MORNINGSTAR®

U.S. CMBS General Ratings Methodology

February 2017

Contents

Editor's note: There are no substantive changes from the methodology published in October 2016. Minor changes include the addition of clarifying language on the treatment of defeased loans after a deal closes. This methodology, which supersedes and replaces CMBS New-Issue Ratings Opinions and CMBS Surveillance Ratings Opinions (both published in October 2016), takes effect immediately.

Introduction

This methodology describes Morningstar's approach to issuing letter-grade ratings for commercial mortgage-backed securities at issuance and during surveillance. Morningstar assigns ratings to CMBS transactions as an engaged rating agency. We also provide a subscriber-paid CMBS monitoring service on deals that we were not engaged by the issuer to rate and for which we may or may not assign ratings on the issued certificates. The methodology contained herein applies solely to those deals for which Morningstar has assigned letter-grade ratings.

Any determination to issue letter-grade ratings is in Morningstar's sole discretion according to Morningstar's policies and procedures, and we may, at any time, decline or refuse to rate a transaction for any number of reasons, including, without limitation, the failure or refusal of the arranger or third parties to provide information to Morningstar.

Morningstar Definitions of Letter-Grade Credit Ratings

The definitions of Morningstar's letter-grade credit ratings, application of changes to Morningstar methodology and access to rating opinions are set forth at www.morningstarcreditratings.com in Morningstar Credit Ratings Definitions and Other Related Opinions and Identifiers, which is incorporated herein by reference and integral to determining any ratings.

Morningstar Ratings Methodology

Morningstar's ratings approach typically consists of: a quantitative and qualitative analysis of a sampling of the underlying commercial real estate loans, the properties backing the loans, the security payment structure, and a legal review. The legal review encompasses the offering documents, the servicing agreement and trust agreement (if separate), loan sale agreement(s) (including any loan and property representations and warranties and exceptions), true sale opinion or similar opinion, and any related hedge documents. The legal review also includes loan documents and/or loan summaries, special-purpose entity operating agreement(s), nonconsolidation opinion(s), and intercreditor and/or co-lender agreements with respect to all or certain loans described in the presale report for the transaction.

Overview of Ratings Methodology

Morningstar's analytical process to rate CMBS transactions starts with analysts evaluating the underlying property or properties of all or a sample of the loan(s) held by the CMBS trust to estimate the sustainable net cash flow and sustainable value for the properties. Morningstar reduces the originator's underwritten NCF of the underlying properties for those loans not evaluated by analysts to estimate the sustainable NCF and value for those properties. The Morningstar sustainable NCF and value attributed to the property or properties associated with each loan are then stressed in Morningstar's deterministic subordination model to estimate the base credit-support requirements of the CMBS transaction for each rating category. We then qualitatively review these results by comparing the credit characteristics of the transaction to comparable transactions. This review may result in an adjustment to our credit-support requirements.

Several factors affect the performance of a commercial real estate property, including the property's physical condition and location, the dynamics of the market where it is located, the credit quality of its tenants, and the terms of their leases. Each property has its own distinct factors that Morningstar analysts consider to identify strengths and weaknesses, leading to an estimate of the property's sustainable NCF and value through the loan term.

Morningstar inputs these sustainable NCFs and values in our proprietary CMBS Subordination Model, which is used to estimate the base credit-support levels required at each rating category. This model estimates the base credit-support level for a loan by first applying a property cash flow stress to the Morningstar sustainable NCF. This stressed NCF is then compared with the loan terms to determine the stressed debt service coverage ratio and arrive at the loan's probability of default. The Morningstar value is subjected to a combination of property NCF and value stresses to determine the property's stressed value and arrive at the loan's loss severity. We also factor the concentration risk of the deal's portfolio into this determination. The probability of default and loss severity are multiplied to determine the loan's base credit-support level. This process is performed in two scenarios–one for the term of the loan and the other at the loan's maturity. Morningstar derives each loan's base credit-support level from a blend of both scenarios. The deal's base credit-support level is an aggregation of each loan's base credit-support level.

