

RMBS Ratings and Analytics

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Morningstar's RMBS Ratings and Analytics provides structured finance investors with a comprehensive ratings and surveillance solution that utilizes econometric forecasting and state-of-the-art models to develop default and loss analysis at the loan-level and security-level for each RMBS transaction covered by Morningstar's RMBS ratings group.

Each month, individual loan performance for each RMBS transaction is reviewed using a proprietary econometric forecast and a loan-level transition model to generate expected and stressed cash flows. The resulting loan-level prepayment, default, and severity vectors are applied to specific transaction waterfalls to generate expected and stressed cash flows for the related securities.

The Morningstar RMBS analytical process generates an up-to-date security specific NRSRO rating, rating outlook, and proprietary default and loss projections, all of which are detailed in our comprehensive monthly RMBS DealView report.

Monthly DealView Analysis

The monthly RMBS DealView provides complete details of our credit analysis for RMBS transactions. Each DealView report contains an overview of the transaction collateral, bond-level information, loan benchmark analysis, default and loss projections, and the Morningstar ratings and outlooks generated by our analytical process. All economic assumptions and qualitative outside-the-model adjustments are clearly disclosed and explained in the DealView analysis.

RMBS Ratings & Analytics Features:

- ▶ NRSRO Ratings
- ▶ Monthly DealView Credit Analysis
- ▶ Quarterly Economic Forecasts
- ▶ Proprietary Loan-level Credit Modeling
- ▶ Interactive Web-based Platform
- ▶ User Defined Simulations & Sensitivity Analysis
- ▶ Portfolio Analytics

Consistent, Timely, & Comprehensive Process:

- ▶ Letter ratings & outlooks reviewed and updated monthly
- ▶ Quarterly review and update of economic forecasts
- ▶ DealView credit analysis conducted on more than 4,000 RMBS transactions each month
- ▶ Highly automated evaluation approach

Web-based Interactive Application

RMBS Ratings and Analytics is web-based, easy-to-use, and highly interactive. Our flexible application gives users the ability to build their own stress scenarios and test sensitivities by adjusting Morningstar's base-case economic assumptions, with the expected impact on the loss projections and ratings available immediately.

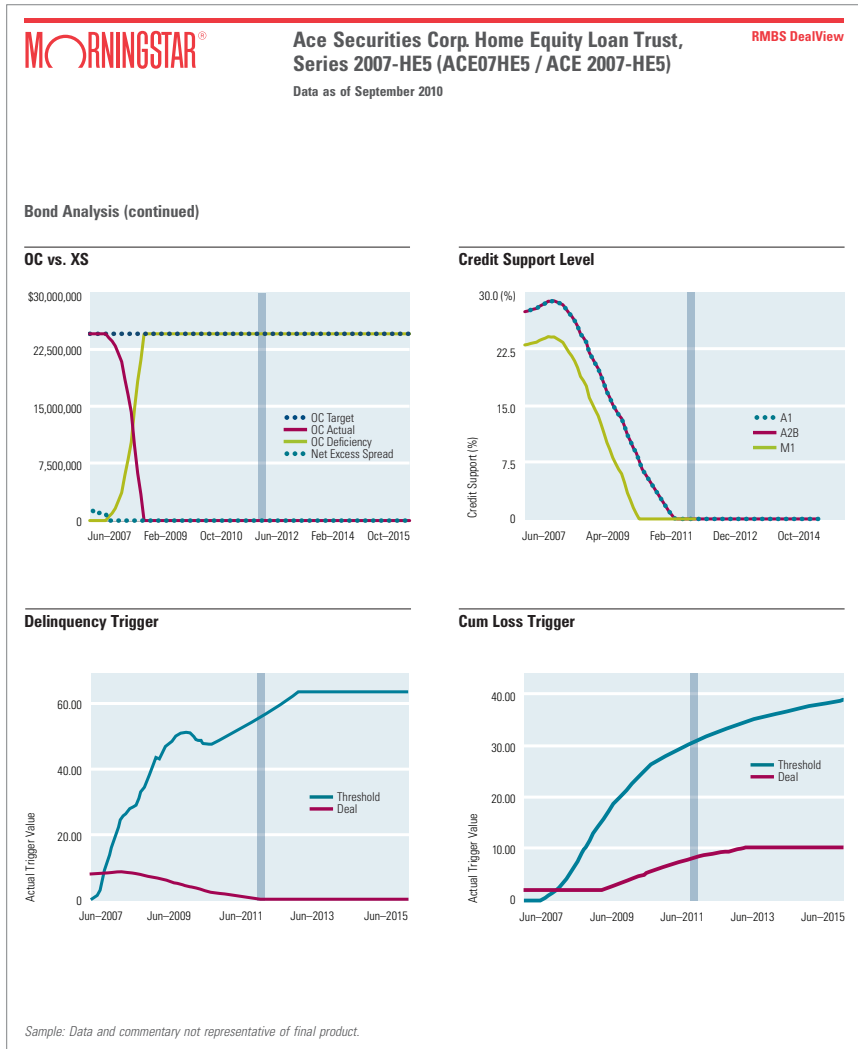
Economic Forecasts & Modeling Assumptions

