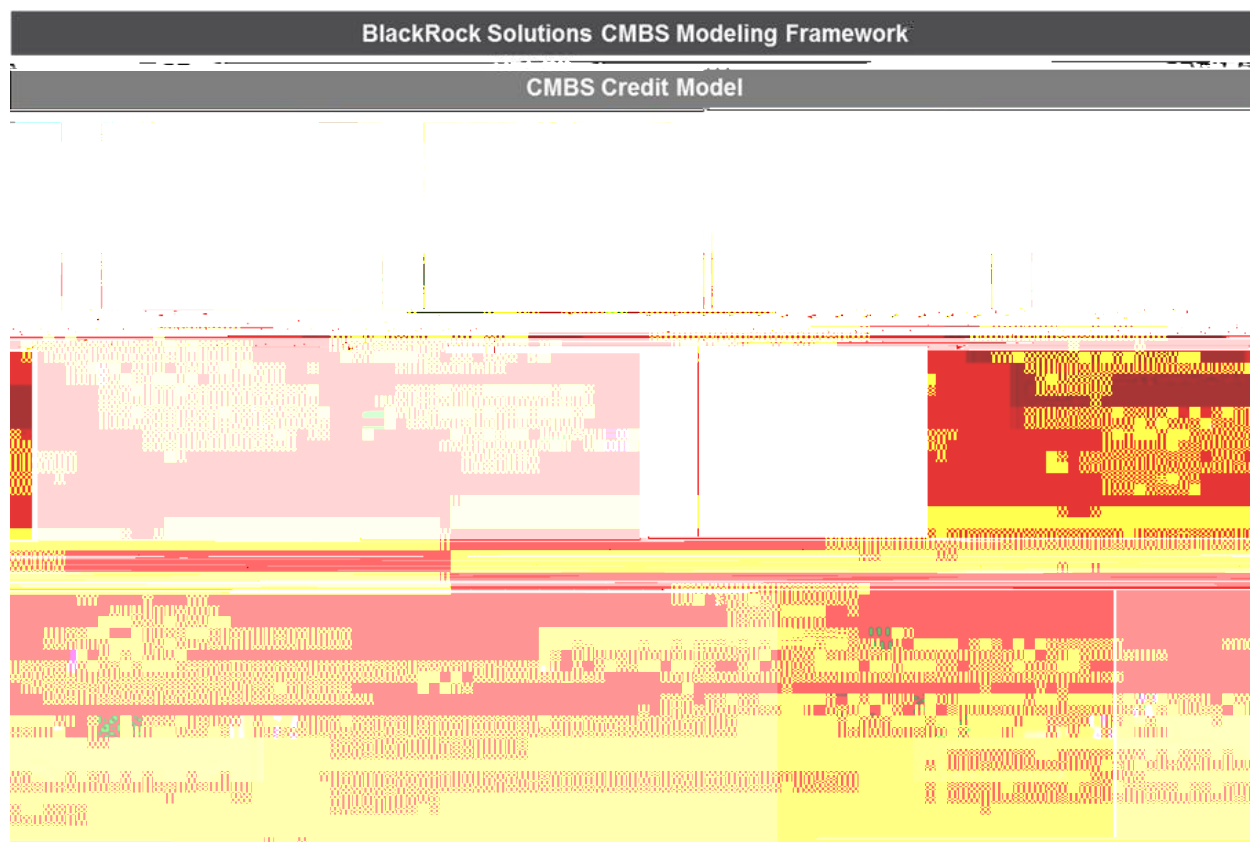


MODEL OBJECTIVE

The BRS CMBS Credit Model is designed to assess credit risk across all US Non-Agency CMBS and Freddie Mac K deals by assessing (1) systematic risks associated with the macroeconomic drivers and market-level vacancy and rent, as well as (2) property-level idiosyncratic risks associated with individual property performance and tenant lease structure.

The graphic below highlights the components of the BRS CMBS framework and the interaction between them.



Model Methodology

CMBS CREDIT MODEL BACKGROUND

Historically, CMBS models have generally taken one of two approaches: either a fundamentally-driven deterministic model in which property cash flow and value projections are applied against loan terms to determine discrete loan outcomes, or a probabilistic model which projects default and loss vectors based upon historically observed data. In designing the enhanced version of the CMBS Credit Model, BRS sought to leverage the strengths of both model types by developing a hybrid model that incorporates elements of both deterministic and probabilistic models. The result is an enhanced methodology leveraging a lease level Monte Carlo simulation incorporating econometric vacancy and rent projections to model property performance (cashflow and valuation), the outputs of which are used in a deterministic framework to model discrete loan outcomes, which are then used to derive collateral and tranche cash flows.

The econometric and simulation components model a property's income and value by generating a range of vacancy and rent projections and simulating tenant lease renewal decisions over each projection period. Projected loan performance is then assessed as to whether the property generates (1) sufficient net cash flow to cover debt service payments during the loan term or future value appreciation which justifies interim sponsor support through debt service deficiency payments and (2) sufficient value on the maturity date of the loan to retire the debt. This model has numerous advantages over more traditional models, including:

- Assessing property-level idiosyncratic risks associated with lease rollovers

- Incorporating property-level CRE analysis, underwriting, and review

- Incorporating macroeconomic factor inputs across a variety of scenarios

- Better capturing of property-level tail risks associated with tenant leasing behavior

MODEL METHODOLOGY OVERVIEW

The CMBS Credit Model is composed of four key components:

- Component 1:** Vacancy and Rent Projections

- Component 2:** Property Cash Flow Modeling

- Component 3:** Loan Cash Flow Modeling

- Component 4:** CMBS Cash Flows and Analytics

An outline of the methodology follows.

Component 1, the Vacancy and Rent Projections, was derived using an econometric model based on a regression framework that establishes a link between market vacancy/rent levels and national and local economic factors such as Employment, Income, and CRE Supply (Stock). Projections are generated for each Market and Property Type Pair (“M/PT Pair”), for example New York Office, within a deal. The levels of the macroeconomic factors vary by scenario (e.g., different projections of employment growth across base and stress scenarios). The econometric estimations of vacancy and rent in Component 1 also contain a random deviance factor to give rise to a simulation framework where a series of vacancy and rent paths are projected for a given set of macroeconomic projections (“model simulation paths”) in each scenario.

Component 2 of the model, Property Cash Flow Modeling, utilizes the market-level vacancy and rent vectors produced by Component 1, in conjunction with an additional level of simulation around property-specific tenant-level lease renewals based on property rent rolls, to determine projections of property-level occupancy and rent. The incorporation of tenant-level simulation across model simulation paths further helps capture the distribution of possible outcomes and idiosyncratic events inherent in commercial real estate assets. Using these property-level occupancy projections, the market-level rent forecasts from Component 1, and the operating statement, forecast are generated for monthly property-level revenue items (e.g., gross rent, expense reimbursements, etc.) and expense items (e.g., taxes, insurance, management fees, etc.) to derive property cash flows. Property values are then calculated using a discounted cash flow methodology.

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