



Methodology

*Rating European Covered Bonds*

OCTOBER 2011



*Insight beyond the rating.*

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- Legal Criteria for European Structured Finance Transactions and Addenda
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This methodology replaces and supersedes all related prior methodologies. This methodology may be replaced or amended from time to time and, therefore, DBRS recommends that readers consult [www.dbrs.com](http://www.dbrs.com) for the latest version of its methodologies.



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# Rating European Covered Bonds

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## Introduction

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The purpose of this report is to describe DBRS criteria for rating all types of Covered Bonds (CBs) whether issued under country-specific CB legislation or outside. This report is an update to the methodology published in August 2011 to include rating specific market spread values to calculate liquidation values on the Cover Pool (CP), and the updated DBRS idealised default table<sup>1</sup>.

The notion that CBs are essentially senior secured bank debt lies at the heart of DBRS credit risk assessment and therefore DBRS rating methodology for CBs follows a “linked approach”. These instruments are issued by regulated banking entities – or specialised funding institutions – and for those institutions, CBs are a cost-efficient alternative to traditional bank debt. In the case of an issuer default, CBs are designed to offer CB holders a preferential claim on the CP and a residual claim on the issuing bank’s insolvency estate. Not only do the CB holders ultimately benefit therefore, from the same degree of protection as senior unsecured debt holders, but they also enjoy additional protections that minimise the probability of default (PD) of these debt instruments and provide investors with enhanced security.

These protections include the following:

1. The high quality of the collateral assets or CP usually supporting the CBs, as well as the benefit of conservative legally or internally defined rules relating to the origination and servicing of the CP, asset and liability management constraints (ALM), liquidity provisions, market risk mitigants, restrictions governing asset substitution, mechanisms for replacement of transaction parties upon breach of rating thresholds, contingency action plans, etc.
2. A privileged treatment in case of default, insolvency or liquidation of the issuing entity (or its supporting parent bank), which aims at enhancing the remoteness of default of the CB.

Based on these credit protections, DBRS estimates that, in most cases, the default probability of CBs is lower than the default probability of an issuer’s senior debt (as expressed by the issuer’s long-term rating).

Despite the fact that the default probability of CBs is generally lower than that of the issuer’s other debts, the credit risk of the CBs is to a degree always linked to the financial condition of the issuer. When CBs are issued through a separate entity of a banking group, this link may be somewhat reduced, but even in this case, financial and operational links will almost always persist between a CB issuance and the rest of the issuer’s operations. These links include the criteria adopted by the issuer to originate CP assets, the servicing of the CP and the ALM. As such, DBRS evaluates the level of segregation between the CP and the rest of the bank’s operations and the manner in which this segregation may impact the credit protections afforded to CB holders (in particular in a default scenario of the entity supporting a CB programme).

DBRS also takes into consideration any additional structural protections (e.g., the use of replacement mechanisms for transaction parties, contingency action plans, increase in overcollateralisation levels (OC) to mitigate collateral and other quantifiable risks) and evaluates if and when the issuer has the willingness and the capacity to add such protections.

Finally, DBRS assesses the systemic importance of CBs in any given market and the willingness and ability of a sovereign to support weakened banking institutions issuing or supporting CB programmes as well as a central bank’s direct support of a CB programme. In DBRS opinion, CB ratings may exceed to a varying degree the sovereign rating of the jurisdiction where the CB transaction is registered. The magnitude of the gap between the sovereign and the CB rating is assessed by jurisdiction and transaction without a fixed number of notches applied. Because of the regulators’ involvement in CB markets and in some cases

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1. See Appendix A



the systemic support benefiting this instrument, the maximum level by which CB ratings might exceed the IR tends to decline as the support mechanisms of covered bond legislation weakens and as the sovereign migrates down the rating scale.

