



Methodology

*Rating North American Commercial
Real Estate Non-Performing Loan
Liquidating Trusts*

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Insight beyond the rating.

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All DBRS ratings and research are available in hard-copy format and electronically on Bloomberg and at DBRS.com, our lead delivery tool for organized, Web-based, up-to-the-minute information. We remain committed to continuously refining our expertise in the analysis of credit quality and are dedicated to maintaining objective and credible opinions within the global financial marketplace.



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Introduction

The credit crisis of 2007 brought fundamental changes to the commercial mortgage sector that will have a lasting effect on commercial real estate (CRE). As the market struggles to adapt to a new environment, investors, lenders and special servicers hold an increasing number of delinquent loans and defaulted loans. With an imperative need for liquidity, one option available for lenders to finance their portfolios of non-performing loans (NPLs) is to issue notes backed by non-performing mortgage assets. Such a structure is often called a liquidating trust (LT). LT noteholders are dependent primarily on proceeds from the liquidation of mortgaged properties as opposed to traditional cash securitizations where cash flows from the receipt of monthly borrower remittances.

This methodology comes in response to many inquiries received by DBRS about the rating process for NPL LTs. DBRS expects commercial mortgage LT issuance within the next few years to be a viable option to help clear the mounting volume of CRE NPLs. We expect the main drivers for issuance to be (1) demand from distressed investment funds and hedge funds and (2) lenders seeking to obtain financing for non-performing assets in an effort to ease liquidity pressure through LT securitization.

Background

As of the third quarter of 2011, there was \$2.4 trillion of commercial and multifamily mortgage debt outstanding, according to the Mortgage Bankers Association.¹ Of that \$2.4 trillion, 33% is held by banks and thrifts and 26% is securitized within commercial mortgage-backed securities (CMBS) or other structured finance products. As the overall U.S. economy slowed in 2008 and arguably reached the deepest and longest financial crisis since the Great Depression, the CRE sector also severely deteriorated. The combination of the difficult economic environment, a spike in unemployment and businesses either vacating or renegotiating leases began a deep slide in CRE values, leaving many properties over-leveraged and unable to cope with the fluctuations in cash flow and/or refinance existing debt. As of Q3 2011, 8.92%² of CMBS fixed-rate mortgages were delinquent compared with less than 1% as of YE2007. Of the commercial mortgages held by banks and thrifts, 3.75% were 90-plus days delinquent as of Q3 2011.³

Loans that are transferred to a special servicer(s) from a master servicer(s) are either in need of a modification, are more than 60 days delinquent, are non-performing or are on the verge of imminent default. Once a mortgage is non-performing, the special servicer of a defaulted mortgage evaluates the highest and best resolution for the loan, which can include foreclosure proceedings on the mortgaged property, some form of discounted disposal of the note and payment modification with the borrower. If the special servicer proceeds with foreclosure, given the certainty of default of a non-performing mortgage, outside of CMBS, the servicer is not obligated to advance for delinquent monthly remittances of interest and principal. Most non-performing properties do generate cash flow, although the cash flow may be anemic and, at worst, negative. In addition to this cash flow, any expenses associated with liquidating an asset are offset by liquidation proceeds received from the sale of the mortgaged property and any insurance proceeds.

1. *MBA Commercial Real Estate/Multifamily Finance, Mortgage Debt Outstanding, Q3 2011*, Mortgage Bankers Association (MBA).

2. *MBA Commercial Real Estate/Multifamily Finance, Mortgage Delinquency Rates for Major Investor Groups, Q3 2011*, Mortgage Bankers Association (MBA).

3. *Ibid.*



A practical alternative for a lender to fund a portfolio of non-performing loans is an LT structure, given the expectation of foreclosure or a discounted payoff (DPO) on the mortgage assets of the trust if no other action is taken. LTs are generally done in the form of an owner trust securitization because of the ineligibility for real estate mortgage investment conduit (REMIC) status. The structure potentially lends greater flexibility when it comes to working out troubled loans. At the same time, it centralizes the cost of the workout and liquidation effort, which can be substantial.

The funding of an LT is accomplished by the issuance of notes and represents indebtedness of a trust. Since an LT may comprise one or more pools of non-performing loans, it is expected that the timing and amount of cash flow largely depends on the liquidation timing and the recoverable proceeds of the defaulted mortgages. The notes can assume a senior-subordinate structure and may have forms of credit enhancement, including (but not limited to) overcollateralization, subordination and a reserve fund.

ORIGINAL RESOLUTION TRUST CORPORATION AND LIQUIDATION TRUST STRUCTURES

In the late 1980s, in the wake of the savings and loan (S&L) crisis and the closure of hundreds of depository institutions, the U.S. government initiated the Resolution Trust Corporation (RTC) to oversee the disposal of failed bank real estate loans. The RTC's mandate was to liquidate S&L defaulted assets to recover as much money as possible and to limit the impact on the already suffering real estate markets. One successful structure imposed by the RTC was the formation of CRE securitized liquidation trusts. These trusts comprised CRE loans in various stages of default and were structured with senior tranches of investment-grade securities available to the public market and a subordinate equity piece retained by the issuer. A servicer was put in place to coordinate the collection of monthly property payments as well as facilitate the sale process for any loans within the trust. As the loans were sold, the most senior certificate holders received interest and principal until all public certificates were retired.

The initial structure of the investment-grade securities varied, but all trusts contained a liquidity reserve to protect the purchasers of the investment-grade securities from untimely receipt of interest. The liquidity reserve provided sufficient cash flow to cover the interest obligations to the senior certificates. Capital improvement reserves were also initially funded by the issuer to provide a reserve should the safety and integrity of the property securing a particular loan need any repair.

ANTICIPATED STRUCTURE OF NEW LIQUIDATION TRUSTS

Past Observations

Similar to the S&L crisis of the early 1990s, the United States is facing a growing number of delinquent or defaulted loans either on banks' balance sheets or in various securitization special-servicing departments. In order to facilitate the resolution of delinquent and defaulted loans, a liquidation trust vehicle similar to the ones used by the RTC during the early 1990s is a credible solution to allow for public investment and orderly liquidation of the growing number of impaired CRE loans.

