBS - Credit rating services	Granular CMBS[33] - Credit rating services
Originator information				
Underwriting standards			✓	✓
Internal credit risk model (PIT/TTC PD, rating scale, etc.)			✓	✓
Historical performance (delinquency, default, recovery, prepayment, etc.)				✓
Sponsor/asset manager information				
Sponsor/asset manager presentation				✓
Business plan and cash flow model (when available)				✓
Transaction information				
Teaser/information memorandum	✓	✓	✓	✓
Structure chart	✓	✓	✓	
Rent roll and arrears	✓	✓	✓	
In-tenancy information and risk assessment	✓		✓	
Data tape			✓	✓
Transaction documentation				
Term-sheet	✓	✓		
Issuance documents, offering memorandum, facility agreement, intercreditor deed	✓		✓	✓
Security agreements	✓		✓	✓
Servicing agreements	✓		✓	✓
Key side documents, fee letters, hedging documents	✓	✓	✓	✓
Legal and tax opinions	✓	✓	✓	✓
Due diligence and third-party reports				
Originator due diligence (for synthetic and SRT transactions)			✓	✓
Sponsor and asset manager due diligence (for non-stabilised CRE)	✓		✓	
Property due diligence	✓		✓	
Valuation report	✓	✓	✓	
Technical and environmental reports	✓		✓	
ESG and sustainability reports	✓		✓	
Agreed-upon-procedure reports			✓	✓
Greenfield, brownfield and bridge financing projects				
Developer and construction team presentation	✓		✓	✓
Borrower financial statement	✓		✓	✓
Pre-sales/let plan and buyers'/tenants' profile	✓	✓	✓	✓
Construction plan, authorisations and costs follow-up	✓	✓	✓	✓
Miscellaneous				
Other data supporting the credit analysis	✓	✓	✓	✓
Monitoring				
Servicer report and management report	✓		✓	✓
Up-to-date compliance certificates	✓		✓	✓
Up-to-date valuation report	✓		✓	
Up-to-date rent roll and arrears	✓		✓	
Up-to-date account balances	✓		✓	✓
Up-to-date business plan and capital expenditure plan	✓		✓	
Up-to-date servicer site inspection reports	✓		✓	

[33] We expect granular CMBS data package to be completed by CRE loan data package for a sample of CRE loans (outlier CRE loans, largest exposures, etc.).

Retired Methodology

4.16 CRE loan and CMBS credit rating process



Retired Methodology

Scope Ratings GmbH

Headquarters Berlin
Lennéstraße 5
D-10785 Berlin
Phone +49 30 27891 0

Frankfurt am Main
Neue Mainzer Straße 66-68
D-60311 Frankfurt am Main
Phone +49 69 66 77 389 0

Paris
10 avenue de Messine
FR - 75008 Paris
Phone +33 6 6289 3512

Oslo
Karenslyst allé 53
N-0279 Oslo
Phone +47 21 09 38 35

Madrid
Paseo de la Castellana 141
E-28046 Madrid
Phone +34 91 572 67 11

Milan
Via Nino Bixio, 31
20129 Milano MI
Phone +39 02 30315 814

Scope Ratings UK Limited

London
52 Grosvenor Gardens
London SW1W 0AU
Phone +44 20 7824 5180

info@scoperatings.com
www.scoperatings.com

Retired Methodology

Disclaimer

© 2022 Scope SE & Co. KGaA and all its subsidiaries including Scope Ratings GmbH, Scope Ratings UK Limited, Scope Fund Analysis GmbH, Scope Innovation Lab GmbH, Scope ESG Analysis GmbH and Scope Hamburg GmbH (collectively, Scope). All rights reserved. The information and data supporting Scope's ratings, rating reports, rating opinions and related research and credit opinions originate from sources Scope considers to be reliable and accurate. Scope does not, however, independently verify the reliability and accuracy of the information and data. Scope's ratings, rating reports, rating opinions, or related research and credit opinions are provided 'as is' without any representation or warranty of any kind. In no circumstance shall Scope or its directors, officers, employees and other representatives be liable to any party for any direct, indirect, incidental or other damages, expenses of any kind, or losses arising from any use of Scope's ratings, rating reports, rating opinions, related research or credit opinions. Ratings and other related credit opinions issued by Scope are, and have to be viewed by any party as, opinions on relative credit risk and not a statement of fact or recommendation to purchase, hold or sell securities. Past performance does not necessarily predict future results. Any report issued by Scope is not a prospectus or similar document related to a debt security or issuing entity. Scope issues credit ratings and related research and opinions with the understanding and expectation that parties using them will assess independently the suitability of each security for investment or transaction purposes. Scope's credit ratings address relative credit risk, they do not address other risks such as market, liquidity, legal, or volatility. The information and data included herein is protected by copyright and other laws. To reproduce, transmit, transfer, disseminate, translate, resell, or store for subsequent use for any such purpose the information and data contained herein, contact Scope Ratings GmbH at Lennéstraße 5 D-10785 Berlin.