



Methodology

Cash Flow Assumptions for Corporate Credit Securitizations

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Insight beyond the rating.

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Introduction

This publication outlines the revised DBRS cash flow assumptions for rating Collateralized Loan Obligations (“CLOs”) and Collateralized Debt Obligations (“CDOs”) backed by other corporate debt. The rating process outlined herein represents an update to the description of cash flow modeling procedures in the following methodologies: “Rating Global High-Yield Loan Securitizations, Structured Loans and Tranched Credit Derivatives” and “Rating Canadian Structured Credit Transactions”.

This methodology describes the basic quantitative framework of DBRS’s analysis for securitizations backed by corporate debt. The approach covered by this publication would apply to securitizations backed by both cash and synthetic corporate obligations, including loans to small and medium enterprises (“SMEs”). It would be applicable to securitizations globally. This methodology does not cover securitizations where the underlying assets are primarily other securitizations. Actual ratings assigned are determined by a rating committee, and will reflect a combination of both quantitative and qualitative considerations.

Certain proposed portfolios and structures presented to DBRS may contain risk characteristics not contemplated by this framework. These methodologies will be supplemented by appropriate analytical judgments, deterministic overlays, and sensitivity scenarios where such exogenous risks are identified and deemed to fall outside of the scope of this methodology. Any material differences that cause such deviation will be discussed in the transaction-specific commentary accompanying the rating action.

In addition, DBRS remains committed to ongoing monitoring of the market in conjunction with these methodologies. Assumptions in these methodologies will be updated from time to time, and any updates will be published.

This framework is applied in conjunction with a number of other DBRS publications, including:

- “Rating Methodology for CLOs and CDOs of Large Corporate Credits”;
- “Legal Criteria for European Structured Finance Transactions”;
- “Legal Criteria for Canadian Structured Finance”;
- “Legal Criteria for U.S. Structured Finance Transactions”;
- “Swap Criteria for European Structured Finance Transactions”;
- “Swap Criteria for Canadian Structured Finance Transactions”;
- “Master European Structured Finance Surveillance Methodology”;
- “Canadian Surveillance Methodology for CDOs of Large Corporate Credits”;
- “Mapping Financial Institution Internal Ratings to DBRS Ratings for Structured Credit Transactions”;
- Unified Interest Rate Model for U.S. and European Structured Credit; and
- “Rating U.S. and European Structured Finance CDO Restructurings”.

APPLICATION OF METHODOLOGY

The following diagram describes the process used to analyze a CLO or Corporate CDO transaction:

(1) DBRS uses either a Monte Carlo model or its DBRS Large Pool Model (depending on deal type) in order to determine a ratings-based lifetime pool default rate (the “Stressed Default Rate”) that can be equated with a certain credit rating, based on factors such as the credit quality, diversification and term to maturity of the underlying obligors. The model will output a level of cumulative default stress appropriate for each rating category.