DBRS recognises that CB legislation is written to supersede bankruptcy and insolvency laws within a jurisdiction. The CB legislation gives CB holders a special privilege over the assets of a CP which take preference over claims of any other creditor in the case of issuer insolvency. DBRS expects this privilege of the CB holders to endure in situations where regulators may intervene in financial markets to promote financial stability, as was recently seen in Ireland with the Credit Institutions (Stabilisation) Act 2010, which did not affect the Asset Covered Securities Act 2001.

DBRS CB ratings are composed of three building blocks. The concept behind the three building blocks is to assign a rating to a CB issuance in a step by step process by first determining the Maximum Achievable Rating for a CB programme based on the IR and LSF; once the Maximum Achievable Rating is determined, DBRS can then assign a rating to the CB issuance based on a Cover Pool Credit Assessment and programme OC levels. The three building blocks are:

1. The rating of the issuer (Issuer Rating or IR, taking into consideration the Intrinsic Assessment component (IA)).<sup>2</sup>
2. The assessment of the Legal and Structuring Framework (LSF). This involves the evaluation of the level of “de-correlation” which may exist between the credit risk of the issuer and those of the CBs and related CP through the legislation under which the CB are issued and through structural features put in place by the issuer. This assessment encompasses an in-depth review of both the legislation that supports a CB issuance and any additional contractual dispositions. This LSF gives an indication of the level of additional credit protection for CB investors provided by the CP through the legal and structuring features. DBRS opinion on the LSF is classified into four categories: Very Strong, Strong, Adequate and Modest.
3. The credit assessment of the CP, which includes the credit quality and management of the CP. DBRS transaction modeling consists of a credit analysis (default and loss severity assumptions applied to a proposed CP) and a cash flow analysis. This approach is similar to those routinely used for rating residential or commercial mortgage-backed securities or pools of securitised public finance assets amongst others. This ensures consistency in the evaluation of the intrinsic credit risk of the CP, irrespective of the nature of the overlying debt obligation. Because of the dynamic nature of CPs, where new assets can be regularly added or substituted with old ones, DBRS models the changes to the CPs of rated transactions on a regular basis, either at the time of substitution or through the periodic surveillance of the CB ratings assigned.

### *Legal and Structuring Framework Matrices*

These matrices indicate the manner in which the three building blocks – IR, LSF, and CP – are combined to obtain a final CB rating and also indicate the evolution of the CB rating as a function of each of the three building blocks. The matrices are created to estimate the rating for a CB based on the IR (probability of default), the Cover Pool Credit Assessment, a correlation assumption, and a probability assumption the CP will not be available for the CB repayment in the event of an issuer’s insolvency<sup>3</sup>.

There are two main characteristics of the matrices:

1. CB ratings can be above an IR and the CP Credit Assessment.

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2. Because of the strong link between a CB issuer (or the supporting entity) with its CB programme, DBRS believes that when an IR (or that of the supporting entity) is placed “Under Review” with Positive, Developing or Negative Implications, the corresponding CB ratings will also be placed “Under Review” with the same directional designation.

3. See Appendix B1 for Covered Bond Default Probability.



2. CB ratings always remain linked to the IR in any LSF. As a result, CB ratings may not be maintained at “AAA” past a certain IR, even in a Very Strong LSF.

DBRS considers that the analysis of an issuer default scenario must take account of the broad scope of financial and non-financial commitments borne by an issuer or the subsequent replacement transaction parties. Therefore, DBRS reviews and values in the assignment of a LSF grade all transaction parties’ replacement mechanisms and contingency action plans activated ahead or subsequent to an issuer default or extreme financial stress. By combining an LSF with the IR, DBRS can determine a Maximum Achievable Rating for the CB programme.