As of the time of print of this methodology, a U.S. CRE NPL LT had not yet been issued for the recent vintages of CRE loans. However, residential mortgage-backed securities (RMBS) LTs secured by non-performing residential loans have been issued recently. A typical RMBS LT includes three classes of notes, each rated investment grade, with an unrated equity piece. A reserve fund is typically funded up front to cover any interest shortfalls that might occur.

Future Expectations

Future CRE NPL securitization structures are anticipated to incorporate prefunded liquidity interest reserves and capital improvement reserves to provide security for the investment-grade certificate holders. Additionally, a qualified asset manager is expected to be in place to manage the pool of assets as well as the coordination of liquidations to maximize recovery values for the trust.



The criterion for a AAA rating would include the presence of a dedicated prefunded interest reserve for the most senior bond in the structure. The interest reserve would need to be sufficient to fund interest owed to the bond for its estimated weighted-average life. DBRS may rate subordinate bonds in the structure that do not contain such a reserve if the bonds are subject to an available-funds cap or payment in kind (PIK). If the bonds are PIK, the bonds' principal is anticipated to increase in accordance with any interest shortfall.

DBRS considers the implications of different structures on a case-by-case basis. Below is an example of a waterfall structure that may support an investment-grade rating:

- Waterfall cash flows comprise collateral net operating income (NOI) as well as any realized liquidation proceeds.
- Waterfall cash flows first pay the most senior bond interest; if cash flow is insufficient, the interest reserve is drawn down.
- Remaining cash flows next pay subordinate bond interest; if cash flow is insufficient, the interest reserve is drawn down.
- Remaining cash flows replenish the interest reserves (which are kept in escrow).
- Remaining cash flows pay any capital expenditure advances not already supported by collateral NOI; if cash flow is insufficient, the capital expenditure reserve is drawn down.
- Remaining cash flows replenish capital expenditure reserves.
- Remaining cash flows pay most senior outstanding bond principal.
- Remaining cash flows pay predetermined administrative and servicing fees.

Unlike a residential NPL pool, most CRE properties still produce monthly operational cash flow. Assuming a receiver is in place or cash flow is otherwise controlled by the LT, the monthly property cash flow after payment of operational expenses is contributed to the LT cash flow waterfall and follows the same path as any liquidated proceeds.

DBRS anticipates that the timeline of the ratings process for CRE LT securities will increase significantly because of the additional preparation of the property-specific business plans by the special servicer (or asset manager), as reviewed by DBRS, as well as other due diligence performed by the special servicer related third parties and DBRS.

Any LT execution must recognize the difference between the amount of analysis necessary for NPLs versus performing loans. The performance, state, circumstances and quality of the collateral are anticipated to vary substantially within a non-performing pool (e.g., occupancy rates, cash flow, deferred maintenance and borrower behavior). This makes it more difficult to generalize and apply broad, pool-wide assumptions when rating a transaction.

As a result, DBRS expects that the amount of increased analysis necessary to arrive at sound estimates of future collateral performance will approximately double the time needed for the ratings review process to be complete.



DBRS Approach to Rating CRE LTs

PRE-QUALIFICATIONS

In order to qualify for and maintain a DBRS rating, a CRE LT is expected to have certain structural and reporting elements in place.

Equity

There must be a sufficient amount of equity in the deal to warrant a DBRS investment-grade rating. Equity is defined as the positive difference between the purchase or transfer price of the collateral by the loan seller and the rated-bond principal issued by the trust. The collateral must have been purchased or transferred by the loan seller in an arm's-length transaction; it is incumbent on the loan seller to demonstrate to DBRS why and how the purchase price is representative of the current market value of the collateral.

Servicer Review

The special servicer (or asset manager) mandated with the workout of the loans must have incentives that are built into the deal structure; this ensures the special servicer maintains an abiding interest to work on behalf of the trust to expedite the liquidations while maximizing recovery. This interest is important as the cash flows of the NPL are dependent on an orderly and timely liquidation of the assets.

Prior to contemplating a transaction, DBRS reviews the special servicer's ability to liquidate the assets in an efficient manner while maximizing value. DBRS continues to evaluate the servicer's performance and track record throughout the life of the LT and would adjust ratings accordingly.

A servicing operation must have the capability to offer in-depth and timely due diligence of the assets in the trust. The operation must also be able to provide ongoing inspections and due diligence of the collateral. The operation must have the capacity to underwrite each asset in the trust and provide the asset summaries, which are important to the DBRS transaction review for each asset. Therefore, the background and experience of a special servicer's asset managers, as well as the ratio of assets to asset manager, are of particular importance in the DBRS review.

For more information on DBRS commercial mortgage servicer evaluations, please refer to the methodology entitled *Commercial Mortgage Servicer Evaluations*, available at www.dbrs.com.

Documents and Reporting

DBRS requires the following list of definitions, documents and reports to establish and maintain its rating of a CRE NPL LT.

Transaction Structure

For a CRE NPL LT, it is important to have a transaction structure clearly defined. The definition of the structure must include the following:

- Coupons of the proposed bonds.
- Reserves and reserve structure.
- Whether any of the bonds are PIK.
- Waterfall rules and priority of payments.
- Administrative fees (if any).
- Special servicer incentive fees (if any).



Servicing Track Record

As previously mentioned, DBRS conducts a formal servicer evaluation according to its *Commercial Mortgage Servicer Evaluations* methodology. In addition, the acting special servicer is encouraged to provide a well-documented history of liquidations and the results of those liquidations in terms of liquidation time and recovered value. Track records would ideally contain clear and accurate record of the following:

- Characteristics of the collateral liquidated (such as detailed property types, markets and vintage).
- The time to liquidate each of the loans.
- The recoverable value and ultimate loss experienced for each of the loans.
- Details of the modifications and/or workout strategies applied.