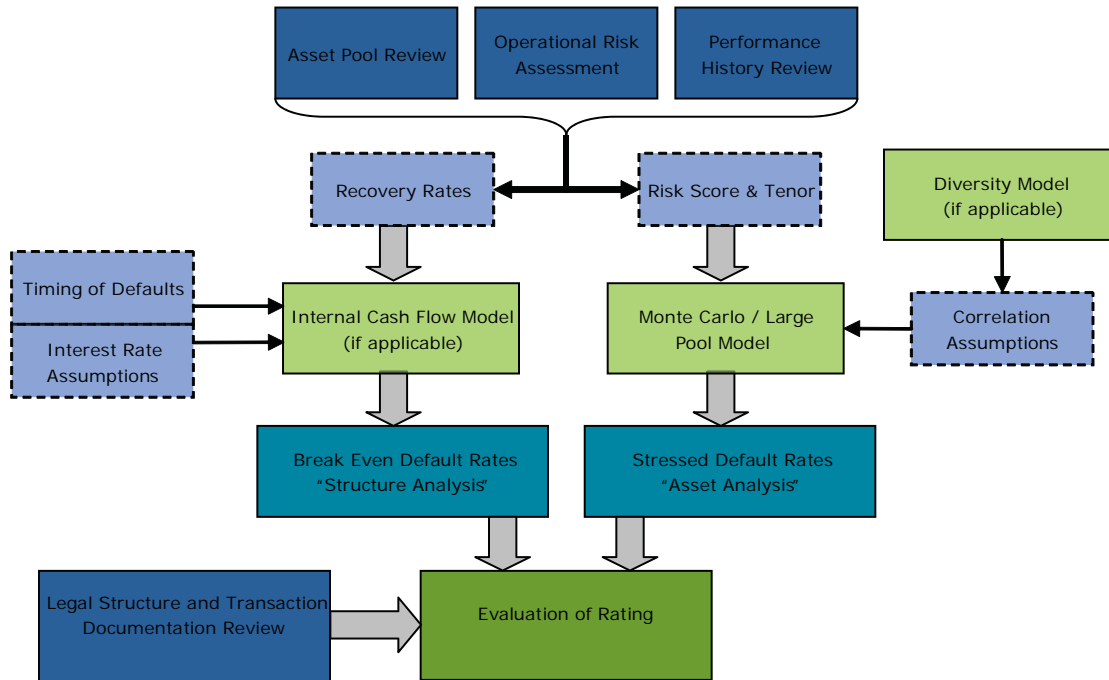
(2) DBRS will perform cash flow analysis in a proprietary internal cash flow model by incorporating assumptions regarding principal amortization, amount of interest generated, timing of defaults and movement in interest rates, as well as other considerations. DBRS assigns ratings based on a comparison of cash flow results to the output from the default probability model. The output of the internal cash flow model will henceforth be



referred to as the “Break-Even Default Rate”. Note that this step only applies to cash flow transactions where waterfall mechanisms materially affect credit support and hence the probability of a class of notes receiving full repayment of principal and interest. Purely synthetic transactions would not require a cash flow model.

(3) DBRS reviews legal aspects of the transaction in order to identify legal risks inherent in the transaction, and to ensure compliance with DBRS legal criteria.

DBRS Rating Process for Corporate Credit Securitizations



Note: Boxes surrounded by dotted lines represent inputs into the various models.

