MOODY'S
INVESTORS SERVICE

RATING METHODOLOGY

Resecuritizations Methodology

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This rating methodology replaces *Resecuritizations Methodology* published in April 2020. We edited the "Modeling Approach" section to provide more information on our modeling approach, and we added a section that mentions our approach to evaluating the risk from environmental, social and governance considerations. We also made editorial updates to enhance readability. These updates do not change our methodological approach.

Scope

This rating methodology applies to securities backed by resecuritizations.

In this methodology, we explain our approach to assessing credit risks for resecuritizations, (resecs), including quantitative and qualitative factors that are likely to affect rating outcomes in this sector. This approach applies to resecs that are typically backed by residential mortgage-backed securities (RMBS) and commercial mortgage-backed securities (CMBS) issued by a special purpose entity (SPE) or trust. While the illustrative examples in this approach only refer to RMBS resecs, this approach is also used to rate resecs supported by other securities including, for example, asset-backed securities and Enhanced Equipment Trust Certificates (EETCs).

This methodology applies to resec transactions that consist of one underlying security supporting two or more resec bonds and in which the payments and losses are not allocated to the individual resec bonds on a pari passu basis. For transactions with multiple securities supporting two or more resec bonds in which payments and losses are not allocated on a pari passu basis, we likely use our structured finance CDOs rating methodology. For transactions with one or more securities supporting one or more bonds in which payments and losses are allocated on a pari passu basis, we would likely use our repackaged securities rating methodology.[1]

We discuss the asset and liability analysis, including associated modeling, as well as other considerations. We also describe our monitoring approach.

[1] A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

Rating Approach

In this section, we summarize our approach to assessing credit risks for resecuritizations, including quantitative and qualitative factors that are likely to affect rating outcomes in this sector.

We analyze the resec transaction structure, namely the legal framework and financial attributes of the transaction, such as:

» the amount of the resec bonds and the proposed priority of principal and interest distribution and loss allocation

» the credit enhancement available to the resec bonds

» other mechanisms such as par value tests

As with all rating methodologies, in applying this methodology, where appropriate, we consider all factors that we deem relevant to our analysis. In our approach, we consider the risks associated with the underlying security and the transaction structure. The model outputs derived by our quantitative modeling are important considerations in our rating committee process. However, the ratings assigned by the rating committee incorporate a variety of qualitative factors and may differ from the model output.

Asset-level Analysis and Related Modeling

In this section, we explain how we assess the underlying assets that back resecuritizations, including how we estimate potential cash flows from the assets.

When rating resec bonds, we assess the sufficiency of the cash flows from the underlying security to repay the resec bonds. We make this assessment by reference to the rating of the underlying security, or in some cases by projecting the cash flows of the underlying security under various stressed scenarios, as necessary based on the nature of the assets and the resec structures.

Structural Analysis and Liability Modeling

In this section, we explain how we analyze the structural features of a resecuritization, including how we model and allocate cash flows to different classes of bonds, taking into account asset cash flows and available credit support.

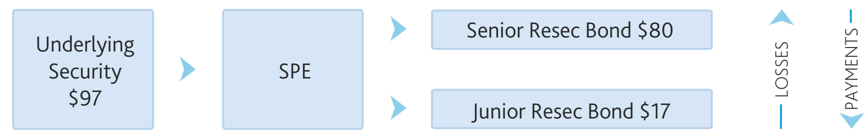
Resec Structures

Resec structures can vary significantly, ranging from straight pass-through transactions to those with additional structural features such as swaps and par value tests. To illustrate our approach, we focus on straight pass-through transactions.

The simplest resec structure allocates the cash flows from the underlying security to both senior and junior ranking resec bonds. The example in Exhibit 1 illustrates a resec structure, where the senior ranking resec bond typically has the first claim on the underlying cash flows and suffers losses only after a write-down of the junior resec bond. Thus, the junior resec bond protects the senior resec bond against interest shortfalls and principal losses on the underlying security.

EXHIBIT 1

Sequential Payment Allocation and Reverse-sequential Loss Allocation

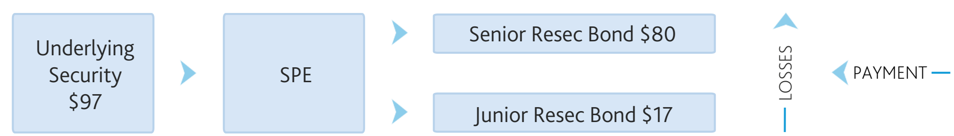


Source: Moody's Investors Service

Other examples of simple resec structures are shown in Exhibits 2 and 3, with different allocations of cash flows and losses from the underlying security to the senior and junior ranking resec bonds.

