

BLACKROCK®

BlackRock Solutions CMBS Methodology

For professional clients/qualified investors only

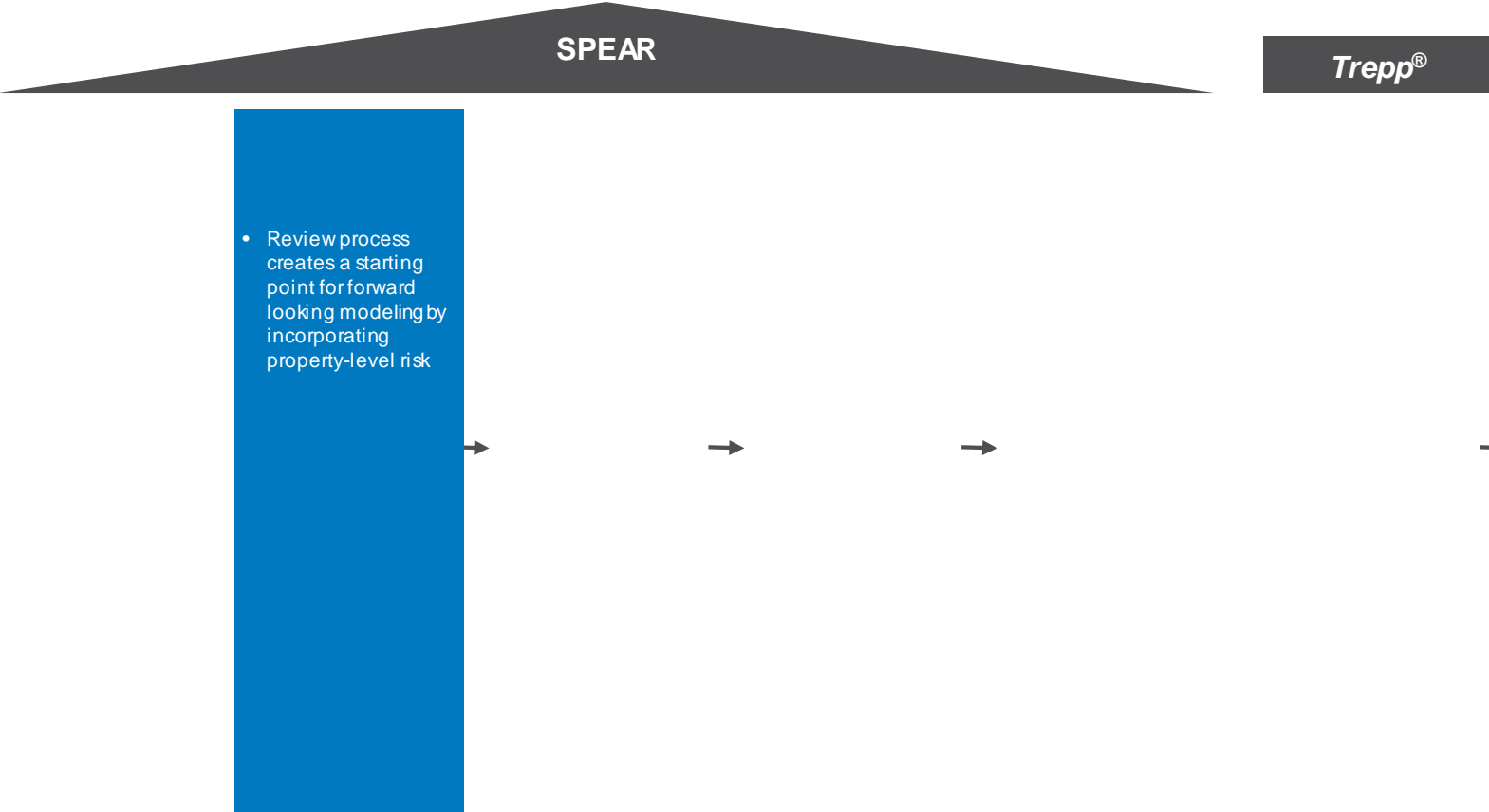
BlackRock Solutions CMBS Modeling Framework

BlackRock Solutions uses a bottom-up approach to analyzing CMBS, built on loan-level data and a forward-looking deterministic modeling framework

BlackRock Solutions sources data directly from CMBS servicers and trustees, reviewing monthly loan information for data errors and qualitatively reviewing property financials quarterly to assess whether reported data reflects property risk profiles

Forward-looking real estate assumptions, combined with a deterministic credit loss model project outcomes for each loan backing a CMBS trust under multiple scenarios

Loan-level loss outcomes are passed through Trepp's waterfall engine to generate bond-level cashflows, which BlackRock Solutions uses to estimate CMBS intrinsic valuations, loss projections and related security-level analytics



CMBS Modeling Framework: Loan and Property Database

BlackRock Solutions maintains its own database of commercial mortgage and property information backing US CMBS transactions

All loan- and bond-level analysis and projections are derived using this data

The initial dataset is aggregated from the original offering documents

Updates are sourced directly from CMBS servicers and trustees on a monthly basis

The dataset includes > 800 CMBS transactions, comprised of ~50k loans and ~75k properties

