CMBS Single Borrower & Large Loan Rating Methodology

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March 3, 2015

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Prelude

This document details Kroll Bond Rating Agency's (KBRA) methodology for rating U.S. CMBS Single Borrower and Large Loan transactions. It is intended for use with Single-Borrower Single Asset (SASB) transactions or discrete pools of loans to one or more borrowers, which may include Large Loan Floaters or Commercial Real Estate Collateralized Loan Obligations (CRE CLOs). These securitizations tend to have fewer than 25-30 loans, and generally exhibit more concentration than conduit/fusion transactions that offer more diversity relative to geographic location, property count, property type, and sponsor, which are analyzed using our U.S. CMBS Multi-Borrower Methodology.

This criteria supersedes the previous version that was published on August 8, 2011. The document has been reorganized in a more user friendly manner that conveys additional information regarding loans with speculative grade credit characteristics, commentary regarding the differentiation of higher and lower quality assets, and updates to KDSC tests. In addition, we have expanded the low and high end of our capitalization rate ranges to enable us to better differentiate the dispersion of asset quality we have observed in securitizations in recent years, and made corresponding adjustments to our assumed refinance rate ranges, which are available in Appendix I. Lastly, we have adjusted our approach to calculating pooling benefit to better address small pools of loans to multiple borrowers. KBRA re-evaluated all of its outstanding ratings governed by this methodology, and none warranted positive or negative adjustment as a result of the methodology update.

Introduction

SASB transactions can take two forms. The first are transactions collateralized by a single mortgage loan to a single borrower. The loan can be secured by one or multiple properties. The second are transactions secured by a grouping of cross-collateralized, cross-defaulted loans to one borrower or multiple related borrowers. In contrast, Large Loan transactions typically contain a number of loans made to unrelated borrowers. These transactions are generally collateralized by several loans with higher balances that can exceed $50 million, some of which may be secured by transitional properties. CRE CLO transactions are generally comprised of 10-25 loans with relatively high leverage levels, and are frequently secured by transitional properties. Unlike SASB and Large Loan transactions, CRE CLOs often issue securities from a non-REMIC vehicle owing to unique structural features that may permit the ability to add or replace loan collateral, include future funding amounts, and alter payment priority on the trust securities due to the presence of cash flow diversion tests. For all three transaction types, the collateral and the trust securities may pay interest at either fixed or floating rates.

Given the nature of these transactions, credit risk can be concentrated in numerous ways, including sponsor, property count, property type, and geographic location. To account for these risks, we utilize a granular, "ground-up" approach to derive our CMBS ratings. The approach starts with an analysis of individual property cash flow and value, which is used to determine KBRA loan to value (KLTV) and KBRA debt service coverage (KDSC). The analysis used to derive KLTV and KDSC goes beyond evaluating property financials and takes into account an individual property's performance in the context of its market. KLTV is the primary parameter that informs our view of loan level credit risk, and is used to divide a given loan's aggregate balance into one or more credit risk layers or tranches identified by rating category (hereafter referred to as ratable proceeds). The ratable proceeds for a given loan are then subjected to, and may be constrained by, KDSC tests.

Ratable proceeds for a loan serve as a measure of credit risk, and provide an indicator of potential recovery upon the loan's default. In Large Loan and CRE CLO transactions, the rated securities can also benefit from the pooling of a number of loans made to discrete borrowers. Pooling of unrelated loans reduces the risk of binary outcomes that is inherent in Single Borrower transactions. This is particularly true for the most senior classes in the trust, which, owing to their priority in the cash flow waterfall, will continue to receive payments even if a portion of the pool defaults. This change in risk profile is recognized via a pooling credit, which is greatest for the most senior classes in the trust.

The rating process also considers loan and transaction structure, liquidity, and the recovery benefit that may accrue to the senior rating categories through the subordination provided by the more junior tranches. In providing details on the overall process, we'll begin by describing how we calculate a given loan's ratable proceeds. We then move on to discuss certain structural features that could impact our loan sizing parameters. Next, we discuss the derivation of pooling credit, and how we assign transaction ratings. Finally, we will highlight our surveillance process.

Determining Loan-Level Ratable Proceeds

Commercial real estate (CRE) is a non-homogenous asset class. Individual properties have unique risk characteristics that are a function of the specific market in which they are located, their overall quality, and their ability to attract tenants at sustainable rent levels. As such, the determination of ratable proceeds begins with a detailed analysis of property financial and operating performance. The goal of the analysis is to derive KBRA's estimate of sustainable net cash flow (KNCF). The process we use to derive KNCF for individual loans is further detailed in our publication entitled **CMBS Property Evaluation Guidelines**.

KLTV and KDSC

KNCF is the primary driver of KBRA Loan to Value (KLTV) and KBRA Debt Service Coverage (KDSC). KLTV is the primary input we use to determine the initial ratable proceeds for a given loan, which are then subjected to, and may ultimately be constrained by, KDSC tests.

KLTV is calculated for each loan by dividing the loan balance by a sustainable property value. To derive a sustainable property value, KBRA divides KNCF by a capitalization rate. The capitalization rates we typically use in our analysis are our estimate of what a stabilized, long-term capitalization rate would be for a given property. They are generally higher than current market capitalization rates and fall into the ranges contained in **Appendix I**. In determining the appropriate capitalization rate to use for an individual property, we consider a number of factors, which include, among other things, property type, location, competitive position, and tenant profile.

To derive our capitalization rate ranges, we considered numerous data sources, including the American Council of Life Insurers (ACLI), and Property and Portfolio Research (PPR). These data sources provided capitalization rates from the mid-1960s (in the case of ACLI) to the present, and the late 1980s (in the case of PPR) to the present for all of the major property types (office, retail, multifamily, industrial, and lodging). Capitalization rates for sub-property types (e.g., anchored retail, power centers, etc.) were not available for the time series. The mid-points for the KBRA ranges are generally in line with the average ACLI cap rates for the period, which were higher than those from the PPR data set. The PPR data set lacked information from prior to the early 1980s, which included periods of relatively higher interest rates.

During high interest rate periods, investors generally demand higher capitalization rates, a trend which was reflected in the ACLI data.

KBRA calculates two debt service coverage levels in its loan-level analysis. The first is $KDSC_t$, which is used to test term default risk. $KDSC_t$ is calculated by dividing KNCF by the loan's highest annual debt service during the loan term. In the case of floating rate mortgage loans, $KDSC_t$ will generally be tested using the lesser of the interest rate cap plus the margin over the rate index and an assumed KBRA refinance constant, which is described in this section. The reason we look to both rates is because the cost of purchasing interest rate protection could result in an artificially high rate cap. Should this occur, the KBRA refinance constant can provide an alternative measure for calculating debt service to test term default risk.

The second debt service calculation is $KDSC_m$, which is used to test maturity default and refinance risk at the loan's balloon date. $KDSC_m$ is calculated by dividing KNCF by an estimate of the debt service that may be required for a take-out loan equal to the first mortgage's balloon balance. This debt service is calculated by multiplying the loan's balloon balance by an assumed KBRA refinance constant for the specific property type.

Both the term and maturity DSC tests are illustrated later in this document. The refinance constants are typically higher than a loan's actual constant and help create a buffer against interest rate increases that may occur during the loan term. The refinance constant ranges are detailed in **Appendix I**. The ranges were derived by examining ACLI constants dating back to 1965, as well as the relationship of loan spreads to both five and 10 year US Treasury rates. The refinance constants for a specific loan are selected by our analysts, and are dependent on various factors such as property-type and location, asset and tenancy quality, and cash flow stability.