The RMBS analytical process begins with our Economic Outlook Committee establishing the economic scenarios, interest rate paths, and qualitative adjustments used to generate our economic forecasts and modeling assumptions. The key economic drivers of residential loan performance reviewed and forecasted by Morningstar's econometric group include: changes in housing prices, affordability, lending conditions, unemployment, and interest rates. The result of the Economic Outlook Committees review is an expected and stressed economic scenario that is updated quarterly to ensure accuracy and stability in our ratings and analysis. The economic scenarios and assumptions associated with each rating scenario are published and available to investors to ensure the highest level of transparency.

Web-based Application

PROJECTED CASH FLOW SUMMARY										
TRANCHE M1										
PERIOD	DATE	COLLAT NET LOSS (\$)	COLLAT NET LOSS (%)	PRINCIPAL	INTEREST	CASHFLOW	BALANCE	ACCUM INTEREST SHORTFALL	ACCUM PRINC WRITEDOWN	PROJ CE (%)
0	11/04/2010	—	—	—	—	—	16,217,753	—	—	—
6	04/25/2011	9,072,720	4.01	—	37,852	37,852	9,845,298	28,618	995,612	—
12	10/25/2011	7,955,507	3.52	—	21,148	21,148	4,370,720	28,699	854,276	—
24	10/25/2012	13,082,694	5.78	—	6,692	6,692	—	28,780	393,717	—
36	10/25/2013	10,016,676	4.43	—	—	—	—	28,780	393,717	—
48	10/27/2014	7,657,902	3.38	—	—	—	—	28,780	393,717	—
60	10/26/2015	5,847,887	2.58	—	—	—	—	28,780	393,717	—
TOTAL		53,633,386	23.70	—	65,692	65,692	—	28,780	393,717	—

Sample: Data and commentary not representative of final product



Data Collection & Standardization

Morningstar has developed an effective process for collecting historical and updated loan-level data from industry data providers, along with transaction data from trustees and mortgage servicers. This comprehensive data set is subjected to a robust scrubbing and validation process prior to incorporation in our proprietary modeling process, and in our web-based analytical tools.

RMBS Credit Model and NRSRO Ratings

The next step of our RMBS analytical process utilizes Morningstar's proprietary credit model (the loan-level transition model) to apply our macroeconomic forecasts to the loan-level data set to produce monthly forecasted loan-level default, loss, and prepayment vectors for each of the various economic and interest rate scenarios, each representing a rating scenario.

The results generated by our credit model are applied to the transaction waterfall to show the impact on the related securities for each of the rating scenarios. The result is a suggested bond rating that is associated with the highest stressed rating scenario that does not result in principal loss or interest shortfall. The final step to our ratings process is a committee review of the model results to determine any necessary ratings adjustments and to assign final ratings to the securities.

Qualitative Adjustments

Our experienced economists and structured finance analysts are able to apply qualitative adjustments to the quantitative forecasts when appropriate to address unforeseen circumstances, such as natural catastrophes or servicer events. Any off-model adjustments are fully disclosed to ensure complete transparency of the analytical process.

Better Loss Projections:

- ▶ Proprietary state-of-the-art loan-level transition model
- ▶ Economic assumptions combine both econometric model results and economist opinion
- ▶ Qualitative adjustments to model made at the global level
- ▶ Forward looking opinions based on transaction information that is updated monthly
- ▶ Monthly surveillance monitoring and ratings updates ensures timeliness and ratings stability

Increased Transparency:

- ▶ Published Morningstar economic scenarios & assumptions for each rating category
- ▶ Complete access to Morningstar ratings methodology
- ▶ Full disclosure of qualitative, outside-the-model adjustments

Private Client Services Solutions

The Private Client Services unit combines proprietary analytics, cutting edge technology, and analytical expertise to deliver client portfolio specific solutions to investors in the residential mortgage market. With our Private Client Services offering, investors are provided with comprehensive analysis that can help them move beyond the identification of risk, and towards an effective solution for mitigating risk, with guidance and insight from experienced Morningstar analysts.