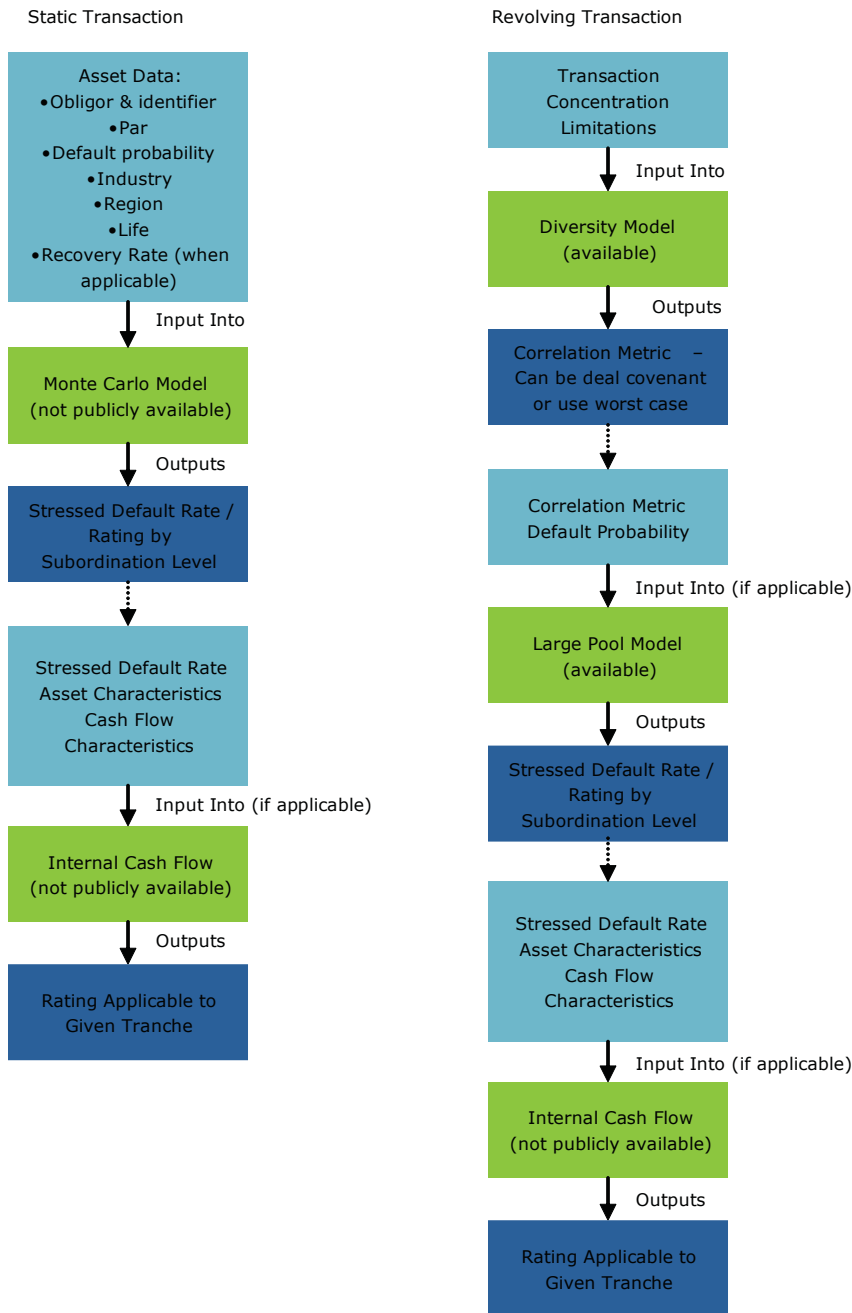
DBRS MODELS USED

DBRS used a variety of proprietary models in the analysis of CLOs and corporate CDOs. The four major models driving this process are: (i) the DBRS Diversity Model, (ii) the DBRS Large Pool Model, (iii) the DBRS CDO Monte Carlo model and (iv) the DBRS internal cash flow model. The cash flow model and the Monte Carlo model are internal models, while the DBRS Diversity Model and the DBRS Large Pool Model can be found on the DBRS website.

The chart below outlines the general points at which each of the models would be used in different transaction types. The operative concept is that portfolio default hurdles derived from asset analysis are compared to Break-Even Default Rates. In general, the CDO Monte Carlo model will be used for static transactions, whereas the Diversity Model and Large Pool Model will be used for revolving transactions. The internal cash flow model will be used for transactions of either type, to the extent that cash flow mechanics in the transaction provide additional support beyond subordination.



DBRS Models Used for Corporate Credit Securitizations



Overview

DBRS rating methodologies applies a first dollar loss analysis, comparing the Break-Even Default Rate to the Stressed Default Rate based on the composition of the asset pool. The asset pool analysis was described at length in “Rating Methodology for CLOs and CDOs of Large Corporate Credits.” For assets where the structure provides credit enhancement in addition to that provided by subordination (for example, by allowing for the diversion of excess spread), or in vehicles with certain other characteristics (such as the possibility of principal leaking out of the structure to subordinated interest), DBRS will perform a cash flow model analysis to determine the Break-Even Default Rate for each tranche where a rating is requested. The default percentage derived



has as its numerator the notional of assets that defaulted (less a tolerance level) when the tranche first experienced a principal loss (or a deferral of interest, in the case of tranches for which this is not permitted under the transaction documents), and has as its denominator the notional of performing assets.