Special Servicer Asset Summaries

A significant part of the DBRS analysis is evaluating and qualifying a business plan put forth by the special servicer on each asset in the trust (or a substantial sample of the trust's assets when the number of loans makes it excessively cumbersome to review each). The DBRS review of these asset summaries consists of the validation of the special servicer's central assumptions such as liquidation time, liquidation expense and recoverable value. Because of the reality of time constraints, DBRS does not expect or need the business plan to contain the detail that a special servicer might offer under different circumstances. DBRS instead looks primarily to the following:

- A short description of the circumstances of the liquidation (e.g., the history of the asset and the history of the borrower).
- A summary of the workout strategy for the loan/property.
- A summary of the collateral characteristics (e.g., address, property type, units/size, year built, major tenants and historical occupancy).
- A summary of the original and current loan characteristics and underwriting (e.g., loan purpose, lien position, loan-to-value (LTV), historical financials, balance, amortization terms, reserves and delinquency history).
- A budget and net present value (NPV) analysis that delineates estimated timing of cash recoveries.
- A detailed defense of the key assumptions: liquidation time, liquidation expense and recoverable value. The defense might entail such things as documented conversations or agreements with the borrower, market analysis, rent roll analysis, historical financial analysis and competitive set analysis.
- Additional information provided by the special servicer's inspection of the property.
- A description of the contact and relationship with the borrower.
- A summary of the legal document review and pertinent fact checking (e.g., title and loan documents).
- A summary of the sponsor or loan guarantor (e.g., name, net worth and recourse).

In summary, an asset summary gives the asset manager the chance to relay any particular loan-specific analysis that would be pertinent to DBRS in its estimation of the key model drivers.

Servicing Agreement

In reviewing the servicing agreement, DBRS seeks to understand how the agreement may affect the timing of the liquidations (e.g., whether the agreement proffers additional flexibility to the special servicer in working out the loans and whether this flexibility translates into actual decreased liquidation times and increased recoverable value). In addition, DBRS views the alignment of servicer incentives as an essential part of its rating process and the intended operation of the CRE NPL LT. DBRS does not rate transactions that lack a strong incentive for the servicer to liquidate the loans in a timely manner. Balancing the need for rapid liquidation of the loan is the need for enough recoverable proceeds to repay the bond principal and any outstanding interest obligation.

Where one exists, DBRS critically reviews the servicer's fee structure to determine if it promotes both quick liquidation and sufficient recoveries for the trust.



Purchase/Transfer Prices

DBRS must have access to the actual purchase or transfer price that the issuer or loan seller paid for each of the CRE loans in the pool and/or documents that accurately demonstrate the perceived market value of each property in the pool.

Recent Opinion of Value

DBRS expects the trust to have an independent third-party report that provides an estimate of the market value of each property. These can be a broker's opinion of value (BOV); a recent appraised value (MAI Appraiser) or a recent special servicer asset status report that includes an assessment of value. DBRS finds benefit in all three forms and does not prefer one over the other. The most important features are the time frame in which the valuation or assessment was completed and the assumptions used.

Historical Financial Performance

DBRS reviews records of the past monthly and annual financial performance for each asset in the trust. The past financial statements inform DBRS about the in-place cash flow of each property, the future potential for performance of each property and the potential cash flow volatility of each property.

Monthly Cash Flow Remittance

Throughout the life of the transaction, DBRS must have access to monthly cash flow reporting on each of the properties, with detailed delineation of monthly revenues and expenses.

Site Inspections

Throughout the life of the transaction, DBRS must have access to periodic site inspections for each of the properties in the pool. It is expected that the special servicer conduct periodic site visits and relay the results to DBRS in a timely manner.

Rent Rolls

DBRS expects to have access to an updated rent roll for each of the properties in the pool, at issuance and throughout the life of the transaction.

Issuer Data Tapes

DBRS expects a data tape that in some way contains the following data elements on each of the loans in the pool.

Property Characteristics

Property Type
Detailed Property Type
Address
Net Rentable Area (Square Feet and/or Units)
Year Built
Year Renovated
Issuer Purchase or Transfer Price of Assets
Latest Appraised Values
Appraisal Firm
Latest Comparable Sales in Submarket
New Supply Statistics of Submarket
Latest Date of Appraisals
Latest Financial Statements (with Available History)
Pro Forma Financials
Deferred Maintenance
Largest Tenants
Historical Occupancy

Loan Characteristics

Original Note Amount
Last Note Amount
Lien Position
Participation Information
Loan Guarantor
Guarantor Financial Status
Recourse
Recourse Amount
Delinquency Status
Status of Foreclosure Proceedings
Status of Bankruptcy Proceedings
Status of Any Outstanding Judgments
Status of Cash Flow Remittance
Status of Lockbox and/or Receivership
Resolution Strategy
Reserves



MODEL OVERVIEW

DBRS uses a two-step approach to rating CRE NPL LTs.

Step 1

The first step establishes initial value-driven credit enhancement levels. This approach relies on estimates of the individual property's values, which are stressed at successively higher levels at each successively higher rating category.

In order to stress the key model drivers in Step 1, DBRS applies the following probability schedule for each of its rating categories.

Probability Schedule by Rating Category

Rating Category	Probability
AAA	95.00%
AA	92.00%
A	88.00%
BBB	78.00%
BBB (low)	72.00%
BB	62.00%
B	50.00%

These probabilities affect stresses to the key model drivers, which in turn define the initial levels that are then further tested and stressed in Step 2 of this approach. They are not meant to provide DBRS ratings.

Step 2

Since DBRS ratings can address both the timeliness and/or ultimate repayment of the principal and interest that are received by investors, a second step is necessary to test the timing of liquidations and other cash flow. This next step aims to ensure that the structure can avoid potential interest shortfalls and principal losses under a variety of different scenarios and to consider the impact of correlation and concentration.

In order to stress the key model drivers in Step 2, DBRS randomizes the probabilities that are used to stress its key model drivers.

The second step in the ratings process acts as a check and balance to the value assumptions arrived at in the first step of the analysis. If challenged, DBRS will adjust the transaction's subordination levels until it can pass the scenario test.