KBRA may also use higher or lower rates than those depicted in the appendix under specific circumstances. For example, one scenario where we may choose to use a higher rate is if a loan's actual interest rate generates a higher debt service payment than that derived using the KBRA refinance constant. A higher rate may also be used if the difference between a refinance constant and a loan's actual interest rate is smaller than differences observed for loans of similar credit quality. Conversely, a lower rate may be used if the collateral securing the loan is a trophy asset with stable cash flows.

KBRA will perform KDSC tests for all transactions evaluated pursuant to this methodology. The results of these tests will be considered in our rating assignment process. Test failures will likely constrain ratable proceeds in transactions with binary credit risk. These may include SASB transactions or securitizations that are collateralized by a small number of loans, which are sometimes referred to by marketplace constituents as a "four" or "five" pack to reflect the number of loans in the trust. Many Large Loan and CRE CLO transactions benefit from diversity and access to cash flows from multiple loans made to different sponsors for payment of the rated securities. While KDSC levels will be calculated for loans in these deals, failures may not prompt a constraint in ratable proceeds depending on the particulars of a given loan and transaction. This typically occurs in securitizations where the credit risk to the pool arising from any individual loan is mitigated by the pool's diversity and in transactions where the underlying loan collateral is transitional in nature. An example may be a recently built or renovated property that is expected to experience cash flow growth during the loan term. KDSC may also not be calculated or used as a metric for loans that do not rely on ongoing cash flow from property operations for repayment, such as a condo-conversion, where individual unit sales are the primary source of principal re-payment. In these cases, KBRA will utilize other types of analysis in lieu of the $KDSC_t$ and $KDSC_m$ tests to evaluate the loan's credit worthiness, which may include scenario analysis.

KBRA Tranching Template

The KLTV, along with other loan and property information, is entered into KBRA's Tranching Template to derive the ratable proceeds for each loan in the transaction at each rating category. The Tranching Template effectively "carves" each loan into different risk layers based on KLTV thresholds, which are assigned to the rating categories in an effort to produce credit ratings that will perform in accordance with **KBRA's Rating Scales**.

Table 1 below presents the "baseline" KLTV thresholds. Baseline KLTV thresholds are the starting point used for tranching a non-amortizing loan collateralized by a single property of average to above average quality with no additional indebtedness beyond the first mortgage. In arriving at these thresholds, we considered historical defaults and losses on CMBS loans by property type, as well as loan to value ratios. We also considered property cash flow volatility. This resulted in lodging, which has a cash flow stream that is dependent on nightly room rates, having more conservative ranges than other property types, which have longer-term leases in place.

The loss buffer at any given rating category is one minus the respective tranche's KLTV (1-KLTV). For example, consider a SASB transaction secured by one office loan with low all-in leverage, which has a 'AAA' class KLTV of 47.50%. The loan would have to default and experience a loss in excess of 52.50% of the (already discounted) KBRA value before the 'AAA' class would suffer any principal loss. KBRA considers this a plausible, yet remote scenario, and deems the level of risk consistent with a 'AAA' rating.

Table 1: Baseline KLTV Thresholds *

Rating	Retail - Regional Mall	Retail - Anchored	Office	Warehouse, Industrial	Multifamily	Lodging
AAA	52.50%	50.00%	47.50%	50.00%	52.50%	42.50%
AA	57.50%	55.00%	52.50%	55.00%	57.50%	47.50%
A	65.00%	62.50%	60.00%	62.50%	65.00%	55.00%
BBB	70.00%	67.50%	65.00%	67.50%	70.00%	60.00%
BBB-	75.00%	72.50%	70.00%	72.50%	75.00%	65.00%
BB	82.50%	80.00%	77.50%	80.00%	82.50%	72.50%
B	93.00%	90.50%	88.00%	90.50%	93.00%	83.00%

* Thresholds are prior to adjustments for leverage, loan structure, and asset quality.

As previously noted, the thresholds presume there is no additional indebtedness beyond the first mortgage. If present, additional indebtedness generally results in the curtailment of all KLTV thresholds, which is highlighted in the **Thresholds Adjustments** section of this document. Furthermore, KBRA also curtails its KLTV thresholds for loans with speculative grade characteristics that serve as collateral in SASB transactions and highly concentrated pools, such as some Large Loan Floaters, to compensate for the increased risk of default and loss. In these cases, the leverage curtailment is higher for loans of lesser credit quality. A loan in a SASB transaction with a KLTV that is consistent with a 'BB' rating will receive a penalty of 1.25% at each threshold, while a loan with a KLTV consistent with a 'B' rating will receive a 2.25% penalty. Furthermore, highly leveraged loans with KLTVs that exceed the 'B' rating threshold are subject to a penalty of up to 4.50% or higher, depending on the amount by which the KLTV exceeds the threshold. For example, consider an interest only office loan in a SASB transaction with no additional indebtedness that has a KLTV of 85.0%, which is consistent with a 'B' threshold. As a result of the loan's leverage, the Office Baseline KLTV thresholds in Table 1 will be contracted by 2.25% at each rating category, prior to any additional adjustments that may be warranted. The resulting KLTV thresholds for the loan at the AAA, AA, A, BBB, BBB-, BB and B categories will be as follows: 45.25%, 50.25%, 57.75%, 62.75%, 67.75%, 75.25% and 85.75%, respectively.

Conversely, loans with leverage levels that are consistent with an 'A' or higher rating may be eligible for KLTV threshold expansion, particularly where there is no additional indebtedness in place. The amount of the expansion will be influenced by a number of factors, including property quality, location, and the debt per square foot (sf) or unit associated which each rating threshold versus the valuation of the underlying collateral.

To provide examples of the ratable proceeds associated with a given loan, consider the following:

In Example 1(a), assume a single interest-only loan that serves as collateral in a SASB transaction. The loan is secured by a well-located, Class A office asset that has posted stable historical performance and is well positioned in its market. The loan also benefits from institutional-quality sponsorship and property management, as well as favorable structural features and has no provisions for additional indebtedness. Given this fact pattern, we would likely choose to use the baseline KLTV thresholds for office properties in determining ratable proceeds for the loan, as outlined in Example 1(a).

EXAMPLE 1(a): Baseline KLTV Thresholds for Determining Ratable Proceeds

I. Loan and Property Characteristics	
Loan Secured by a CBD, Class A Office	
First Mortgage Amount (In-Trust)	$500,000,000
Additional Debt on Property	$0
Total Debt on Property	$500,000,000
Loan Interest Rate	5.00%
Loan Term (Years)	10.00
Amortization (Years)	0.00
First Mortgage Balloon Balance	$500,000,000

II. KBRA Cash Flow and Valuation Analysis	
Issuer Net Cash Flow	$66,000,000
KBRA Net Cash Flow (KNCF)	$63,000,000
Haircut to Issuer Cash Flow	4.55%
KBRA Capitalization Rate	8.50%
KBRA Value (KNCF/KBRA Cap Rate)	$741,176,471
In-Trust Loan to KBRA Value (KLTV)	67.46%
Total Debt to KBRA Value	67.46%

III. Resulting KBRA Capital Structure

Rating	Baseline KLTV Threshold	Threshold Adjustments	Threshold after Adjustments	Cumulative Proceeds	Tranche Size
AAA	47.50%	0.00%	47.50%	$352,058,824	$352,058,824
AA	52.50%	0.00%	52.50%	$389,117,647	$37,058,824
A	60.00%	0.00%	60.00%	$444,705,882	$55,588,235
BBB	65.00%	0.00%	65.00%	$481,764,706	$37,058,824
BBB-	70.00%	0.00%	70.00%	$500,000,000	$18,235,294

IV. DSC Calculations

KBRA Loan Constant	9.25%	$KDSC_t$	2.52x	$KDSC_m$	1.36x

Example 1(b) below demonstrates the KLTV thresholds for a similar loan on the same property in Example 1(a), with the exception that the loan has higher leverage that is consistent with a 'B' rating. As can be observed below, the Office Baseline KLTV thresholds were contracted by 2.25% in Example 1(b) as a result of increased credit risk associated with the loan, which is the sole collateral for a SASB transaction.