Chapter 1 – Analysis Overview

For each tranche that DBRS is requested to rate (other than transactions rated in Canada), a minimum of nine scenarios are run. These represent all possible combinations of the three default timings previously discussed (Front-Loaded, Back-Loaded and Smooth), as well as the three interest rate scenarios (Forward, Up and Down in the case of non-Canadian transactions, and deal-specific rates for transactions rated in Canada).

If the tentative rating is AAA, then the lowest Break-Even Default Rate generated from these scenarios (or any additional runs that are driven by specific aspects of the deal) will be treated as the Break-Even Default Rate for the given tranche. For tranches seeking a AA (high) (sf) rating or lower, the average of the scenarios run is used. However, if a wide disparity exists in the rates derived from various stress scenarios for those tranches rated below AAA (sf), DBRS may ignore higher scenarios in determining the average.

If a deal uses a matrix for some or all of its covenants, then all points on the grid will be run. Similarly, if the deal has buckets, the use or non-use of which could affect the breakevens (for example, fixed rate assets in a deal with floating liabilities), the deal may be run assuming that bucket is both fully utilized and empty. For modeling purposes, each configuration will be considered its own deal and all such configurations must pass independently, without averaging across the various points.

Any additional runs driven by aspects of the deal portfolio would be discussed in the rating action commentary, if applicable. A three or more notch rating difference from the rating resulting from the application of the DBRS CDO cash flow model would be defined as a material deviation.

Chapter 2 – Collateral Cash Flow Stresses

DEFAULT AND RECOVERY ANALYSIS

Default timing

Cumulative collateral default rates are applied based on the following timing patterns. For each of the below scenarios, defaults are assumed to occur evenly throughout the year, at the beginning of each payment period, for each applicable deal payment period. The required default timing scenarios are as follows:

Front-Loaded

- 40% in year 1 (starting in period 2)
- 30% in year 2
- 20% in year 3
- 10% in year 4

Back-Loaded

- 20% in year 1 (starting in period 2)
- 30% in year 2
- 40% in year 3
- 10% in year 4

Smooth

- 30% in year 1 (starting in period 2)
- 30% in year 2
- 30% in year 3
- 10% in year 4



In some instances, DBRS may adjust these stresses or run additional stresses. Adjustments or additions could be made for transactions with either extremely long or extremely short maturity profiles, or the starting period could be adjusted for an extremely long or short first period. Additional stresses may also be run for portfolios with a significant barbell of maturities – i.e. some quite short and some quite long – or for deals that are highly concentrated and may be more subject to spiked defaults. Certain structural features which could materially affect the timing of cash flows may also trigger additional timing stresses. DBRS will determine appropriate default patterns on a case-by-case basis for these types of transactions.

Assets defaulted are assumed to do so at the beginning of the period and to earn no interest for the period in which the default occurs.

Defaults in Skewed Portfolios

In addition to running additional stresses for the reasons described above, DBRS may also do so for asset pools that are not homogeneous. Such pools could include not just pools with skewed maturity profiles or certain large concentrations, but also pools where there is significant disparity in credit quality. To the extent that weighted averages of any metric do not adequately reflect the true risk of the pools, DBRS could run certain pools separately and/or add additional stresses to attempt to capture this.

Recovery Timing

DBRS lags recovery timings to reflect the likely delay in realizing proceeds from any asset upon default. Timing for recoveries and recovery lag on defaulted assets is tiered by region. Please refer to “Rating Methodology for CLOs and other CDOs of Large Corporate Credits” for tables of recovery rates and lag timing used by asset type and country tier.

INTEREST RATE STRESSES

DBRS runs a series of interest curves to test the sensitivity of the structure to interest rate volatility. These curves generally include the applicable forward curve, as well as upward and downward stresses. Curves are generally generated within certain rating ranges, and are applied according to the desired rating of the tranches. Tranches seeking a AAA rating will have greater gains in interest rates in the “Up” scenario and generally a steeper drop in the “Down” scenario, although this number is usually floored at a minimum of 10bps.