Step 1: Initial Value-Driven Credit Enhancement

DBRS Value Estimate

The DBRS model tests the proposed credit enhancement levels by establishing values for each property. The recoverable value of an asset is the value that can be achieved from the sale of an asset (before liquidation expenses) if marketed today. Value for income-producing assets is generally determined by applying a normalized cap rate, taking into account the prevailing market for the asset type, its quality and its location. Further cap rate adjustments are contemplated depending on the asset's position in the stabilization process as well as the discount an equity investor may require for a non-stabilized asset. The cap rate is then applied to the DBRS Sustainable net cash flow (NCF; described next) to determine value. In instances where the DBRS Sustainable NCF is not applicable, value is generally derived based on an analysis of sales comparables, the dark value of the asset or its replacement value. Sources that DBRS may reference include appraisals, market statistics (historical as well as projected performance), issuer acquisition basis and special servicer business plans. Where applicable, the value is informed by an independent third party's analysis of each individual asset.



Sustainable Net Cash Flow

The DBRS Sustainable NCF is calculated based on an analysis of the asset's historical performance and market statistics to determine sustainable rents, occupancy, expenses and capital items, based on asset type, quality and location.

The sustainable cash flow that drives the DBRS value estimate is the cash flow that is realistically achievable by a property shortly after its liquidation. It is the cash flow that a buyer may likely estimate for the short to medium term after purchasing the property and, therefore, the cash flow that would be a significant driver of the buyers' conservative assessment of value. DBRS applies its underwriting methodology with the purpose of estimating this cash flow.⁴

DBRS relies on a number of different sources to inform its estimate of sustainable cash flow: current and historical property financials, third-party broker information, the special servicer's asset summary/business plan and market comparable information (e.g., market vacancy rates, rental rates and expense ratios). DBRS also performs rent roll analysis to estimate the future expected cash flow volatility by examining upcoming lease expiration schedules and recent leasing activity and adjusts its estimate for sustainable cash flow accordingly.

In order for a special servicer to accomplish the dual aims of liquidating the property as quickly as possible and maximizing recoverable value, it must be able to make substantial tenant improvement and leasing commission (TI/LC) and capital expenditures. Absent of these expenditures, recoverable value and disposal time may be adversely affected as a special servicer needs to make necessary capital expenditures to maintain or improve occupancy. Such future estimates for TI/LC expenditures are deducted from the estimate of sustainable NOI. This allowance will be heavily dependent on the specific circumstances that surround each property (e.g., property type, borrower behavior, anticipated performance in the market and stability of property performance). DBRS complements its own estimate for TI/LCs with a review of the property-specific budget prepared by the special servicer in its asset summary.

Observed Market Value

Observed market value is generally the value implied by the purchase price that the loan seller paid for the collateral. DBRS requests the loan seller to report purchase prices for each of the properties in the transaction and provide convincing evidence that these prices are representative of the market value of each asset.

Recent Opinion of Value

A recent opinion of value must be provided by an independent third party for each property in the pool in order to achieve an investment-grade rating. These can be a BOV, a recent MAI Appraiser or a recent special servicer asset status report that includes an assessment of value. As noted earlier, DBRS finds benefits in all three forms and does not prefer one over the other. The most important features are the time frame in which the valuation or assessment was completed and the assumptions used.

Market Comparable Value

DBRS collects detailed market value statistics for CRE properties and uses these statistics to build comparable market value per-unit estimates for each property, based on certain property characteristics such as property type, size, market liquidity, zip code, city, metropolitan statistical area (MSA) and state. The estimate of value is derived from these comparable per-unit values.

In an instance where the observed market value, the BOV and the market comparable value are substantially different than the sustainable cash flow driven value, DBRS reviews the reasons for the variance and, if warranted, adjusts its estimate.

4. *CMBS Rating Methodology*, January 2012.



Debt Yield Volatility

The debt yield that is implied by the DBRS Sustainable NCF is also called the base-case (i.e., the B rating category) debt yield. This debt yield is stressed increasingly with each successive rating category when setting the initial value-driven credit enhancement levels for a transaction.

$$\text{Stressed Debt Yield} = \frac{\text{Base-Case Debt Yield}}{e^{0.5\sigma^2\Delta t} + \Phi^{-1}(1 - p) \sigma\sqrt{\Delta t}}$$

Base-Case Debt Yield	The debt yield used to derive recoverable value at the B rating category.
Stressed Debt Yield	The debt yield used to derive recoverable value at each of the other rating categories or each of the scenario runs.
σ	Debt yield volatility
Δt	Liquidation time (in years)
p	Probability as designated by rating category or scenario run (values range between 0.5 and 1)

The debt yield stress encapsulates a variety of potential challenges the properties face, such as illiquid lending environments, more stringent lending standards requiring increased equity positions and an overall stressed CRE environment.

Debt yield volatilities were determined through examination of past CRE debt yields over multiple real estate cycles and are based on observed debt yield volatilities by property type.

Observed Volatilities

Property Type	Debt Yield Volatility
Multifamily	7.49%
Retail	10.11%
Industrial	10.53%
Office	10.93%
Lodging	16.86%

Source: American Council of Life Insurers (ACLI).

The liquidation time used in the stressed debt yield formula refers to the liquidation time estimate for each individual loan at the rating category in question. Liquidation times are primarily derived from empirical observation of CMBS workouts. The baseline average time to liquidation is 16 months. The baseline AAA time to liquidation can reach 38 months (see the Timeline of Liquidation section below). The probabilities used in the stressed debt yield formula are taken from the probability schedule in accordance with the rating category in question (see the Model Overview section above).