EXAMPLE 1(b): KLTV Thresholds for a High Leverage Loan in a SASB Transaction

I. Loan and Property Characteristics	
Loan Secured by a CBD, Class A Office	
First Mortgage Amount (In-Trust)	$630,000,000
Additional Debt on Property	$0
Total Debt on Property	$630,000,000
Loan Interest Rate	5.25%
Loan Term (Years)	10.00
Amortization (Years)	0.00
First Mortgage Balloon Balance	$630,000,000

II. KBRA Cash Flow and Valuation Analysis	
Issuer Net Cash Flow	$66,000,000
KBRA Net Cash Flow (KNCF)	$63,000,000
Haircut to Issuer Cash Flow	4.55%
KBRA Capitalization Rate	8.50%
KBRA Value (KNCF/KBRA Cap Rate)	$741,176,471
In-Trust Loan to KBRA Value (KLTV)	85.00%
Total Debt to KBRA Value	85.00%

III. Resulting KBRA Capital Structure

Rating	Baseline KLTV Threshold	Leverage Adjustments	Threshold after Adjustments	Cumulative Proceeds	Tranche Size
AAA	47.50%	-2.25%	45.25%	$335,382,353	$335,382,353
AA	52.50%	-2.25%	50.25%	$372,441,176	$37,058,824
A	60.00%	-2.25%	57.75%	$428,029,412	$55,588,235
BBB	65.00%	-2.25%	62.75%	$465,088,235	$37,058,824
BBB-	70.00%	-2.25%	67.75%	$502,147,059	$37,058,824
BB	77.50%	-2.25%	75.25%	$557,735,294	$55,588,235
B	88.00%	-2.25%	85.75%	$630,000,000	$72,264,706

IV. DSC Calculations

KBRA Loan Constant	9.25%	$KDSC_t$	1.90x	$KDSC_m$	1.08x

Once ratable proceeds are derived based on the leverage thresholds, we then perform our supplemental debt service coverage tests for Term Default ($KDSC_t$), and Maturity Default ($KDSC_m$). These tests are used to determine whether the first mortgage loan is able to meet or exceed a 1.05x KDSC, with the exception of lodging, where a 1.10x KDSC is used.

In the case of Example 1(a), the $500 million first mortgage loan has a $KDSC_t$ of 2.52x. The $KDSC_t$ is calculated by dividing KNCF ($63 million) by the loan's highest annual debt service amount. As the sample loan does not amortize, the debt service calculation is $500 million multiplied by the loan's actual interest rate of 5.00% ($25 million). The loan's $KDSC_m$ is 1.36x, and is calculated by dividing KNCF ($63 million) by the debt service that would be due on the loan's maturity balance at the KBRA assumed refinance constant ($500 million multiplied by 9.25%, or $46.3 million). Both $KDSC_t$ and $KDSC_m$ are higher than the 1.05x threshold. If the KDSC was lower than this threshold, the ratable proceeds would have likely been curtailed to compensate for the failure, assuming the loan is being securitized in a SASB transaction.

Threshold Adjustments

The Baseline KLTV Thresholds presented in the previous section are used for tranching a non-amortizing loan collateralized by a single property with no additional indebtedness. This section discusses how the baseline thresholds are expanded or contracted to account for property and loan characteristics including asset quality, cash flow stability, amortization, diversity, and additional indebtedness.

Asset Quality

The Baseline KLTV thresholds in Table 1 are intended for properties of average to above average quality. The asset quality of CRE properties can vary significantly, however, which can lead to the expansion or contraction of the Baseline thresholds. Loans that typically qualify for expansion are generally collateralized by higher quality properties located in strong markets, with demonstrated cash flow stability. These assets typically have high KBRA property scores. The KBRA property score scale ranges from 1.00 to 5.00 (in 0.25 increments), with a score of 1.00 indicating poor quality and 5.00 indicating outstanding quality. The score is assigned within the context of its property type and will only be compared to and scored against other properties within the same property type category.

Consider a loan in a SASB transaction that is secured by a 115,000 sf superior quality retail asset, which is well situated in Manhattan's iconic Midtown Fifth Avenue retail corridor, an area that commands rents that are among the highest in the world. The property, which was assigned an above average property score of 4.25, is well tenanted, and all of its leases extend well beyond the loan term. Furthermore, the majority of its cash flows are generated by High Quality Credit-Worthy Tenants (HQCWTs). HQCWTs are generally entities rated investment-grade by two or more rating agencies, or are high credit quality entities as determined by KBRA. For this type of asset, we may start with the Retail - Regional Mall Baseline KLTV thresholds, and expand them by 5.00%, as presented in Example 2(a). This would yield KBRA debt per sf figures of $2,521 and $3,478 at the 'AAA' and 'BBB-' level, respectively, which are significantly below the property's appraisal value of $6,250 per sf. The debt per sf and discount to appraisal would be some of the considerations in the determination of the threshold expansion, and, in this case, provide comfort that the ratings have a risk profile that is commensurate with KBRA's rating definitions.

EXAMPLE 2(a): Threshold Expansion for a High Quality Asset

I. Loan and Property Characteristics	
Loan Secured by a Very High Quality Retail Asset	
First Mortgage Amount (In-Trust)	$600,000,000
Additional Debt on Property	$0
Total Debt on Property	$600,000,000
Loan Interest Rate	3.75%
Loan Term (Years)	10.00
Amortization (Years)	0.00
First Mortgage Balloon Balance	$600,000,000

II. KBRA Cash Flow and Valuation Analysis	
Issuer Net Cash Flow	$54,000,000
KBRA Net Cash Flow (KNCF)	$52,950,000
Haircut to Issuer Cash Flow	1.94%
KBRA Capitalization Rate	7.00%
KBRA Value (KNCF/KBRA Cap Rate)	$756,428,571
In-Trust Loan to KBRA Value (KLTV)	79.32%
Total Debt to KBRA Value	79.32%

III. Resulting KBRA Capital Structure

Rating	Baseline KLTV Threshold	Quality Adjustments	Threshold after Adjustments	Cumulative Proceeds	Tranche Size
AAA	52.50%	5.00%	57.50%	$434,946,429	$434,946,429
AA	57.50%	5.00%	62.50%	$472,767,857	$37,821,429
A	65.00%	5.00%	70.00%	$529,500,000	$56,732,143
BBB	70.00%	5.00%	75.00%	$567,321,429	$37,821,429
BBB-	75.00%	5.00%	80.00%	$600,000,000	$32,678,571

IV. DSC Calculations

KBRA Loan Constant	7.25%	$KDSC_t$	2.35x	$KDSC_m$	1.22x

Conversely, a struggling anchored retail center in an underperforming sub-market with visible signs of deferred maintenance may be a candidate for threshold contraction. This is particularly true if it has substantial lease expirations during the loan term, and several tenants have termination options. In this example, the Retail – Anchored Baseline KLTV thresholds may be reduced by up to 5.00% to determine ratable proceeds, as presented in Example 2(b) below.