#### *Cover Pool Credit Assessment<sup>4</sup>*

DBRS Cover Pool Credit Assessment includes a credit analysis of the CP and cash flow analysis of the CB programme (including expected cash flows from the issuer, CP and hedging arrangements) to determine if the Maximum Achievable Rating can be assigned to a CB issuance. The Cover Pool Credit Assessment begins with an analysis of the “AAA” stresses to ensure timely payment of interest and full payment of principal is made at the scheduled maturity date. The Cover Pool Credit Assessment allows DBRS to calculate a minimum OC level for a given stressed rating scenario of the CP. If it is determined the Maximum Achievable Rating for a CB issuance cannot be achieved due to programme OC being lower than the “AAA” minimum OC level, the rating assigned to the CB is determined by the most stressed rating scenario of the CP where the minimum OC level is less than the programme OC level.

DBRS methodology reflects the fact that CB repayment sources are sequential and operate within a network of supports, constraints and opportunities offered by the respective governing legislation, systemic support and structuring features. Therefore, up until an issuer default, the issuer under the supervision of its regulator remains the sole source of repayment which is reflected by its issuer rating. At the time of default (or extreme financial stress), provided a transfer solution or subrogation of an issuer’s obligations under its CB programme has not been found through market forces or incentivised by its regulator, there should be a switch towards the CP as the source of repayment. This sequence of payments allows DBRS to rate CBs above an issuer’s rating and CP, as both an issuer default and an insufficiency of CP cash-flows would have to occur for a CB to default.

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## Rating Rationale

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### CONCEPTUAL FOUNDATIONS

DBRS CB analysis is an integrated approach that combines both qualitative and quantitative elements.

CBs are on-balance-sheet, full-recourse debt instruments maintained by the issuing institution or supporting bank as long as the bank is a going concern institution. DBRS believes that only in the scenario that a bank issuing or supporting CB faces liquidation or extreme financial stress, and that market forces or regulator’s incentive do not succeed in having the failing bank replaced, would the ultimate line of defense – the cash-flows from the CP to which investors have a preferential claim – be tapped as a repayment source. Therefore, the rating of an issuer is the starting point of the rating analysis, followed by legal and systemic support considerations followed by contractual provisions governing the covered bond programme, and concluded with cover pool and cash flow analysis.

Not only is the issuer the first source of payment on CBs (as long as the issuer does not default), but the IR provides information about the increased probability that a CB investor might eventually need to rely on the CP for repayment. Because of the importance of the issuer or support bank rating, DBRS will not

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4. See Appendix D for Cover Pool Credit Assessment.



rate CBs if the issuer or the support bank does not maintain a DBRS public or private rating or internal assessment.<sup>5</sup>

The likelihood that the cash flows from the CP are sufficient to continue making payments of interest and principal on the outstanding CB, without disruption, depends on numerous factors. These include the credit quality of the CP, the efficiency of mechanisms to replace transaction parties and eventually the transition of the CP from the troubled bank to a third party<sup>6</sup>. These lines of investor protection rely on both quantitative and qualitative factors.

Quantitatively, the credit support provided by the CP depends on the credit quality of the assets in the CP (varying by asset class, loan-to-value, geographic location, diversification and debtors' quality amongst others<sup>7</sup>), the range of cover asset substitution in the CP, the available OC and ALM provisions including swaps. DBRS captures these elements of the CB analysis in the rating of the CP through the standard rating process conducted on similar assets used in structured finance transactions.

Qualitatively, DBRS assessment of the LSFs captures the likelihood that payment obligations under the CB could be smoothly and efficiently transferred from a troubled bank to another bank or the CP – administrated by a third party – and provides evaluations on the following criteria: the robustness of the legal provisions with regards to asset segregation, accessibility of CP cash-flows on a preferential and timely basis; bankruptcy remoteness of the Cover Pool; and contingency plans, including the involvement and responsibility of the regulator or the relevant Central Bank to facilitate the transfer. DBRS considers that the success of the contingency plans depends on the level of details and situations contemplated in the legal provisions or supplementary contractual provisions. This includes, for instance, how legal challenges potentially brought by parties to the transaction may be addressed to prevent delays from occurring. Equally important to the success of a smooth transition is the liquidity available to the CP when the payments on the CB transition to become solely dependent on the CP. Various forms of liquidity support may be available at the time. They include dedicated reserves, liquidity lines provided by sufficiently highly rated counterparties, OC or the ability for the replacement CP administration to issue further CBs and other instruments or access repo-facilities with the relevant Central Bank. In respect of the OC, DBRS looks at the quality and quantity as well as the enforceability of voluntary and mandatory OC in the CP against claims from unsecured obligors.