Liquidation Expenses

The DBRS value estimates (previously described) are reduced by the estimates of the liquidation expenses. Liquidation expense estimates included in the final valuation reflect estimates of legal fees, broker closing costs. They also include extraneous costs associated with the liquidation (e.g., travel fees, inspections and insurance). Sometimes liquidation expenses are a function of what is in the particular loan documents (e.g., the establishment of a limited liability company (LLC) to protect the trust from environmental concerns). DBRS estimates for liquidation expenses are derived from empirical observation of these expenses and verified through discussions with knowledgeable market participants. They may also be influenced by the budget created by the special servicer and by DBRS property-level analysis. The range of liquidation expenses is typically greater than 5% and less than 20% of the final liquidation value, depending on the size of the subject property and the requested rating level.

DBRS base-case estimates of liquidation expenses are based upon empirical observation of loan workouts and interviews with special servicers.

Liquidation Expense

Property Size	Mean	Standard Deviation
Small and Medium	9%	5%
Large	6%	5%

$$\text{Stressed Liquidation Expense} = \text{Base Case Liquidation Expense} + \sigma\Phi^{-1}(p)$$

Base-Case Liquidation Expense Empirically observed average liquidation expenses by loan size.

Stressed Liquidation Expense Liquidation expense as designated by rating category or scenario run.

σ Standard deviation of liquidation expense.

p Probability as designated by rating category or scenario run (values range between 0.5 and 1).

The probabilities used in the liquidation expense formula are taken from the probability schedule in accordance with the rating category in question (see the Model Overview section above).

Deferred Maintenance and Property Stabilization Costs

To the extent value is derived for an asset that is not stabilized, has deferred maintenance or requires some other capital injection to begin or continue normal operations, an estimate of the associated costs will be deducted from either the DBRS Value Estimate or the DBRS Sustainable NCF.

Under the premise that the borrower pays its debt service obligations at the expense of not reinvesting in the property, DBRS expects that most properties have an element of ongoing deferred maintenance. The longer the delinquency, the more deferred maintenance can be expected. The attitudes and expectations of the borrower toward the property can also be an influential factor. DBRS uses property condition reports, its own site inspections and/or a minimum deferred maintenance to account for the out-of-pocket expense a buyer would have to invest into the property, thereby reducing the value. The minimum deferred maintenance is equivalent to a minimum capital expenditure allowance multiplied by the number of months the loan is delinquent. In addition DBRS would consider using the actual deferred maintenance as provided by the recent property reports.



Recoverable Value

Together, the sustainable cash flow, debt yield and equity requirements, as well as the deferred maintenance and liquidation expenses, imply a recoverable liquidation value for each asset at each rating category, given by the following formula:

$$\text{Value}_{[RC]} = \frac{\text{Sustainable NCF}}{\text{DY}_{[RC]} \times (1 - \text{ER})} - \text{DM} - \text{LE}_{[RC]}$$

- Sustainable NCF** Sustainable net cash flow of a property.
- DY** The debt yield of a property at each rating category.
- ER** A property's equity requirement.
- DM** A property's deferred maintenance
- LE** Liquidation expense.

Initial Value-Driven Enhancement Levels

The initial value-driven enhancement levels represent the sum of the non-recoverable values of each of the loans at each of the rating categories, divided by the total bond balance. DBRS values are not negative: the cash flow stress test considers the possibility of a negative carry associated with non-cash flow producing properties, but the recoverable liquidation value assumes that, at minimum, the value of the loans will equal their liquidation expenses and, therefore, could be zero but not negative.

Step 2: Bond Cash Flow Stress Tests

DBRS subjects the initial value-driven credit enhancement levels to bond cash flow stress tests, which consider a number of different factors not captured by the value-driven approach:

- The proposed transaction structure (i.e., waterfall, coupons, interest reserves, capital items reserves, fees, PIK ability, etc.).
- The timeline of asset disposal and principal recovery.
- The in-place cash flow (as opposed to the sustainable cash flow of the property).
- The impact of potential future cash flow deterioration.

The test will project future cash flows for each loan on a monthly basis and verify that the proposed structure of the bonds holds up as the model inputs are subjected to increasing levels of stress. The bond cash flow stress test models the waterfall of the transaction projected into the future, including an assessment of the transaction's proposed interest and capital items reserves, administrative and servicing incentive fee structure, proposed PIK ability of the bonds and the coupons that the vehicle will be obligated to pay. If a transaction fails this test, additional subordination will be added to the levels arrived at in Step 1.

Cash Flow Volatility

An important difference from Step 1 is the consideration of actual in-place cash flow for the pool as opposed to the DBRS-estimated sustainable cash flow, which drove the estimates of value in Step 1.

The model ties cash flow volatility to the timing of the loan's resolution. The longer the loan remains in the pool, the greater the stress applied to each asset's in-place cash flow. The stresses applied to cash flow at each rating category are derived from observed volatilities of cash flow across property type, as well as from an evaluation of the cash flow stability at each subject property.⁵

5. *CMBS Rating Methodology*, January 2012.



For non-performing properties, it is often the case that many tenants are not making their rental payments or are paying a reduced rental rate. This is a somewhat recent phenomenon particular to the economic contraction that began in the late 2000s. DBRS more often than not makes punitive assumptions about leases that expire during the estimated carrying time. DBRS performs a rent roll analysis in order to validate its first broad estimations of cash flow volatility. The analysis comprises examining the tenant lease expiration schedules at each property and the tenant rental rates with respect to the market rental rate. The aim is to derive both the best-case and worst-case scenarios of the property's cash flow volatility during and slightly beyond the expected time to liquidation. DBRS uses the conclusions of the rent roll analysis to drive adjustments of each property's estimated cash flow volatility.

In our view, the practical effect of using cash flow volatility estimates that are derived from observations of both performing and non-performing loans provides ample volatility estimates across rating categories for non-performing loans. The potential (and observed) downside volatility in cash flow is often greater for performing loans as the cash flow has further to fall. Non-performing loans tend to already have depressed cash flows with downside that is limited to a minimum possible cash flow reflective of zero revenues minus involuntary expenses and capital items. With this in mind, DBRS may, on a case-by-case basis, reduce the volatility assumption for the cash flow of an already-distressed asset.