We consider the distinctive nature of the properties, the loan(s) structures, the presence of any additional debt held outside of the CMBS trust, the composition of the deal portfolio and its credit metrics, and qualitative legal analysis in the determination of these base credit-support levels. This may lead to adjustments to the base stresses in the Subordination Model applied to the sustainable NCF and value for the properties backing some or all of the loans.

Morningstar posts a summary of the CMBS Subordination Model at www.morningstarcreditratings.com that further describes the quantitative metrics used in the application of the model.

Morningstar Ratings Methodology for Interest-Only Certificates

Interest-only certificates do not have a certificate principal balance and do not receive distributions of principal. Instead, most I/O certificates have a notional balance that is equal to one of the transaction's principal-balance certificates (or the sum of two or more principal-balance certificates), and, as the name implies, holders of I/O certificates are entitled to receive only distributions of interest based on the then-outstanding notional balance of the I/O certificate (as well as certain yield maintenance premiums).

Morningstar generally bases our rating for an I/O certificate at the time of issuance on the I/O certificate's payment priority within the transaction's cash waterfall, without regard to the rating of the principal-balance certificate on which the notional balance of the I/O certificate is based. The rating on the I/O certificate generally is the same as the rating assigned to the principal-balance certificate that shares the same order of payment, per the transaction's priority of payments. In the event payment to the I/O certificate is prior to payment to all principal-balance certificates, Morningstar's rating for the I/O certificate generally is the same as the rating for the senior-most principal-balance certificate.

The following examples illustrate the methodology:

Scenario 1: The notional balance of a hypothetical I/O certificate, class X-B, is based on the sum of the principal-balance certificates, Class A and Class B. Morningstar assigns ratings of AAA and AA to these certificates, respectively. Per the transaction's priority of payments, the Class X-B certificate receives its interest distribution prior to or pari passu with the Class A certificates. Morningstar will assign a rating of AAA to the class X-B certificate.

Scenario 2: The notional balance of a hypothetical I/O certificate, class X-B, is based on the sum of the principal-balance certificates, Class A and Class B. In this scenario, Morningstar assigns ratings of A and BBB to these certificates, respectively. Per the transaction's priority of payments, the Class X-B certificate receives its interest distribution prior to or pari passu with the Class A certificates. Morningstar will assign a rating of A to the class X-B certificate.

Scenario 3: The notional balance of a hypothetical I/O certificate, class X-B, is based on the Class A principal-balance certificate to which Morningstar assigns a rating of AAA. Per the transaction's priority of payments, the Class X-B certificate receives its interest distribution after payments to the Class A certificates and pari passu with the Class B certificate, to which Morningstar assigns a rating of AA. Morningstar will assign a rating of AA to the class X-B certificate.

In each of the scenarios, Morningstar based the assigned rating to the hypothetical class X-B certificate on the certificate's priority in the transaction's cash waterfall, not the rating of the principal-balance certificate(s) to which class X-B's notional balance is tied.

Postsecuritization, Morningstar will continue to rate an I/O certificate AAA even if no other principal-balance certificates that Morningstar rates are rated AAA, provided that Morningstar's initial rating on the I/O certificate was AAA; the I/O certificate has the highest priority in the transaction's cash waterfall; and the I/O certificate is not in default. Likewise, for I/O certificates initially rated below AAA, we will continue to maintain the ratings based on their relative priority in the cash waterfall and current payment status.

The notional balance of an I/O certificate on which interest is calculated may be reduced by realized losses and/or principal prepayments to the related principal-balance certificate, whether such prepayments are voluntary or involuntary. Morningstar's ratings do not address the timing or magnitude of reductions of such notional balances, but only the contractual obligation to pay interest in a timely manner based on the notional balance, as so reduced, from time to time.