ASSET TYPES RECEIVING ALTERNATE TREATMENT

Treatment of Defaulted and Distressed Assets

When rating a vehicle that has existing non-performing assets, either in the form of assets that are defaulted or deferring interest, DBRS will separate these from the performing par. They will not be counted towards the denominator or the cumulative default achieved. They will be carried in the model for coverage test purposes according to the requirements of the deal documents. The assets will be assumed to recover at a lag measured from the time of the transaction rating and at the recovery rate applicable for the level of seniority, country tier and desired liability rating level.

Structured Finance Assets

The analysis of structured finance assets held in a CLO or corporate CDO is a look-through based upon the DBRS methodology for the relevant asset class. Because these assets have materially different characteristics from the underlying corporate pool, such assets would be analyzed separately from the corporate portion of the pool, and the results of the analysis will be aggregated with the corporate results prior to cash flow modeling. A discussion of non-corporate assets and the analysis thereof will be included in any commentary related to the issuance of a



DBRS rating. Please refer to “Rating US & European Structured Finance CDO Restructurings” for further discussion of the DBRS approach to securitizations of other securitizations.

Long-Dated Assets

To the extent that a deal has the ability to hold assets that mature beyond the legal final maturity of the vehicle, DBRS will generally assume that these assets are liquidated at maturity. This liquidation will be assumed to take place at an appropriate stress level as determined by DBRS.

Equity Securities and Instruments that are Convertible, Exchangeable or Have Attached Warrants

DBRS gives no credit to equity securities or to securities that may become equity. Warrants attached to any debt security would be similarly disregarded. In general, DBRS would expect to see a prohibition on the purchasing of such assets with principal cash and limitations on the purchase of such assets with interest. Any proceeds that could be used to purchase non-debt portions of such assets or assets convertible into non-debt instruments would be disregarded for the purpose of determining credit enhancement.

Assets Experiencing Extended Delinquency

Even in situations where an issuer has not technically defaulted, DBRS may consider the asset as defaulted for modeling purposes if it has been delinquent for a significant period of time. In general, any asset that has delayed any scheduled payment for a year or longer – even if not technically in default – will be treated as defaulted for modeling purposes. Furthermore, any asset that has defaulted on a scheduled payment – irrespective of waiver of such default – will be considered defaulted for modeling purposes.

Chapter 3 – Deal-Specific Structures

Priority of Payments

DBRS reviews all deal waterfalls as described in the operative documents of the transaction. The internal cash flow models have the ability to model deals with either a single, combined waterfall, or with separate waterfalls for principal and interest. DBRS will also take into account alternate waterfalls that may be in use in the case of engagement of the enforcement mechanisms, or waterfalls that may differ during ramp-up, reinvestment or amortization periods.

Fees and Expenses

All fees that may lessen amounts available to the rated tranches are modeled. For deals with a cap on senior expenses, fees are modeled at the cap level. Taxes are not currently modeled, but this could be reconsidered if there were taxation regime changes in a region where obligors of underlying collateral are domiciled. In certain European SME deals, fees and expenses are uncapped senior in the waterfall. To the extent that these are not covered by the asset swap of the deal, DBRS would stress the cash flows and describe in any commentary the circumstances under which increased fees could cause a deterioration of the rating. Any uncapped, unpaid fees that occur at the bottom of the waterfall are assumed to use up all remaining cash flow from that point forward, and steps lower in the waterfall are assumed to remain unpaid.

Cash Diversion Mechanisms

DBRS models all coverage tests and similar mechanisms as per the transaction documents. The legal review will



examine applicable haircuts and waterfall placement. For new issue deals, haircuts are not assumed to apply, as no buckets should be in breach at the effective date. To the extent that DBRS is assigning a rating to an existing deal, haircuts that would be applicable will be reviewed and may be modeled, as appropriate. For Principal Deficiency Ledgers or Cumulative Default triggers that subordinate mezzanine note interest, DBRS will review the terms at which the former is debited and credited or the latter is triggered (i.e. timing at which an asset is considered defaulted) and will incorporate this into the modeling.