EXHIBIT 2

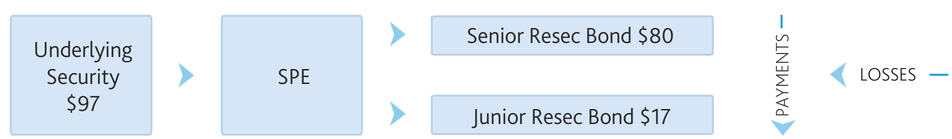
Pro rata Payment Allocation and Reverse-sequential Loss Allocation



Source: Moody's Investors Service

EXHIBIT 3

Sequential Payment Allocation and Pro rata Loss Allocation

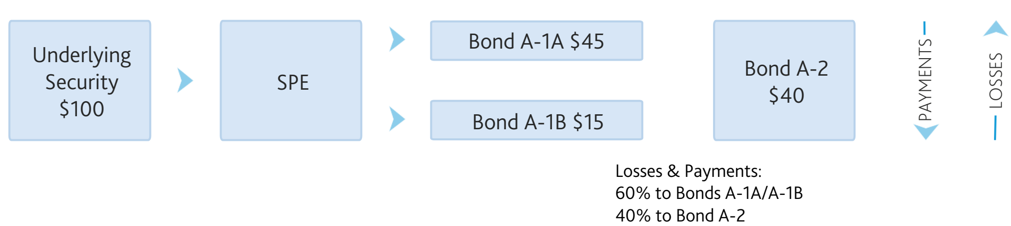


Source: Moody's Investors Service

Other resec structures allocate the cash flows and losses from the underlying security to resec bonds in a slightly more complex manner. The example in Exhibit 4 illustrates a resec structure where cash flows and losses from the underlying security are allocated among three resec bonds. Cash flows and losses are allocated pro rata and pari-passu according to the respective balances to the resec bonds A-1 (considering A-1A and A-1B together as a single bond) and A-2. Then principal cash flows from the underlying security allocated to A-1 are distributed with a sequential priority of payment between the resec bonds A-1A and A-1B. Analogously, losses allocated to resec bond A-1 are first allocated to A-1B so that resec bond A-1A suffers losses only after a write-down of the junior resec bond A-1B, thus protecting the senior resec bond A-1A against interest shortfalls and principal losses.

EXHIBIT 4

Pro rata Sequential Allocation of Payments and Pro rata Reverse-sequential Loss Allocation



Source: Moody's Investors Service

Modeling Approach

We use the following modeling approaches when rating resec bonds:

- We use a weighted average expected loss modeling approach for resec transactions backed by US RMBS issued during or before 2009, and in which all the structures under the resec transactions resemble structures shown in Exhibits 1, 2, or 3 above. In this approach, the expected loss of the underlying security is allocated to the resec bonds per their capital structure such that the resec bonds' weighted average expected loss typically equals the underlying security's expected loss. For underlying securities that have been written down due to realized losses, we use the current balances grossed up by the realized losses. We evaluate the model output using the approach described in the "Loss Benchmarks" section below.[2]
- We use cash flow analysis based on pass/fail scenarios to determine the resec bond ratings for transactions backed by US CMBS and other commercial real estate (CRE)-related securities. For more information, see Appendix A.
- To derive the expected losses of resec bonds for other transactions, we model the cash flows of the underlying security and the resec bonds using the methodology applicable to the underlying security. The results of the expected loss calculations are mapped using the approach relevant to the underlying asset class, as described in the relevant methodology. For resec bonds backed, for example, by EMEA RMBS, we use a comprehensive cash flow model, ABSROM™, which enables us to model transaction cash flows derived from the underlying securities and the associated liability structure. The model produces a series of loss scenarios, with outputs for each security that include the expected loss, weighted average life, and default probability.

In addition to the approaches listed above, we use alternative approaches when necessary to reflect the assets and structures of resec transactions.