In order to test the proposed credit enhancement levels, DBRS projects the individual loan-level cash flow out on a monthly basis until the property reaches its estimated liquidation date. At its estimated liquidation date, the property's initial recoverable value will be realized and applied to the cash flow waterfall.

The individual loan-level cash flows include a projection of the monthly capital expenditures at each property. The estimate of capital expenditures includes TI/LCs and/or other items related to stabilizing the asset and leasing vacant space.

Timeline of Liquidation

An individual loan's carrying time begins with an evaluation of the servicer's intentions and budgetary estimates as laid out in the asset summary. Servicer estimates of carrying time need to be corroborated by the servicer's track record or documented experience in liquidating loans similar to those that are collateral for the NPL LT. The deeper and more documented the servicer's track record is, the greater weight DBRS places on servicer estimates for liquidation time.

These estimates for carrying time are then validated against DBRS empirical data of distressed CMBS collateral, which are summarized in the table below.

Estimates of Carrying Times		
	Base Case	Standard Deviation
Real Estate Owned (REO)	23	9.3
Default	16	9.9
Expedited	14	9.3

DBRS derives time to liquidation using the formula below.

$$\text{Stressed Time to Liquidation} = \text{Base-Case Time} + \sigma\Phi^{-1}(p)$$

Base-Case Time Empirically observed time to liquidation.

Stressed Time to Liquidation The time to liquidation as designated by rating category or scenario run.

σ Observed standard deviation of liquidation time.

p Probability as designated by rating category or scenario run (values range between 0.5 and 1).



Under this methodology, the baseline average time to liquidation is 16 months. The baseline AAA carrying periods can commonly extend beyond 40 months. Baseline estimates are validated by a special servicer's expectations and DBRS loan-level analysis and can often be disregarded altogether when modeling a particular loan.

Investment-grade stress to liquidation time estimates captures the wide range of potential resolution outcomes and unforeseen events (e.g., changes in state law and overburdened court systems). DBRS reviews whether its assumptions for carrying time accurately reflect the present-day realities that loan workouts face and ensures the asset summary corroborates these assumptions.

In the model, a longer liquidation timeline has the following ramifications: the longer the period, the more carrying costs and interest expenses are incurred in the cash flow waterfall; the greater the carrying period, the greater the cash flow decline applied to the monthly cash flow of the asset; and the longer the liquidation time, the greater the stress on recoverable value.

Cash Flow from Liquidations

At the end of the estimated carrying period, DBRS recognizes the cash flow from the liquidation of a given property and applies it to the cash flow waterfall. The liquidation values are calculated using the same process described in Step 1 above, only with randomized probabilities as opposed to set probabilities, based on rating category.

Servicer Fee Structure

DBRS views the alignment of servicer incentives as an essential part of its rating process and the intended operation of the NPL LT. DBRS does not rate transactions that lack a strong incentive for the servicers to liquidate the loans in a timely manner. Balancing the need for rapid liquidation of the loan is the need for enough recoverable proceeds to repay the bond principal and any outstanding interest obligation.

To deter servicers from only focusing on the speed of liquidations and ignoring the maximization recoverable value, DBRS critically reviews the servicer's fee structure to determine if it promotes both quick liquidation and sufficient recoveries for the trust.

Bond Cash Flow Test

The DBRS methodology tests the capital structure for two distinct possibilities: whether the structure can incur a reserve shortfall on any given month before all loans have been liquidated from the trust and whether the structure can incur a loss to rated bond principal, after the final liquidation of collateral.

Example of a Cash Flow Test

On any given month, the estimates for the current-period property-level cash flows are summed and represent the cash flow that is applied to the waterfall. These cash flows are applied to any outstanding capital-items reserve obligations. The beginning balance of the month's reserves equates to the prior month's ending balance or, for the first month, the initial reserves funded at the closing of the trust. Where appropriate, any excess reserve balance over the required existing reserve amount is added to the available cash and released down the waterfall.

The available cash flows are then used to pay the interest due to the rated bonds. Any cash shortfall is cured by the available interest reserve; any excess cash is used to replenish the interest reserve account if necessary. Administrative servicing fees are then removed from the available cash flows in accordance with the contractual obligations. Potential servicer incentive fees are also removed from the available cash flows in accordance with the contractual obligations.

Once all of the loans have left the pool, any outstanding reserves are used to pay down the potential remaining bond balances, after which the remaining bond balances represent a loss to the corresponding bond.



Our discussion in this methodology assumes that the transaction proposal is such that the equity piece of the transaction does not receive proceeds of either interest or principal before all rated bonds are paid down. If a proposal is not of this form, DBRS would need to adapt this methodology or choose not to rate the transaction.

Description of Scenario Analysis

Step 2 is conducted using a dynamic scenario analysis. The scenario analysis allows DBRS to observe the best-case and worst-case outcomes in terms of liquidation time, cash flow degradation and ultimate principal recovery and how these outcomes affect the reserves, waterfall and principal and interest payments to the outstanding bonds. If a transaction fails this test, additional subordination is added to the levels arrived at in Step 1.

Correlation

When times are good, all properties tend to be supported by the market and losses are fewer and less severe. In times of restricted liquidity, tighter lending standards and general risk aversion, nearly all properties have a greater probability of default and severity given default. The fact that property performance is correlated and that the amount of correlation both changes over time and reflects the current economic environment is especially relevant for NPL pools. NPL pools are sensitive to concentrations of cash flow (or negative cash flow), which might break their reserve structure. In addition, these pools are, for the most part, amalgamated from similar sources, serviced by the same people, being liquidated at the same time and facing the same challenging economic environment.

As a starting point, DBRS is comfortable using an expected correlation of 30% for its B rating category scenario.⁶ DBRS elects to increase estimates for correlation depending on the rating category being tested. The correlations that DBRS uses at each of the other rating categories are a collective best conservative estimate. DBRS correlation assumptions aim to make our model capture the worst-case scenarios in terms of the timing and severity inputs. With that goal in mind, DBRS believes that the correlations it uses are adequate (see the table below).