EXAMPLE 2(b): Threshold Contraction for a Struggling, Low Quality Asset

I. Loan and Property Characteristics	
Loan Secured by a Low Quality Retail Asset	
First Mortgage Amount (In-Trust)	$250,000,000
Additional Debt on Property	$0
Total Debt on Property	$250,000,000
Loan Interest Rate	6.00%
Loan Term (Years)	10.00
Amortization (Years)	0.00
First Mortgage Balloon Balance	$250,000,000

II. KBRA Cash Flow and Valuation Analysis	
Issuer Net Cash Flow	$39,000,000
KBRA Net Cash Flow (KNCF)	$35,500,000
Haircut to Issuer Cash Flow	8.97%
KBRA Capitalization Rate	9.50%
KBRA Value (KNCF/KBRA Cap Rate)	$373,684,211
In-Trust Loan to KBRA Value (KLTV)	66.90%
Total Debt to KBRA Value	66.90%

III. Resulting KBRA Capital Structure

Rating	Baseline KLTV Threshold	Quality Adjustments	Threshold after Adjustments	Cumulative Proceeds	Tranche Size
AAA	50.00%	-5.00%	45.00%	$168,157,895	$168,157,895
AA	55.00%	-5.00%	50.00%	$186,842,105	$18,684,211
A	62.50%	-5.00%	57.50%	$214,868,421	$28,026,316
BBB	67.50%	-5.00%	62.50%	$233,552,632	$18,684,211
BBB-	72.50%	-5.00%	67.50%	$250,000,000	$16,447,368

IV. DSC Calculations

KBRA Loan Constant	9.75%	$KDSC_t$	2.37x	$KDSC_m$	1.46x

Asset quality adjustments to KLTV thresholds may not always take the linear form presented in Example 2. Consider the case of a superior quality lodging asset that derives a material portion of its cash flow from gaming operations and food and beverage revenues, which tend to be less stable than revenues associated with rooms. If the property has a superior location, branding, and competitive profile that suggests an expansion may be appropriate, it may be limited to the below investment grade thresholds. This may be done to better insulate the investment grade rated classes from rating volatility owing to the asset's dependence on gaming operations and food and beverage income. The asset's debt per unit at the investment grade rating categories will also be considered in the decision, which may result in the thresholds being curtailed at those categories.

Amortization

KBRA views amortization favorably, as every dollar of principal that is paid to reduce the loan balance during the term is one less dollar that needs to be refinanced at the loan's balloon maturity date. In considering the credit to provide to amortizing loans, we examined the amount of the loan balance that amortized over a 10-year term, and made various assumptions regarding factors that could impact the amortization curve and speed, and the change in KLTV over time. These factors included amortization terms, partial interest-only terms, beginning KLTV, and varying interest rates and risk premium spreads. In general, under these scenarios the deleveraging, as measured by the reduction in KLTV, was in the 10% to 15% range for loans amortizing on a 30-year fixed rate schedule. The reduction in KLTV was greater for higher leveraged loans, with a diminishing benefit from amortization as the beginning KLTV declined.

Given that historical CMBS defaults have generally peaked between years three and five of a loan's life, when approximately a third of the amortization has been realized, we decided to give amortization credit equivalent to the approximate percentage of pay down that occurs up to the mid-point of the loan's life. As a result, for loans with a 10-year term that amortize on a 30-year fixed rate schedule (10/30 loans) with no interest-only payment periods, KBRA generally awards 5.00% of amortization credit. If however, the 10/30 loan is secured by lodging assets, only 3.00% of credit is awarded owing to the volatility and hence higher risk of default associated with the nightly tenancy and operating business risk inherent in hospitality assets. The amortization credit is added to the KLTV ranges at each rating category, expanding the amount of eligible loan proceeds that can be advanced at each rating category. For loans amortizing on faster schedules (for example, 10/25 loans), we may consider awarding higher amortization credit.

For an illustration of how the amortization credit works, let's re-visit Example 1(a). In this illustration, however, assume the loan amortizes on a 30-year schedule, as presented in Example 3 below. As a result of the amortization benefit, the loan's ratable proceeds now extend only through the 'BBB' level versus the 'BBB-' level in Example 1. The amount of advanced proceeds at each of the higher rating categories has also increased.

EXAMPLE 3: Amortization Benefit

I. Loan and Property Characteristics	
Loan Secured by a CBD, Class A Office	
First Mortgage Amount (In-Trust)	$500,000,000
Additional Debt on Property	$0
Total Debt on Property	$500,000,000
Loan Interest Rate	5.00%
Loan Term (Years)	10.00
Amortization (Years)	30.00
First Mortgage Balloon Balance	$406,710,322

II. KBRA Cash Flow and Valuation Analysis	
Issuer Net Cash Flow	$66,000,000
KBRA Net Cash Flow (KNCF)	$63,000,000
Haircut to Issuer Cash Flow	4.55%
KBRA Capitalization Rate	8.50%
KBRA Value (KNCF/KBRA Cap Rate)	$741,176,471
In-Trust Loan to KBRA Value (KLTV)	67.46%
Total Debt to KBRA Value	67.46%

III. Resulting KBRA Capital Structure					
Rating	Baseline KLTV Threshold	Amortization Adjustments	Threshold after Adjustments	Cumulative Proceeds	Tranche Size
AAA	47.50%	5.00%	52.50%	$389,117,647	$389,117,647
AA	52.50%	5.00%	57.50%	$426,176,471	$37,058,824
A	60.00%	5.00%	65.00%	$481,764,706	$55,588,235
BBB	65.00%	5.00%	70.00%	$500,000,000	$18,235,294
BBB-	70.00%	5.00%	75.00%	$500,000,000	$0

IV. DSC Calculations					
KBRA Loan Constant	9.25%	$KDSC_t$	1.96x	$KDSC_m$	1.67x

It is important to stress that while KBRA views amortization favorably, amortization, in and of itself, does not necessarily imply one loan is more creditworthy than another. An amortizing loan with a high beginning leverage level is not necessarily preferable over an interest-only loan with modest beginning leverage. For this reason, KBRA will evaluate the overall creditworthiness of the loan when ascribing amortization credit and will adjust the overall credit that may be applied to the loan if the specific facts and circumstances warrant it. In addition, credit for amortizing loans with shorter terms (i.e., five and seven year terms) will be made on a case-by-case basis, and will be influenced by each loan's unique credit attributes.

Loan Diversity

KBRA views loan-level diversity on the basis of both property count and geographic location favorably. When a loan is secured by multiple properties, the borrower can use cash flow from stronger performing properties to supplement underperforming assets. Upon default, loss severity may also be reduced by realizing proceeds across a portfolio, whereby some properties will be valued more highly than others, acting as potential loss mitigants. When collateral is spread across multiple MSAs, it increases the benefits of having multiple properties, as there is a higher likelihood that the performance of an entire portfolio of properties will not be negatively impacted by an economic downturn in any one region.

To determine how much diversity benefit a loan should be awarded, KBRA utilizes Herfindahl Index calculations. The credit will be added to the KLTV threshold at each rating category, expanding the amount of ratable proceeds throughout the capital structure. The maximum loan-level benefit that will be provided for diversity at each rating category through the diversity calculations is generally 10.0%. To qualify for this level of credit, the loan's collateral will have to be extremely granular in nature and comprised of hundreds of properties across many major MSAs. We expect that most loans will not qualify for the maximum benefit.