Loss Benchmarks

In rating resec bonds backed by US RMBS issued during or before 2009 and resec bonds backed by EMEA RMBS, and in which the structures resemble Exhibits 1, 2, or 3 above, we select loss benchmarks referencing the Idealized Expected Loss table[3] using the Standard Asymmetric Range, in which the lower-bound of loss consistent with a given rating category is computed as an 80/20 weighted average on a logarithmic scale of the Idealized Expected Loss of the next higher rating category and the Idealized Expected Loss of the given rating category, respectively. For initial ratings and upgrade rating actions, the upper-bound of loss consistent with a given rating category is computed as an 80/20 weighted average on a logarithmic scale of the Idealized Expected Loss of the given rating category and the Idealized Expected Loss of the next lower rating category, respectively. When monitoring a rating for downgrade, the upper-bound of loss is computed as a 50/50 weighted average on a logarithmic scale. That is, the benchmark boundaries of loss appropriate for evaluating rating category R are given by:

[2] For more information, see the discussion of Idealized Probabilities of Default and Expected Losses in *Rating Symbols and Definitions* (a link can be found in the "Moody's Related Publications" section) and in the "Loss Benchmarks" section.

[3] For more information, see the discussion of Idealized Probabilities of Default and Expected Losses in *Rating Symbols and Definitions.* A link can be found in the "Moody's Related Publications" section.

FORMULA 1

$$[1]\ Rating\ Lower\ Bound_R = exp\{0.8 \cdot log(Idealized\ Expected\ Loss_{R-1}) + 0.2 \cdot log(Idealized\ Expected\ Loss_R)\}$$

$$[2]\ Initial\ Rating\ Upper\ Bound_R = exp\{0.8 \cdot log(Idealized\ Expected\ Loss_R) + 0.2 \cdot log(Idealized\ Expected\ Loss_{R+1})\}$$

$$[3]\ Current\ Rating\ Upper\ Bound_R = exp\{0.5 \cdot log(Idealized\ Expected\ Loss_R) + 0.5 \cdot log(Idealized\ Expected\ Loss_{R+1})\}$$

Where:

» *Rating Lower Bound$_R$* means the lowest Idealized Expected Loss associated with rating *R* and the expected loss range of rating *R* is inclusive of the *Rating Lower Bound$_R$*;

» *Initial Rating Upper Bound$_R$* means the highest Idealized Expected Loss associated with rating *R* that is either initially assigned or upgraded and the expected loss range of rating *R* is exclusive of the *Rating Upper Bound$_R$*;

» *Current Rating Upper Bound$_R$* means the highest Idealized Expected Loss associated with rating *R* that is currently outstanding and the expected loss range of rating *R* is exclusive of the *Rating Upper Bound$_R$*;

» *R-1* means the rating just above *R*;

» *R+1* means the rating just below *R*.

» The Rating Lower Bound for Aaa is 0% and the Rating Upper Bound for C is 100%. These are not derived using the formula.

Source: Moody's Investors Service

Other Considerations

Along with our asset, structural, and liability analysis, we consider other quantitative and qualitative factors in our credit analysis, such as legal risks.

Legal Risks

We assess legal risks that may affect the expected losses posed to investors. We review legal opinions at closing to help inform our views on the key legal risks identified in a transaction.

True Sale

A key consideration in our resec transaction analysis is whether the transaction isolates the underlying security from the effects of the insolvency of any entity involved in transferring the underlying security to the SPE or trust. In this context, we review the transaction structure, facts and circumstances related to the sale of the underlying security, and the legal opinion to determine if the courts would respect the transfer of the collateral to the SPE or trust as a true sale.

We also assess resec transactions that issuers or arrangers have not structured as a true sale of the underlying security to the SPE or trust and evaluate potential effects of a bankruptcy of the relevant transaction parties on the underlying security. Such transactions are subject to additional risks, and in these cases, a rating committee is likely to decide to link the ratings of the resec bonds to the long-term rating of the entity transferring the underlying security.

Treatment of Extraordinary Expenses

Any unexpected expenses, such as unexpected taxes, indemnification payments to the transaction parties, or any other unexpected cost or expense to the SPE or trust, will result in a diversion of funds from the underlying security, which the SPE or trust would otherwise pay to the resec bondholders. These expenses can result in a principal loss or an interest shortfall to the resec investors. Although we expect a low probability of extraordinary expenses, we are unlikely to assign a Aaa (sf) or Aa (sf) rating to a resec bond that could incur such expenses due to the absence of structural protections.

Restrictions on the resec SPE or trust's activities lessen the likelihood that a resec transaction incurs extraordinary expenses, which, even in the event, will be isolated and small. However, the limited amount of both data and observations precludes us from accurately estimating either the probability of these expenses or their amount should they occur.

Typically, we would not assign a Aaa (sf) or Aa (sf) rating to resec bonds when these expenses directly affect the cash flows that the SPE or trust would allocate to those resec bonds without first exhausting the credit support the junior resec bond provides.