DBRS Correlation Assumptions

Rating Category	Bond Cash Flow Test Correlations
AAA	90%
AA	75%
A	65%
BBB	45%
BBB (low)	40%
BB	33%
B	30%

The key model inputs for which values are correlated by the model are (1) in-place cash flow deterioration, (2) the speed of cash flow deterioration, (3) the time to liquidation and (4) the recoverable value at liquidation. The recoverable value and time to liquidation will be stressed as they are in Step 1, only with randomized probabilities as opposed to probabilities defined by rating category.

Using a Monte Carlo analysis, DBRS examines multiple possible outcomes for each of these four inputs for every loan in the pool. It measures the resulting outcomes against the structure of the bonds and the reserves. If the structure breaks more than permitted by the DBRS Idealized Default Table (see the appendix), DBRS would adjust its ratings accordingly.

6. This estimate is in part informed by the following study: *Loss Characteristics of Commercial Real Estate Loan Portfolios*, a white paper by the staff of the Board of Governors of the Federal Reserve System, Bradford Case, June 2003.



A structure is determined to have “broken” when (1) there is a principal loss to the bond, (2) the reserve balances are negative or (3) there is an interest shortfall to the bond on a bond that is not PIK.

Cash Flow Decline

With each scenario test, a property’s cash flow would be permitted to vary by a random amount downward from its baseline value, according to the downward tail of a normal distribution and assuming a volatility defined by DBRS. Each property’s cash flow decline is assumed to be correlated to a certain degree. The degree of correlation increases across each rating category as described above.

Timing of Cash Flow Decline

Timing always plays a key role in NPL LT cash flow analysis. DBRS assumes that a loan reaches its lowest estimated cash flow after a certain number of months. With each scenario test, the timing of cash flow decline varies randomly between zero and 24 months. As the causes of cash flow declines often reflect the broader market, the estimate of the timing of cash flow decline for any given loan should correlate with the rest of the pool. Additionally, the timing of cash flow decline can be overridden by an analyst to reflect the conservative scenarios of their rent roll analysis.

Liquidation Value

With each scenario test, a loan’s recovered liquidation value would be permitted to vary by a random amount downward from its baseline expected value, according to the downward tail of a normal distribution and assuming volatilities as described in Step 1. The recoverable values of the loans depend on many factors that are often related to each other (e.g., the servicer’s ability, the economy and lending practices). The recoverable values estimated should, therefore, correlate with each other, according the correlation schedule above.

Time to Liquidation

The timing of the liquidation (or carrying time) also has an important impact on the reserves and the bonds. DBRS allows the time to liquidation to vary, depending on the estimate for a property’s expected foreclosure timeline. The actual time to liquidation is often influenced by factors that are shared by all the loans in the pool, such as the abilities of the servicer and the lending/economic environment. Estimates of the time to liquidation, therefore, correlate with each other, according the correlation schedule above.

SURVEILLANCE

DBRS undertakes quarterly reviews of the collateral and bond structure to confirm (or change) the ratings of the bonds. The process of each review follows this methodology. In addition, the ongoing surveillance also measures the performance of the servicer in terms of its liquidation times and recovered liquidation proceeds. Performance in terms of these two metrics is used to recalibrate and reassess the DBRS NPL model to provide more realistic views of the structure’s future performance.

Additionally, the review focuses on the performance of the remaining assets. DBRS expects the collateral-level performance to be much more volatile than regular performing loans and measures whether cash flow may be deteriorating faster than assumed at issuance. It is also possible that cash flow increases at some of the properties. Ongoing loan performance is used to recalibrate and reassess the DBRS NPL model to provide a more realistic view of the future performance of the structure.

Surveillance activities provide a continuous feedback loop to DBRS rating methodologies. Performance metrics revealed in the surveillance process that may affect or challenge the premise of this methodology will be considered and evaluated in a timely manner.



Discussion

IMPACTFUL MODEL DRIVERS

In-Place Cash Flow

NPL LTs naturally contain distressed collateral that has severely compromised or even negative in-place cash flow. This is why the distressed in-place cash flow often ends up being the constraining factor when determining the transaction's subordination levels. Consequently, a pool with a mix of collateral in terms of performance can be expected to fare better than a pool with collateral that has little or negative in-place cash flow.

Value Estimates

Value estimates play a key role in determining the initial credit enhancement levels in Step 1 and the ability of the collateral to pay the coupon and principal obligations of the bonds in Steps 2.

Reserves

In the absence of interest reserves that cover the coupon obligations of the most senior bond in the waterfall for its entire expected life, DBRS does not provide AAA ratings.

In the absence of reserves robust enough to cover the coupon obligations of the bonds in the waterfall under DBRS cash flow, liquidation time and recoverable value assumptions, the transaction does not pass Step 2 of the rating process and DBRS adds additional credit enhancement until the cash flow scenarios do pass.

Consequently, robust reserves are a good way of ensuring that additional credit enhancement is not added after Step 2 of the rating process.

Pool Concentration

Diversification of a pool has an impact on Step 2 of the rating process. DBRS does not give diversity credit when creating the initial value-driven credit enhancement levels. However, a more concentrated pool will have greater difficulty of passing the cash flow tests.

OTHER IMPORTANT CONSIDERATIONS

Borrower Behavior

The relationship that the special servicer has with the borrower, the attitude of the borrower, the level of cooperation and the level of litigation can play an important role in driving multiple model inputs. DBRS gives credit to well-documented communications with the borrower that support a given resolution strategy. Where the relationship is less well documented, DBRS generally assumes the more conservative resolution strategies in terms of liquidation time and recoverable value.

PIK Bonds

DBRS considers whether a particular bond can be rated if it has a PIK structure on a case-by-case basis. Under this methodology, DBRS does not rate a PIK bond AA or above.

Floating-Rate Bond Coupons

Floating-rate bonds are stressed according to the DBRS unified interest-rate model methodology.⁷ These stresses have a direct impact on Step 2 of the rating process, which tests a transaction's ability to pay the coupon owed to investors.