The credit will be determined using Herfindahl calculations, as illustrated below. Consider a loan secured by *n* properties. The Property Count Herfindahl Index is as follows:

Property Count Herfindahl Index = 1/[(Allocated Property Balance$_1$/Loan Balance)^2 + (Allocated Property Balance$_2$/Loan Balance)^2 +. . .+ (Allocated Property Balance$_n$/Loan Balance)^2]

where

$$\sum_{i=1}^{n} \text{Allocated Property Balance}_{\text{i}} = \text{Loan Balance}$$

For the Property Count Herfindahl Index, 10 bps of KLTV credit at each rating category is given for each Herfindahl point above one with a maximum of 500 bps credit. For example, a loan with a Property Count Herfindahl Index of 38 would receive 370 bps in KLTV threshold expansion, thereby increasing ratable proceeds at each rating category. A loan with a Property Count Herfindahl Index of 121, however, would only receive a credit of 500 bps due to the limit on diversity credit.

In a similar fashion, the Geographic (MSA) Herfindahl Index is defined by:

MSA Herfindahl Index = 1/[(Aggregate MSA Balance$_1$/Loan Balance)^2 + (Aggregate MSA Balance$_2$/Loan Balance)^2 +. . .+ (Aggregate MSA Balance$_n$/Loan Balance)^2]

where

$$\sum_{i=1}^{n} \text{Aggregate MSA Balance}_{\text{i}} = \text{Loan Balance}$$

The MSA Herfindahl Index is based on the distribution of outstanding CMBS loan balances by MSA. We provide credit for those properties that reside within the 100 largest MSAs. The remaining MSAs are aggregated into a single "tertiary" category. Thus, no benefit is provided if the transaction collateral is dispersed beyond the 100 MSAs used in our Herfindahl Index calculations.

The MSA Herfindahl Index can be more limited than the Property Count Herfindal Index, as it is provided for a finite number of markets. At each rating category 25 bps of KLTV credit is given for each Herfindahl point above one for a maximum credit of 500 bps. For example, a loan with a MSA Herfindahl Index of 13 would receive a 300 bps KLTV threshold expansion at each rating category. However, a loan with a MSA Herfindahl Index of 50 would only receive a credit of 500 bps, not 1,225 bps, due to the limit on diversity credit.

Example 4 demonstrates how the diversity credit would be applied in practice. In this scenario, a single, interest-only loan is secured by a group of diverse anchored retailed properties. The assets are of high quality, have performed well through a recent economic downturn, and are experiencing increasing rents and declining vacancies. The loan is also structured well, which together with the aforementioned factors, resulted in the selection of KBRA's baseline KLTV thresholds prior to the application of the diversity benefit. The loan is secured by 75 properties, with a Property Count Herfindahl Index of 31, and is located across 15 MSAs, the distribution of which equates to a MSA Herfindahl Index of 9. The Property Count Herfindahl Index of 31 equates to 300 bps in KLTV threshold expansion, and the MSA Herfindahl Index of 9 equates to a 200 bps expansion. Collectively, these loan-level diversity drivers result in the expansion of Baseline KLTV thresholds by 5.00%.

EXAMPLE 4: Loan Diversity Benefit

I. Loan and Property Characteristics	
Loan Secured by Pool of Diverse Anchored Retail Centers	
First Mortgage Amount (In-Trust)	$1,100,000,000
Additional Debt on Property	$0
Total Debt on Property	$1,100,000,000
Loan Interest Rate	5.50%
Loan Term (Years)	10.00
Amortization (Years)	0.00
First Mortgage Balloon Balance	$1,100,000,000

II. KBRA Cash Flow and Valuation Analysis	
Issuer Net Cash Flow	$140,000,000
KBRA Net Cash Flow (KNCF)	$133,200,000
Haircut to Issuer Cash Flow	4.86%
KBRA Capitalization Rate	9.00%
KBRA Value (KNCF/KBRA Cap Rate)	$1,480,000,000
In-Trust Loan to KBRA Value (KLTV)	74.32%
Total Debt to KBRA Value	74.32%

III. Resulting KBRA Capital Structure

Rating	Baseline KLTV Threshold	Diversity Adjustments	Threshold after Adjustments	Cumulative Proceeds	Tranche Size
AAA	50.00%	5.00%	55.00%	$814,000,000	$814,000,000
AA	55.00%	5.00%	60.00%	$888,000,000	$74,000,000
A	62.50%	5.00%	67.50%	$999,000,000	$111,000,000
BBB	67.50%	5.00%	72.50%	$1,073,000,000	$74,000,000
BBB-	72.50%	5.00%	77.50%	$1,100,000,000	$27,000,000

IV. DSC Calculations

KBRA Loan Constant	9.25%	$KDSC_t$	2.20x	$KDSC_m$	1.31x

Some loans may also benefit from diversity arising from other sources such as multiple property types (for example, a loan or a group of cross-collateralized, cross defaulted loans secured by office and retail properties) or an extensively diversified tenant base (for example, a loan secured by multiple retail centers which collectively have several hundred tenants, with no single tenant contributing more than

5.0% of the portfolio's base rent). KBRA will analyze these instances on a case-by-case basis, and may consider awarding loan-level diversity due to these factors.

Additional Indebtedness

The KLTV thresholds in Table 1 are for whole loans structured without any additional indebtedness. After all the adjustments discussed above are applied, where applicable, the thresholds are generally reduced if the subject loan is structured with additional debt. A higher aggregate debt burden increases borrower insolvency risk and may introduce additional classes of creditors who could interfere with the mortgage lender's exercise of remedies if the borrower were to default. These creditors could also attempt to exercise remedies themselves in a manner adverse to the trust, or, in the case of a mortgage borrower bankruptcy, support a plan of reorganization adverse to the trust's interests.

Given the increased risk additional debt potentially poses relative to both default probability and loss severity, we reduce our KLTV thresholds in a manner that considers both the form and amount of additional debt that is present, as detailed in Table 2. With the exception of second mortgages, the maximum penalty is generally limited to 7.50%. There is no ceiling on the threshold adjustment for financings that include second mortgages.

Table 2: Additional Indebtedness Adjustments Guidelines

Additional Debt Type	Leverage Characteristics of Additional Indebtedness			
	IG	BB	B	NR [1]
Mezzanine Debt and Preferred Equity with Debt-Like Charateristics	0.00%	-0.50%	-1.00%	-2.00%
Subordinate Rake Certificates and Subordinate Participations	0.00%	-1.50%	-2.50%	-5.00%
B-Note Structures	-1.00%	-2.00%	-4.00%	-7.50%
2nd Mortgages[2]	-5.00%	-10.00%	Case-by-Case	Case-by-Case

1-May be adjusted higher or lower, depending on the amount of debt in this bucket.
2-As further described herein, the ratability of a transaction collateralized by one or more loans with 2nd mortgages will be considered on a case-by-case basis.

Some CRE financings utilize multiple layers and forms of additional debt. When this occurs, KBRA will determine the threshold adjustment by calculating the penalty associated with each layer of additional debt, and selecting the highest of those penalties. In doing so, KBRA also considers any curtailments for speculative grade loans in SASB transactions and some Large Loan pools that exhibit high degrees of concentration risk. As mentioned in the KBRA Tranching Template section, high leverage loans in these transactions receive curtailments at each KLTV threshold based upon the rating that is commensurate with the last dollar of the loan's ratable proceeds. Loans with KLTVs that are consistent with a 'BB' rating will generally receive a penalty of 1.25%, which increases to 2.25% for loans that size to 'B', and up to 4.50% (or higher) for those that size below 'B'.