Environmental, Social and Governance Considerations

Environmental, social and governance (ESG) considerations may affect the ratings of securities backed by resecuritizations. We evaluate the risk following our cross-sector methodology that describes our general principles for assessing ESG issues[4] and may incorporate it in our analysis.

Monitoring

In this section, we describe our approach when monitoring transactions. We generally apply the same key components that we apply when assigning ratings, except for those elements of the methodology that could be less relevant over time.

We generally apply the same approach when assigning ratings and monitoring outstanding ratings of resec bonds, except for those elements of the methodology that become less relevant over time or are not expected to change. Certain components, such as reviews of legal structures of existing transactions or true sale opinions, are static and will generally not be re-reviewed unless circumstances warrant.

In general, we consider the credit performance of the underlying security (e.g., potential defaults, significant credit migration) and other relevant changes in the economic environment that may affect the underlying security. If performance measures vary materially from initial limits or their prior levels, or the transaction structure changes, we may review the transaction and outstanding ratings in more detail.[5]

[4] A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

[5] For example, in methodologies where models are used, modeling is not relevant when it is determined that (1) a transaction is still revolving and performance has not changed from expectations, or (2) all tranches are at the highest achievable ratings and performance is at or better than expected performance, or (3) key model inputs are viewed as not having materially changed to the extent it would change outputs since the previous time a model was run, or (4) no new relevant information is available such that a model cannot be run in order to inform the rating, or (5) our analysis is limited to asset coverage ratios for transactions with undercollateralized tranches, or (6) a transaction has few remaining performing assets.

Appendix A: Analytical Considerations Related to US CMBS Securities

Modeling Approach

When assigning and monitoring the ratings on a CMBS resec, we run ratings-specific cash flow scenarios with different loss-timing, recovery, and prepayment assumptions on the underlying pool of mortgages. The factors, we consider include the underlying transaction's collateral attributes, structure, past and current performance, and our performance outlook for CRE. More specifically, based on the expected loss and weighted average life of the underlying transaction, we apply a granular default-vector analysis, such as constant default rate (CDR), to the underlying pool of mortgages to obtain either lifetime losses or forecast periodic cash flows for the resec's collateral.

We use the cash flow model to generate expected and stress scenarios of each. In each scenario, we analyze cash flows and losses from the underlying collateral, applying different stresses at each rating level. We then overlay the ratings-specific cash flows on the resec's structure to determine ratings assigned for each resec bond class.

Assumptions

Prepayments

Prepayment scenario assumptions for the resecuritization of US CRE-backed securities vary with the lock-out and yield maintenance provisions of the underlying commercial mortgage loan pool. Specifically, in rating a resec transaction, we stress cash flows from the underlying collateral using constant prepayment yield (CPY) scenarios in place of constant prepayment rates (CPR). CPY takes into account prepayment lock-out and yield maintenance provisions that are common in CRE lending; we use forward interest rate trends to calculate loan-by-loan yield maintenance. Lock-out provisions restrict an obligor's ability to make prepayments for a defined period. Yield maintenance provisions typically commence after the lock-out period has ended, after which obligors who prepay loans must pay the lender a fee equal to the net present value of the loan's future interest payments over the forward rate. Some loans provide for defeasance in addition to or instead of yield maintenance, whereby the loan sponsor substitutes securities to generate cash flows that replicate the prepaid loan. Yield maintenance and defeasance mitigate prepayment risk.

Defaults

Based on the rating, credit enhancement, and weighted average life of the underlying securities, we apply constant default-rate (CDR) vectors to the underlying collateral pools. We consider loans that are 30+, 60+, and 90+ days delinquent, in foreclosure, bankruptcy, or real estate owned (REO) as having defaulted. Exhibit 5 lists the CDR, CPY, loss severity, and lag to liquidation assumptions we generally test for performing and defaulted loans.

EXHIBIT 5

Timing and Severity Scenarios

Asset Status	CDR	CPY	Loss Severity	Lag to Liquidation
Performing	Variable	100%	50%	12 months
Defaulted	100%	100%	60%	12 months

Source: Moody's Investors Service

Moody's Related Publications

Credit ratings are primarily determined through the application of sector credit rating methodologies. Certain broad methodological considerations (described in one or more cross-sector rating methodologies) may also be relevant to the determination of credit ratings of issuers and instruments. A list of sector and cross-sector credit rating methodologies can be found here.

For data summarizing the historical robustness and predictive power of credit ratings, please click here.

For further information, please refer to *Rating Symbols and Definitions*, which includes a discussion of Moody's Idealized Probabilities of Default and Expected Losses, which is available here.

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