Synthetic Benchmarking

Synthetic benchmarking is a service where the performance of a pool of residential mortgages, such as the collateral of a securitization or whole loan portfolio, is compared to similar loans in the Morningstar RMBS database. The benchmarking process consists of classifying the individual loans by lien position, product type, age, and credit risk level. The client's loans are benchmarked against other loans with the same classification within the Morningstar RMBS database.

Performance Forecasting

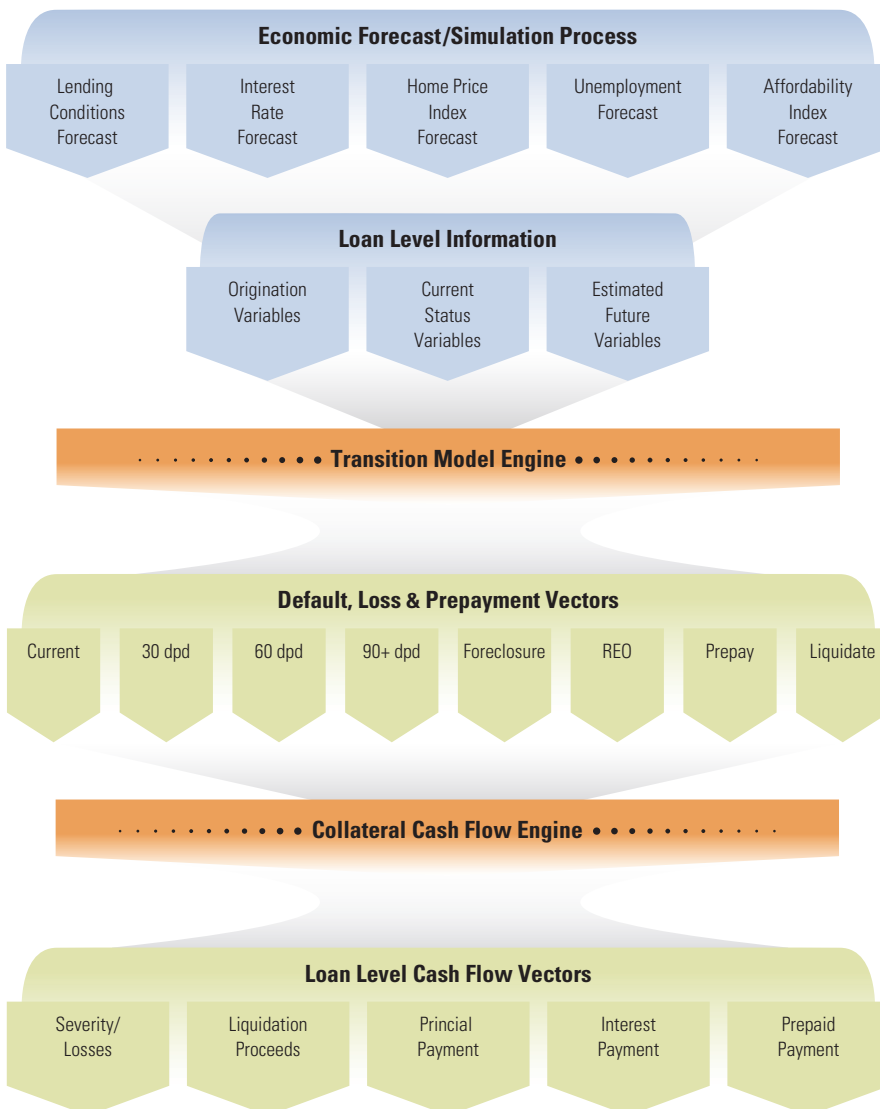
Performance forecasting involves utilizing the Morningstar transition model and cash flow engine to forecast future performance of client loan portfolios. This process allows for the client's economic forecast to be used in the Morningstar model, with the results compared against those derived using Morningstar's economic forecasting scenarios.

Servicing Optimization

Servicing optimization is a quantitative approach to providing insight into what future servicing actions would yield the optimal value to a whole loan investor. To determine this action, a simulation of possible alternatives are run through the Morningstar transition model and cash flow engines to calculate the net present value of the resulting simulated cash flow vectors for each possible alternative. ■■

Morningstar's structured credit research and ratings subsidiary is a Nationally Recognized Statistical Ratings Organization (NRSRO) that has earned a reputation for innovation and excellence in the structured finance market. Our goal is to help institutional investors identify credit risk in structured finance investments. Our analytical approach stresses transparency of the ratings process, strong fundamental credit analysis, and comprehensive investor-focused reporting. With Morningstar, structured finance investors have access to high quality ratings, investment research, surveillance services, data, and technology solutions.

Morningstar RMBS Modeling Process





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