Example 5 illustrates how we determine the threshold adjustment for additional debt. In this example, we assume a loan in a four-loan Large Loan Floater that has a KLTV of 85.00% through the first mortgage, and 95.00% through a mezzanine loan held outside the trust. Furthermore, the first mortgage is split into a senior component and a subordinate participation. The KLTV through the senior component is 75.00%, while the KLTV through the subordinate participation (in the form of a rake certificate) is 85.00%. For the purposes of our example, the senior component has leverage characteristics that equate to a 'BB', the rake certificate has leverage characteristics that equate to a 'B', and the mezzanine loan has leverage characteristics that fall below 'B'. The adjustment for the senior component is -1.25, and pursuant to Table 2, the respective adjustments for the rake certificate and mezzanine debt are -2.50% and -2.00%. Since the highest penalty among these is -2.50%, KBRA will constrain the KLTV thresholds by 2.50% across every rating category.

Example 5: Additional Indebtedness Adjustment			
Debt Layer Type	KLTV	Leverage Characteristics	Adjustment
Pooled/Senior Debt Leverage is below Investment Grade	75.00%	BB	-1.25%
Subordinate Rake Certificates and Subordinate Participations	85.00%	B	-2.50%
Mezzanine Debt and Preferred Equity with Debt-Like Charateristics	95.00%	NR	-2.00%
B-Note Structures	NAP	NAP	0.00%
2nd Mortgages	NAP	NAP	0.00%
Final Penalty			-2.50%

KBRA constructed the penalties to be increasingly punitive as the amount of borrower equity in the property decreases. At higher leverage levels, a borrower with less equity in a property might be less willing to keep a loan current if the property experiences cash flow stress and hence there is a relatively higher likelihood of default. During such times, the need to pay debt service on the additional debt may result in the diversion of cash flow that would otherwise be used to maintain the condition and tenancy of the property, which in turn could impair the asset's value. A decrease in the property value in turn increases the related loan's loss potential should an event of default occur.

The type of additional debt also has a bearing on the specific penalty assessed. The most benign form of additional financing is preferred equity. A transaction with preferred equity that is structured like true equity without "debt-like" characteristics, such as a current pay interest rate, debt style remedies, and a hard maturity date, will likely not receive a capital structure penalty at all. If, however, the preferred equity has "debt-like" characteristics, it will be treated in a manner similar to mezzanine debt.

Relative to mezzanine debt, we generally will not apply a tranching penalty if the mezzanine debt is the only form of additional indebtedness and total leverage, inclusive of the mezzanine debt, is still investment grade as determined by KBRA. Under these circumstances, the borrower still has significant equity in the property, which should help minimize the risk of default and loss. As leverage increases beyond investment grade, however, the presence of mezzanine financing will result in capital structure penalties as equity erodes and greater amounts of property cash flow are needed to service the mezzanine debt.

The capital structure impact of mezzanine financing is typically less severe than that imposed to account for additional debt in the form of a subordinate participation interest, including rake bonds, held inside the trust. The main reason for this difference is that unlike a subordinate participation lender, a mezzanine lender is not secured by a lien on the mortgage collateral, but rather by a pledge of the partnership interests of the mezzanine borrower. This effectively means that the mezzanine lender's sole remedy upon the occurrence of a mezzanine loan default is a foreclosure on the partnership interests in, and assumption of control of, the mezzanine borrower. In addition, unlike a default on a subordinate participation interest, a default on mezzanine debt will not necessarily trigger a transfer of the related securitized loan to the special servicer. In general, a transfer of a loan to special servicing results in increased fees and work-out expenses to the trust.

KBRA generally views B-Note structures even less favorably than both mezzanine debt and subordinate participations. By virtue of holding a promissory note issued by the mortgage borrower, the holder of the B-note has direct privity with the mortgage borrower. This presents an increased risk that the B-note holder will be considered a separate creditor in the event of a borrower insolvency or bankruptcy. The introduction of separate classes of creditors, the interests of which might not be aligned with the interests of the rated security holders, could result in a more protracted and therefore more expensive workout upon a loan default and/or a borrower insolvency or bankruptcy.

Finally, KBRA views additional debt in the form of an actual subordinate second mortgage least favorably. An element of "cram down" risk is present in the case of subordinate mortgages that could disadvantage the senior note holder in bankruptcy. Should the borrower and subordinate debt holder agree on a plan of reorganization, a bankruptcy court could impose it, even if it is not favorable to the senior mortgage holder. This could result in a loan modification that runs contrary to the expectations of the holders of the rated securities. As a result, KBRA's leverage penalties are most severe for this type of additional encumbrance. At higher leverage levels, KBRA may not be willing to rate a transaction collateralized by a loan with an accompanying second mortgage. We will review these situations on a case-by-case basis to determine whether or not we will assign ratings.

In Large Loan transactions, it is common to see rake certificates, which derive 100% of their payments from an unpooled junior participation interest in a whole loan. We would determine ratable proceeds for the whole loan, including the junior participation, by applying the adjusted KLTV tranching thresholds, including the appropriate additional indebtedness penalty, if any, as described in this section. The resulting proceeds are then compared to the issuer's proposed capital structure for the rake certificates to determine their ratings. For these types of loans, only the senior participation is contributed to the trust on a pooled basis. Since the junior participation is not pooled, rake securities are not eligible for the pooling benefit adjustment detailed in the next section.

Pooling Benefit

Large Loan and CRE CLO transactions can benefit from the pooling of a number of loans made to discrete, unrelated sponsors that are secured by multiple property types in different locations. This is particularly true of the most senior classes in the trust, which, owing to their priority in the cash flow waterfall, will continue to receive payments even if a portion of the pool defaults. For this reason, we provide a pooling benefit for transactions that exhibit diversity relative to property count, sponsor, property type, and geography (MSA).

The pooling benefit is calculated using four Herfindahl indices that are used to determine the pool's diversity with respect to the aforementioned pool characteristics. The pooling benefit is greatest at the 'AAA' level and decreases for subordinate classes using interpolation in a manner that accounts for tranche principal balance and thickness. As the 'AAA' class is senior in the waterfall, it is most likely to benefit from diversification and continue to receive payments even if a portion of the pool defaults. The most subordinate class in a given transaction is most susceptible to impairment owing to negative pooling, and could experience loss even if a small number of assets become impaired. For this reason, credit is not provided to the most subordinate pooled class, nor is it applied to rake certificates. More details on the tests are as follows:

- For the Property Type test, seven property type categories are generally used: office, retail, industrial, multifamily, lodging, self-storage, and mobile home parks. To illustrate the formula, consider a transaction with loans collateralized by *n* property types. The Property Type Herfindahl Index is as follows:

$$\text{Property Type Herfindahl Index} = 1/[(\text{Aggregate Property Type Balance}_1/\text{Deal Balance})^2 + (\text{Aggregate Property Type Balance}_2/\text{Deal Balance})^2 + \ldots + (\text{Aggregate Property Type Balance}_n/\text{Deal Balance})^2]$$

where

$$\sum_{i=1}^{n} \text{Aggregate Property Type Balance}_\text{i} = \text{Deal Balance}$$

Pools that are diverse in regard to property type will have higher Herfindahl scores, and, on a relative basis, receive higher pooling benefit. A property type Herfindahl score of one receives no property type pooling benefit and a score of seven receives the maximum pooling benefit.