Reinvestment of Excess Spread or Recoveries

Reinvestment diversion or interest reinvestment tests are modeled to the extent that they are above all uncapped fees. Cash reinvested in additional collateral as a result of failure of this test is assumed to default at the applicable default rate being run 18 months from the time of its investment, but is not counted toward the numerator of the Break-Even Default Rate. To the extent that deals permit for the reinvestment of recoveries when overcollateralization tests are failing, assets resulting from these reinvestments would be treated in the same manner.

Portfolio Cash Flows and Covenants

Given the ability of the manager to trade, DBRS will generally model a deal still in its reinvestment period to its covenants. This will include, but not be limited to, using the maximum possible weighted average life, and the minimum possible coupon and spread. An existing deal may be modeled to start at the current spread and coupon; all reinvestments in both new issue and existing deals will be assumed to take place at the minimum possible weighted average spread and coupon. To the extent that there is an interest rate mismatch in an existing or revolving deal, DBRS will model both ends of the bucket for a possible coupon type mismatch.

DBRS will rate to the target par amount as stated in the governing documents, or such lower amount as is currently held in an existing deal. In general for an existing deal, principal cash is assumed to be reinvested in collateral of the same seniority as the current pool and at the weighted average recovery rate.

If a deal is static, DBRS may use the existing portfolio spread and coupon, although will carefully review any capacity that the manager may have for post-reinvestment period reinvesting or replacement to deteriorate the pool. DBRS may also assume a decrease of portfolio spread and/or coupon over time to the covenant level, even in static deals.

Portfolio weighted average life for revolving deals is assumed to be equal to the weighted average life covenant at the end of the reinvestment period, plus the length of the reinvestment period. In general, no amortization or prepayment is modeled to take place during the reinvestment period, on the assumption that the manager will reinvest any scheduled or unscheduled principal payments in additional collateral prior to the following payment date. For deals that are static or beyond their reinvestment period, DBRS will use the amortization schedule as derived from trustee files, but may add additional stress to the extent that there is evidence of portfolio manager actions, including voting for asset extension, that may increase the life.

Eligible Investments

DBRS generally assumes that cash held within the deal, such as that in reserve or amortization accounts, accrues interest at the rate of the dominant index in the transaction, less 25bps. This may be adjusted according to market conditions. DBRS usually does not assume accruals in interest or principal cash flows received by the deal intra-period.

Reserve Accounts

DBRS has observed a number of different reserve account types in the transactions that it has rated. Depending upon the nature of the account, it may either be directed into the waterfall (interest, principal or



combined) on each payment date, or may be held on an ongoing basis for the purpose of supporting a class or classes of notes. Reserve accounts solely for the purpose of addressing timing mismatches are generally not modeled. Accounts where the manager has discretion over the amounts to be deposited are usually assumed not to be used. In general, reserve accounts are assumed to earn cash at the cash reinvestment rate, and these amounts are treated as interest proceeds. Reserve accounts are assumed to be available for the waterfall upon deal maturity or liquidation, allocated according to the transaction documents.

Pro Rata Payment Structures

For certain deals, there is the capacity for certain tranches to pay down pro rata until a minimum amount of collateral remains or a threshold trigger – often overcollateralization-based – is breached. DBRS will review transaction documents and will generally model senior tranches assuming that pro rata pay down occurs for as long as permissible there under. To the extent that there are additional triggers that may be outside the modeled cash flows that would trigger a shutoff of cash flow to lower portions of the waterfall, DBRS may model more junior tranches assuming that pro rata payments are ended earlier.

DBRS has observed in certain deals provisions that provide for certain tranches to be pro rata until certain triggers are hit. This could include making otherwise senior tranches pro rata with the junior tranches upon an overcollateralization deterioration. In this case, DBRS will generally model the lower tranche assuming sequential pay for the life of the deal – to stress that it is possible that the sequentially senior tranche may be paid off prior to defaults accruing to the requisite level – but may assign the ratings of both tranches based on the lower sequential breakeven, since the potential for the tranches to be pro rata remains throughout the deal. Given the nature of the breakeven analysis, the results for the sequentially subordinated tranche assuming sequential pay and for the pro rata breakeven between the two should be materially similar.