7. See *Unified Interest Rate Model for U.S. RMBS Transactions*, October 2011.



Floating-Rate Collateral

Loans that have floating rates have their rates factored into the analysis only if they are performing loans. Performing loans generally contribute a stressed floating-rate debt service to the waterfall if the bond coupons are also floating and the effects of the rate stress are not beneficial to the transaction.

Performing Loans

In Step 1, performing loans included in an NPL pool are sized under the DBRS *CMBS Rating Methodology* where appropriate. In Step 2, performing loans are also subject to a property-level cash flow stress; therefore, the less of the contractual debt service or the property's stressed cash flow is contributed to the waterfall's monthly cash flow. In these two ways, performing loans that are included in NPL pools may enhance the results of Step 1 and may also contribute to the cash flow of the trust collateral and the results of Step 2.

Unconventional Asset Types

For assets for which DBRS does not have the ability to form opinions about key assumptions of time to liquidation and recoverable value because of a lack of well-supported historical and current empirical data, no value may be assigned.

Subordinate Notes, Mezzanine Debt and Equity

DBRS does not give credit to any type of non-performing obligation outside of first-lien debt on the collateral property.

Special Servicer Incentives

The entity ultimately responsible for the liquidation of the assets is expected to act in the best interests of all of the bond holders and in accordance with the industry's servicing standard. DBRS considers the incentives of the special servicer closely when determining whether the structure can achieve a rating. When the special servicer is not independent of the issuer, DBRS considers whether the special servicer is properly incentivized to act in the interest of the more senior bonds in the transaction. When the special servicer is independent of the issuer, DBRS considers whether the special servicer is properly incentivized to liquidate the loans in a manner that balances the need for timeliness with the need to achieve the highest possible recovery.

Environmental Risk

Environmental contamination at a property can be expensive to remedy and when discovered, it can completely erode the property value in addition to causing liability issues. DBRS anticipates that the environmental risk is mitigated to the best extent possible by the trust's mortgage loan seller if the following are in place:

- Original environmental reports from the loan's origination in conjunction with updated servicer property inspections:
- If there has been no change in use, DBRS can gain a certain level of comfort surrounding environmental risk.
- If there has been damage at the property, as reported in the property inspection report, an update may be required.
- The mortgage loan seller has hired a due diligence firm that has updated the environmental report and provided an overall assessment of the property. There also may be some reliance on due diligence performed by the servicer that was originally handling the defaulted loan file if updated reports were mandated and received.
- The mortgage loan seller may choose to purchase an environmental insurance policy for the trust. DBRS reviews the policy to determine the level of coverage provided for in the insurance policy.
- The mortgage loan seller may choose to cover any costs associated with environmental defects within its representations and warranties.
- If none of the above are available as options to mitigate the environmental risk associated with the loans in the LT, DBRS takes that into account in its ratings of the pool. Absent sufficient coverage of this risk, the highest ratings are difficult to achieve.



Appendix: DBRS Idealized Default Table

Rating	1	2	3	4	5	6	7	8	9	10
AAA	0.0110%	0.0264%	0.0460%	0.0699%	0.0987%	0.1330%	0.1736%	0.2212%	0.2765%	0.3405%
AA (high)	0.0161%	0.0390%	0.0691%	0.1071%	0.1539%	0.2107%	0.2784%	0.3580%	0.4501%	0.5554%
AA	0.0212%	0.0517%	0.0922%	0.1442%	0.2091%	0.2883%	0.3832%	0.4948%	0.6237%	0.7703%
AA (low)	0.0281%	0.0709%	0.1297%	0.2055%	0.2994%	0.4123%	0.5445%	0.6962%	0.8672%	1.0571%
A (high)	0.0419%	0.1095%	0.2045%	0.3280%	0.4801%	0.6602%	0.8671%	1.0991%	1.3543%	1.6306%
A	0.0487%	0.1287%	0.2419%	0.3893%	0.5704%	0.7841%	1.0283%	1.3005%	1.5978%	1.9173%
A (low)	0.0945%	0.2420%	0.4391%	0.6815%	0.9643%	1.2825%	1.6309%	2.0045%	2.3990%	2.8101%
BBB (high)	0.1860%	0.4685%	0.8333%	1.2659%	1.7521%	2.2792%	2.8359%	3.4126%	4.0013%	4.5956%
BBB	0.2318%	0.5818%	1.0305%	1.5581%	2.1460%	2.7776%	3.4384%	4.1166%	4.8024%	5.4884%
BBB (low)	0.3732%	0.8912%	1.5142%	2.2099%	2.9528%	3.7230%	4.5053%	5.2884%	6.0636%	6.8252%
BB (high)	1.0800%	2.4384%	3.9327%	5.4686%	6.9863%	8.4500%	9.8400%	11.1473%	12.3697%	13.5091%
BB	1.3627%	3.0573%	4.9001%	6.7721%	8.5997%	10.3408%	11.9738%	13.4908%	14.8921%	16.1826%
BB (low)	2.2346%	4.7297%	7.2541%	9.6836%	11.9572%	14.0507%	15.9604%	17.6938%	19.2641%	20.6863%
B (high)	3.6297%	7.4056%	11.0204%	14.3419%	17.3292%	19.9866%	22.3389%	24.4186%	26.2592%	27.8922%
B	4.8503%	9.7471%	14.3160%	18.4179%	22.0296%	25.1805%	27.9201%	30.3028%	32.3799%	34.1974%
B (low)	10.0776%	17.6609%	23.5135%	28.1371%	31.8670%	34.9314%	37.4891%	39.6528%	41.5044%	43.1047%
CCC (high)	18.7898%	30.8505%	38.8426%	44.3357%	48.2625%	51.1831%	53.4376%	55.2363%	56.7119%	57.9502%
CCC	22.2746%	36.1264%	44.9743%	50.8151%	54.8208%	57.6837%	59.8169%	61.4696%	62.7949%	63.8884%
CCC (low)	61.1373%	68.0632%	72.4872%	75.4076%	77.4104%	78.8419%	79.9085%	80.7348%	81.3974%	81.9442%
C	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%	100.0000%

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