The MSA, Property Count, and Sponsor Count Herfindahl Indices are calculated in a similar fashion.

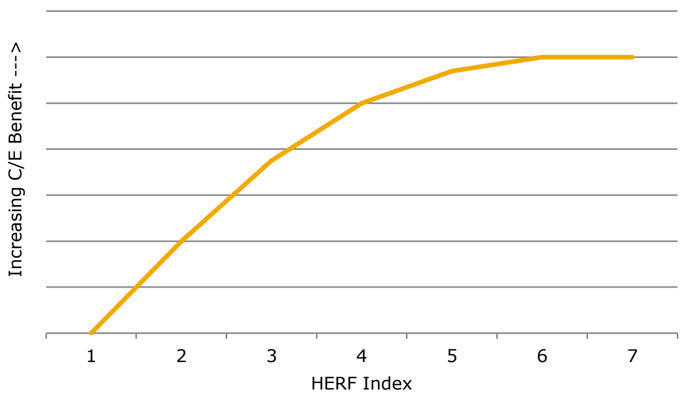
- The MSA Herfindahl Index is based on the distribution of outstanding CMBS loan balances across 100 MSAs. The remaining MSAs are aggregated into a single "tertiary" category. Pools that are more geographically diverse will receive higher Herfindahl scores and greater pooling benefit, provided that a preponderance of the collateral is not located in tertiary locations. An MSA Herfindahl score of 1 does not receive any MSA pooling benefit, and a score of 50 receives the maximum benefit.

- For Sponsor Count, the test combines all loans with the same sponsor in a given transaction, regardless of the presence or absence of loan crossing. Pools with sponsor concentrations are typically exposed to more risk should the sponsor experience financial difficulties, and, as such, receive lower pooling benefit compared to pools with more diverse sponsor distributions. A sponsor count Herfindahl score of 1 receives no pooling benefit, and a score of 50 receives the maximum benefit.

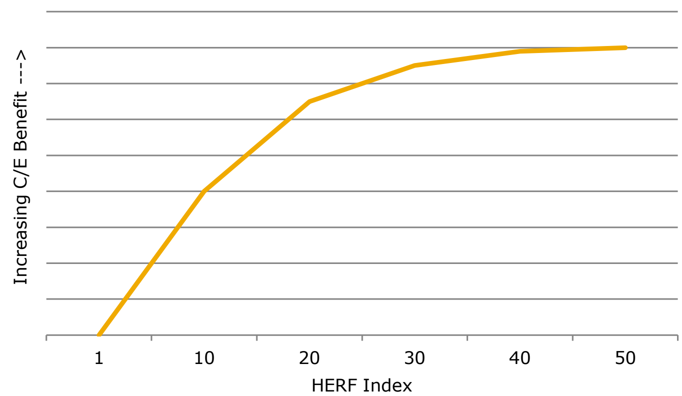
- The Property Count test uses the absolute number of collateral properties in the pool. Pools with higher property counts will receive greater pooling benefit. A property count Herfindahl score of 1 receives no property count pooling benefit and a score of 100 receives the maximum benefit.

For loans secured by multiple properties, MSA and Property Count Herfindahl Indices are calculated in a manner that avoids double-counting the diversity benefit that may have already been provided at the loan level, which is described in the Threshold Adjustments section. The scaling between the maximum and minimum Herfindahl indices for the 'AAA' rating category, for illustrative purposes only, is presented in the graphs below:

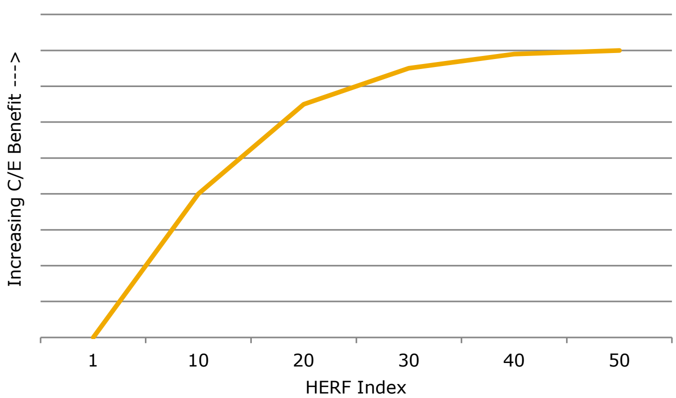
Property Type



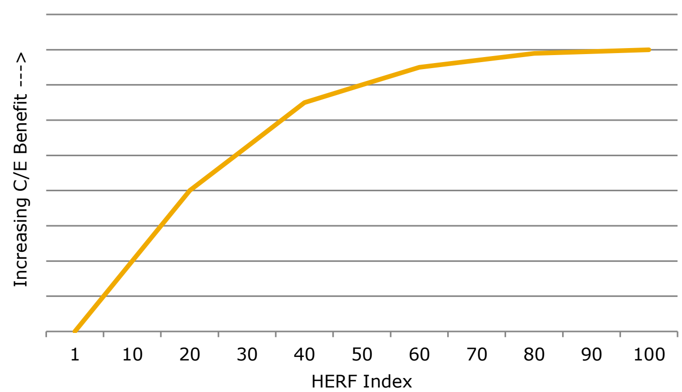
Geography



Sponsor Count



Property Count



Before we apply the pooling benefit, we determine KBRA's base credit enhancement levels. To calculate these levels, the ratable proceeds of all the loans at each rating category are aggregated. The aggregate ratable proceeds are then converted to their credit enhancement equivalents, or KBRA base credit enhancement levels. Once the results of the four Herfindahl tests are determined, they are totaled and applied to the KBRA base credit enhancement levels as pooling benefit.

Assigning Transaction Ratings

In the case of a Single-Borrower transaction, the ratings assigned to the CMBS securities will generally equate to the ratable proceeds associated with each respective tranche of debt. For Large Loan and CRE CLO transactions, the ratings will generally equate to the levels indicated by the post-pooling KBRA credit enhancement levels. Once we arrive at our final ratable proceeds or KBRA credit enhancement levels, as applicable, they are compared to the capital structure proposed by the issuer to assign our ratings.

It is important to note that the methodology described thus far assumes the transaction has typical features found in static CMBS deals. Adjustments to final ratable proceeds, KBRA credit enhancement levels, and/or ratings may occur as a result of deviations in legal and structural elements at the loan and/or trust level. For example, if a CRE CLO permits changes to the collateral pool post securitization, it would entail sensitivity testing that could result in negative adjustments to account for potential negative credit migration. Three other significant areas of focus include an examination of the deal's payment waterfall, servicer advancing/liquidity mechanisms, and a maturity "tail" period.

Relative to payment waterfall, the methodology described thus far assumes a CMBS transaction that is structured to provide for the sequential payment of both principal and interest, and reverse allocation of losses. In this structure, all principal payments from amortization and loan pay downs are used to pay principal of the most senior rated class of securities outstanding until the balance of that class has been reduced to zero. Once the balance of that class has been reduced to zero, all principal payments are used to pay the next class, and so on. Through this natural de-leveraging, the senior classes of a transaction secured by loans with amortization provisions will experience increasing credit enhancement as the transaction ages, provided there aren't significant losses. KBRA designed its KLTV sizing template and corresponding debt service tests with this type of structure in mind. We will evaluate other structures in the context of the quality of the underlying loan collateral as well as other transaction features. These evaluations could utilize scenario analyses and/or asset-liability cash flow modeling to help determine if the specific structural features result in increased or decreased credit risk that warrants adjustments.