Some of these deals may also permit that mezzanine notes may be pro rata with the senior classes once they have reached a certain proportion of the deal, providing that delinquencies are below certain trigger levels and a minimum amount of collateral remains. DBRS generally does not model these provisions, using the logic that the default stresses being run would in general equate to delinquencies significantly in excess of the maximum allowed to permit pro rata payment to the mezzanine classes. To the extent that triggers to shut off pro rata do not incorporate cumulative default or loss concepts, DBRS will assume the most conservative scenario. DBRS may also apply additional timing default stresses to these deals to stress the pro rata payment features.

Variable Funding and Delayed Draw Instruments

DBRS generally assumes full funding of revolving and delayed draw liabilities and assets. The fully-funded assumption on the side of the liabilities maximizes leverage assumed in the deal and hence structural stress. The same assumption made with regards to the assets puts the full notional of the asset at risk of default, on the assumption that a distressed issuer would make every effort to pull on all sources of liquidity prior to default. To the extent that a vehicle had large allowances for revolving or delayed draw assets, however, and these are treated as funded for interest coverage or average spread tests, DBRS may conduct additional interest spread stresses to account for the possibility of an interest shortfall.

Overcollateralization-Based Events of Default

To the extent that a deal contains an event of default based upon a collateral coverage ratio, DBRS will review the potential for the default to be triggered and may adjust mezzanine ratings downward accordingly. Among the factors to be considered may include the level of haircuts used in calculating the numerator (i.e. deep discount,



CCC excess, etc.), as well as the notes covered by the denominator and the level at which the test is set. Should it appear that the event of default could be triggered at a point when there is still the potential for value to the mezzanine notes, DBRS may assume that the breakeven would be lowered.

Hedges

DBRS models any interest rate hedges or asset swaps in a deal according to the underlying transaction documents. A variety of interest rate stress scenarios test the ability of the deal to withstand movements in interest rates. Mismatches in currencies that are not asset-swapped with a counterparty meeting DBRS criteria would be subject to additional stresses.

Chapter 4 – Rating Interest Rate Swap Payments

For deals that contain interest rate swaps, DBRS is able to provide ratings on the ability of the CDO to ultimately make all potential payments, including termination payments, to the counterparty on or prior to the legal final maturity date of the transaction.. When rating interest rate swaps, DBRS assesses the ability of the vehicle to either make timely payments for the life of the swap or its capacity to make the swap termination payment to the counterparty at the point of termination of the swap, which is assumed to be the point at which the vehicle defaults on the swap due to its failure to pay periodic amounts owed. In general, DBRS does not assess the ability of the vehicle to make timely payments under such a swap.

When rating interest rate swaps payments, DBRS assesses the Stressed Default Rates and recovery rates for the underlying pool, as described in previous sections. A cash flow analysis is then performed to assess the risk that a termination of the swap would occur under a given default scenario and whether the deal would be able to repay the termination payment owed on or prior to the legal final maturity of the transaction. The same default timings and interest rate curves are applied as for rating notes issued by the same transaction.

In order to calculate the termination payment owed, the mark-to-market of the swap is calculated for each payment period based on the remaining cash flows owed. DBRS also assumes accrual of default interest from the period of termination. The spread assumed on this payment is further varied by target rating, as the rate is often not explicitly stated in the transaction documents (Please see Appendix A, Table 1 for these factors).

Appendix A: Table Relating to Interest Rate Swap Payments

Table 1: Swap Termination Payment Assumptions

Rating Class Evaluated	Penalty Spread Assumption
AAA (sf)	10.00%
AA (sf)	8.00%
A (sf)	6.00%
BBB (sf)	4.00%
BB & Below (sf)	2.50%

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