Legal Analysis

Morningstar's legal analysis includes a review of documents enumerated above to identify qualitative risks that might impact the expected cash flow received on the loans and/or the flow of such funds to the security holders. When warranted, Morningstar makes quantitative adjustments to the loan level analysis and/or the CMBS Subordination Model to address the qualitative risks identified by the legal review.

Morningstar Information Sources

At issuance, Morningstar expects to receive certain information to rate a transaction. This information may include for some or all assets: asset summaries, historical financial reports, third-party reports (such as appraisals, environmental reports, and engineering reports), rent rolls, lease extracts, insurance information, and loan-level and securitization-level transaction documentation (such as the servicing agreement, loan purchase agreement, loan documents, subordinate debt documents and legal opinions). In addition, Morningstar may initiate site visits to certain properties to assess certain characteristics of the properties. Morningstar may also use the services of third-party data vendors for information such as economic forecasts, property-performance information, real estate news, and/or market-level economic statistics. The scope and extent of Morningstar's review of the information received and/or collateral is typically described in the presale report for the transaction or otherwise indicated. In addition, transaction documents generally require delivery of various reports and information to Morningstar after issuance for Morningstar to perform surveillance on the ratings.

Unless required under Morningstar's policies and procedures, Morningstar does not independently verify or perform due diligence on the information provided by the arranger and third-party data providers. Morningstar does not perform an audit or verification of commercial real estate or other underlying assets, or any publicly available information or any nonpublic information provided by arrangers, issuers, servicers, trustees, data vendors and other third-party sources of information, including any website posted information. Morningstar ratings may be changed, suspended, or withdrawn as a result of changes in, or unavailability of, information or other circumstances.

Surveillance of the CMBS Ratings

Typically, within six months after a CMBS transaction is initially rated by Morningstar, the transaction will be monitored periodically. Morningstar may also conduct surveillance of unsolicited ratings. All outstanding ratings, whether they are engaged or unsolicited, will be formally reviewed at least once every 12 months. We will also consider the impact of any material events on our ratings as they occur.

Morningstar periodically will analyze the performance of the securitizations, generally according to this methodology, and in accordance with any changes to the methodology made during the life of the securitization. The surveillance may include reviewing the performance of individual properties within a transaction and the impact of commercial property market fundamentals on the loan pool. Morningstar's surveillance may include a review of information provided by the servicer or the trustee via such entity's website or a third-party data provider. If Morningstar deems that key information is missing, deficient, or inadequate, the analysis and ratings may be adversely impacted if such information is not received.

For loans that have been defeased or replaced by qualifying United States government securities, Morningstar will typically assume a rating of AAA for the U.S. government and consider this rating upon performing the annual review of the ratings. Morningstar may not monitor deals that have all loans defeased, but will formally review the outstanding ratings on the certificates every 12 months.

Morningstar may be requested to provide a no-downgrade letter addressed to the securitization trust. Morningstar may waive, deny, or approve such request. A no-downgrade letter is confirmation from Morningstar that a proposed change or amendment to the transaction, or to the loan documents or structure of an individual loan, in and of itself and solely as of the date requested, will not result in a qualification, withdrawal, or downgrade on any of the current ratings of the rated deal securities by Morningstar. The letter shall not constitute any consent, approval, agreement, and/or advice or affirmation and is based solely on the proposed transaction documents reflecting the change or amendment and provided to Morningstar at the time of request. In addition, any no-downgrade letter and analysis by Morningstar does not address whether the proposed change or amendment is permitted, consistent, or otherwise approved under the rated deal documents; any benefits or effect of the proposed change or amendment on the security holders or parties to any rated deal documents or any such parties' interests; and/or any considerations not considered or enumerated pursuant to the no-downgrade letter and the ratings letters issued in connection with the rated deal. Any ratings of the deal remain subject to and qualified by the initial ratings letter. In Morningstar's sole discretion, a legal review of the proposed change or amendment may be performed in conjunction with Morningstar's analysis of the proposed transaction.