Another area of focus is how various fees and expenses of the trust are allocated to the trust waterfall, particularly work-out fees and liquidation expenses. These fees typically arise when a special servicer resolves a defaulted or troubled loan and returns it to the master servicer (work-out fee). These fees can be as much as 1.0% of all future collections on the loan, including the balloon payment. Liquidation fees can result from the sale of an REO property or defaulted loan, or from a discounted-payoff by the borrower. Depending on the way the transaction is structured, the fees may not be directly netted against loan proceeds, and can prompt interest shortfalls to the trust. This can be problematic given the large size of some CRE loans. For this reason, KBRA will pay close attention to how these fees are structured. At issuance, we will look for mitigating factors that potentially offset the impact of shortfalls to the trust. For example, a mitigating factor may be inclusion of provisions in the mortgage loan documents that require the borrower to reimburse all trust fees and expenses. If mitigating factors are not present, adjustments may be made.

Relative to liquidity, KBRA's credit ratings are intended to reflect both the probability of default and severity of loss in the event of default, with greater emphasis on probability of default at higher rating categories. As such, KBRA assumes CMBS transactions will have servicing advance provisions in place at the loan level throughout the life of the transaction, including ultimate liquidation if a default occurs. If payments are not received on the underlying loan collateral, these provisions can enable trust certificate holders to continue to receive timely payments of interest. Loan payment interruption could be due to a non-credit issue (such as timing), or to a loan default. In the event of a loan default, the servicer will typically be expected to make advances it deems will ultimately be recoverable for both debt service and property protection. If a servicing advance provision is not present, a substitute liquidity mechanism should be in place. These mechanisms may include reserve accounts or an excess interest trap. This can also take the form of a security-level advancing mechanism for the senior classes, as is present in some CRE CLOs, if the transaction documents permit interest deferrals on the mezzanine and subordinate certificates in a given structure.

Lastly, it is important for a CMBS transaction to have a rated final distribution date that extends beyond the final maturity date of the loan in the pool with the longest remaining term after considering all available extension options. This additional time period is often referred to as a "tail" period. Should a loan not successfully refinance, the tail period gives the servicer time to either attempt to work out the loan or to foreclose upon and liquidate the underlying property collateral, without causing a default on the rated securities. If, however, all principal amounts due on the CMBS securities are not received by the end of the tail period, the ratings on the classes with missed payments will likely be set to 'D'. In determining the tail period, KBRA considers multiple factors. Generally, transactions with longer tail periods will have relatively higher numbers of loans and properties, higher leverage levels, and more complex financing structures involving mezzanine debt, participation interests, and/or B-notes. The typical tail period in a SASB transaction is five to seven years after giving consideration to all available extension options, with the exception of transactions that are collateralized by high leverage loans. For these transactions, which will typically size through 'B', the tail period can be 10 years or more. In Large Loan and CRE CLO transactions, the tail period is generally seven to 12 years after giving consideration to all available extension options.

Surveillance

KBRA maintains active surveillance on all CMBS ratings for the life of each transaction. Surveillance includes the monitoring of news media, security and loan performance data, and reviews of post securitization events. Should any of our surveillance efforts result in rating activity, we will publish a rationale and post it on our web-site. Surveillance can take some or all of the following forms:

- Monitoring the news media on an on-going basis for events that could have a bearing on KBRA's CMBS ratings portfolio. This includes items such as weather related events (e.g., hurricanes, earthquakes, etc.), tenant bankruptcies, and borrower bankruptcies.

- KBRA subscribes to Trepp data feeds and uses the information to monitor events at the loan and certificate level on a monthly basis. Monthly monitoring includes an evaluation of any watch list additions and/or special servicing transfers that occur on a given pay-date. The circumstances surrounding these events would be examined to determine if a deal is in need of an in-depth review or rating change. We also monitor events at the security level, such as interest shortfalls or principal losses.

- KBRA monitors post securitization events that come to its attention. This may include items such as assumptions or loan defeasance. If we determine the event might prompt a rating change, we will perform a more in-depth review.

- On an annual basis, KBRA generally performs a full transaction review, which is posted to KBRA's website. The review includes an analysis of NCF changes at the property level to determine if any ratings are in need of revision.

KBRA uses the same methodology to adjust ratings during its surveillance process as it does to assign new issuance ratings. The review utilizes the most recent financial data available from the servicer(s) of the transaction to make a fresh determination of the KNCF for the underlying loan collateral. The ratable proceeds and/or credit enhancement, as applicable, for the loans are then determined in the manner described in this document, and are used to determine ratings adjustments. In determining rating adjustments, we also take care to determine that any changes in a property's net cash flow are not temporary and can be expected to recur through the remaining loan term. For KBRA to consider rating changes, KNCF would need to be meaningfully higher or lower than the date of the initial rating or last rating action.

For loans that are deemed to be at high risk of loss during the remaining term of the securitization (KBRA loans of concern, or K-LOCs), we may make discrete loss estimates. The projected losses and related recoveries will be applied to the transactions' cash flow waterfall to derive a loss adjusted capital structure using current certificate balances. This will be considered in determining rating adjustments for SASB deals. For transactions containing multiple loans, the loss adjusted capital structure will then be compared to the KBRA ratable proceeds and/or credit enhancement levels that were determined for the performing loans to determine rating adjustments, if any.

Appendix I: KBRA Loan Refinance Constants and Capitalization Rates

	Refinance Constant Range		Cap Rate Range	
Property Type	Low	High	Low	High
Mall - Sales of $500+	7.25%	8.25%	7.00%	8.00%
Mall - Sales of $300-499	8.00%	9.25%	7.75%	9.00%
Mall - Sales of <$300 psf	8.75%	10.00%	8.50%	10.00%
Neighborhood, Community, Strip & Convenience	8.50%	10.00%	8.25%	11.00%
Power Center	8.25%	10.00%	8.00%	10.25%
Lifestyle Center	8.50%	10.00%	8.25%	10.75%
Outlet	8.50%	10.00%	8.25%	11.00%
Office - CBD, Class A	7.75%	9.50%	7.50%	10.00%
Office - CBD, Class B/C	8.25%	10.00%	8.00%	10.50%
Office - Suburban, Class A	8.25%	10.00%	8.00%	10.50%
Office - Suburban, Class B/C	8.75%	10.25%	8.50%	11.00%
Bulk Distribution/ Warehouse	8.25%	10.00%	8.00%	10.50%
Manufacturing/Light Industrial	8.75%	10.25%	8.50%	11.00%
R & D/Flex	8.75%	10.25%	8.50%	11.00%
Multifamily - CBD, Class A	7.50%	9.25%	7.25%	9.75%
Multifamily - CBD, Class B/C	7.75%	9.50%	7.50%	10.00%
Multifamily - Suburban, Class A	8.00%	9.75%	7.75%	10.25%
Multifamily - Suburban, Class B/C	8.25%	10.00%	8.00%	11.00%
Multifamily - Student Housing/Specialty	8.50%	10.25%	8.25%	11.00%
Manufactured Housing - Pads	8.75%	10.25%	8.50%	11.00%
Self Storage	8.75%	10.25%	8.50%	11.00%
Hotel - Luxury/Resort	9.50%	10.50%	10.00%	11.50%
Hotel - Full Service	9.50%	10.50%	10.00%	12.00%
Hotel - Limited & Select Service	9.50%	10.50%	10.50%	12.75%
Hotel - Extended Stay	9.50%	10.50%	10.75%	13.00%

Note: For gateway markets KBRA may assign constants and cap rates below the ranges indicated above.