The BlackRock Solutions CMBS database is organized to relate multi-note loan structures with underlying properties and reported financials

CMBS Modeling Framework: Loan-Level Review

BlackRock Solutions performs a qualitative review of large loans along with any other loans meeting certain review criteria (e.g. delinquent or specially serviced loans)

All other loans undergo a quantitative vetting process

Loan review process assesses the reasonableness of servicer reported information to account for the following:

Stale or dated income information (e.g. income reporting 9– 12 months old) or partial year reporting

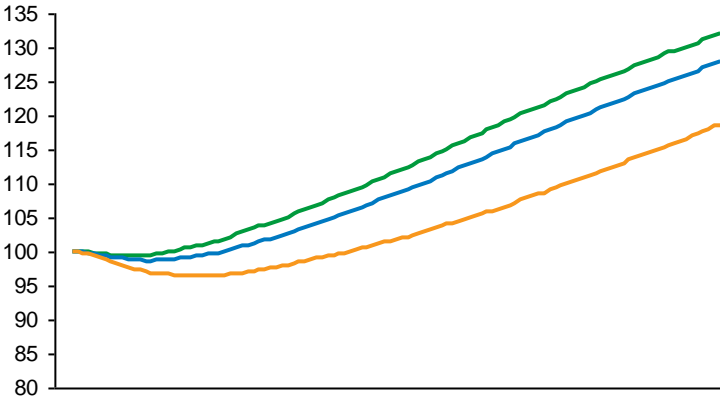
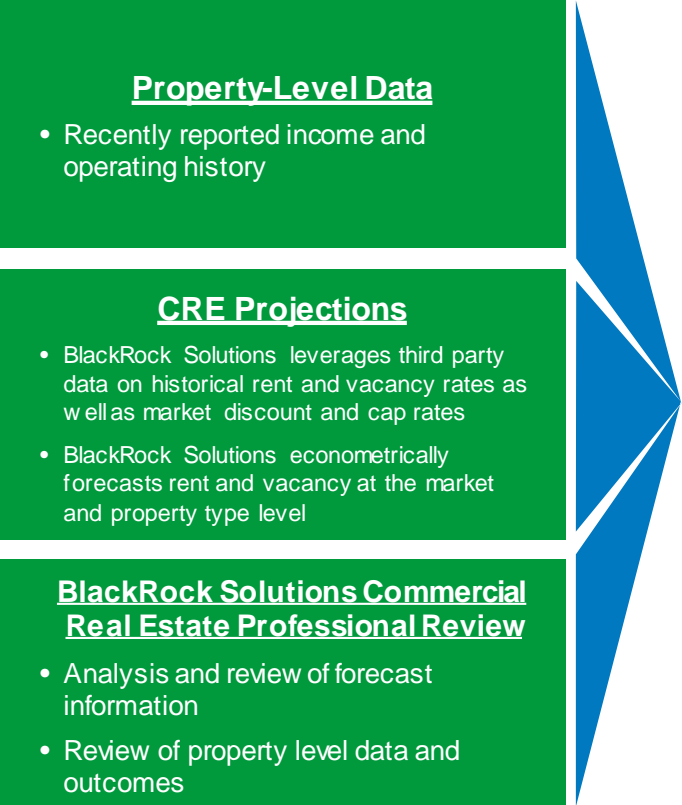
Recent credit events that may materially alter property values (e.g. tenant/sponsor bankruptcy)

Idiosyncratic credit characteristics (e.g. credit tenant)

CMBS Modeling Framework: Assumption Setting

Property-level Cap Rate and NCF projections vary by scenario and are used to estimate loan outcomes

NCF Generation Process



CMBS Modeling Framework: Assumption Setting

BlackRock Solutions employs a forward-looking deterministic credit model to estimate loan-level outcomes. Major assumptions and credit model parameters include the following:

Primary Deterministic Model Parameters

	Assumption	Description	
Income and Property Value Drivers	Rent and Vacancy	MSA and property-type based projections of property-level performance through time	Income growth curves and cap rates are stressed across scenarios
	Discount rates and cap rates	Cap rate curves (term structure) by MSA and property type Adjusted by property grades to account for individual property location and quality Combined with income projections to determine property value	
	Property grades	Individually assigned grades based on location, condition and size Used to adjust cap rates to account for individual property quality	
Loan Outcome and Loss Parameters	DSCR default trigger	Monthly test that results in a term default if DSCR and LTV cross threshold levels Triggers are property type based	
	Loan extensions	Loans are extended at maturity if LTV falls within a defined band	
	Loan prepayment	Loans are prepaid during their open period if LTV and Debt Yield falls within specified levels	
	Workout period	Time to resolution after a term or maturity default Period length based on loan size and jurisdiction (by State)	
	Liquidation costs	Percentage of property value at liquidation	
	Servicer reserves	Reserves held by the servicer are used to fund debt service payment shortfalls if income drops below the DSCR threshold	

Important Notes