DBRS assessment of the above factors results in classifying LSFs into four categories: Very Strong, Strong, Adequate and Modest. See Appendix C for Assessing Legal and Structural Frameworks.

(1) **Very Strong LSFs** provide a very high level of comfort that payment obligations under outstanding CBs can be transferred without payment disruptions to the CP securing the CB. In addition to the sole analysis of the CB ad-hoc Legal Framework, DBRS analysis also takes into account supplementary contractual provisions and the mechanics of the various markets and regulatory regimes which might facilitate a transfer of the CP and CB in a market faster than in others, typically in countries where CBs are important funding instruments compared to other sources. For example, DBRS considers that in large and long-established CB markets, the market dynamics will positively contribute to the transfer of the CP/CB with a systematic urgency. In addition, a programme graded with a Very Strong LSF is expected to benefit from a prompt and orderly reaction from the regulator, even before liquidity problems appear in the public domain.

(2) **Strong LSFs** lack some elements or clarity of the Very Strong LSF, which results in a somewhat reduced certainty and/or a less favourable market environment.

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5. Please refer to “Legal Criteria for European Structured Finance Transactions”.

6. The third party can be a specific administrator prescribed by the relevant legislation or another bank entitled to issue CBs.

7. Please refer to “Master European Residential Mortgage-Backed Securities Rating Methodology and Jurisdictional Addenda” and “European CMBS Methodology”.



(3) *Adequate LSFs* still ensure bankruptcy remoteness, but they lack concrete substance with regard to other important criteria, especially the elements of a contingency plan and effective provisions to replace parties in advance of a default. They may also have some uncertainty regarding the full segregation of the CP or the anchorage of the preferential claims for the CB investors.

(4) *Modest LSFs* are those left with a preferential claim for CB investors, but, however, they reflect considerable risks of cross-defaults and payment acceleration or delayed payments because of a lack or limited references only to contingency plans.

Therefore in assigning LSF grades to CB programmes, DBRS always considers the legal environment, the systemic importance of CBs and the contractual enhancements that may be implemented to supplement the legislation in force. Those contractual enhancements are numerous and include liquidity and ALM provisions, nature and drafting of swap contracts, existence and efficiency of the mechanisms to replace transaction parties, availability and enforceability of additional contractual OC and characteristics of CBs in issue.

The existence of two sources of cash flows, one of which is exclusively accessible by CB investors, and the sequential character of the payments obligations under the CB (first the bank and then the CP), allows DBRS to rate CBs above the IR and Cover Pool Credit Assessment. While DBRS believes that under a Very Strong LSF, the CB of issuers in distress will end up being “taken care of” (most likely by another bank, then ultimately by the CP under the supervision of a dedicated administrator), the ease of the transfer of administration of the CP to a third party is not apparent in advance. Evaluating untested legal frameworks and structural features to prevent a CB’s acceleration and relying on plausible stress scenarios incorporating actions by the management of troubled issuers, regulators and potential legal challenges by unsecured bondholders or liquidators are bound to entail some element of uncertainty, which cannot warrant the CB to always maintain the highest possible rating. One should also keep in mind that being linked to the evolution of the IR, the CB ratings are by construction linked to the IA of the issuer, since the IA is one of the two components of the IR (the other one being the Support Assessment, or SA).

The ratings of the issuer and CP become a more constraining rating factor under Strong, Adequate and Modest LSFs, as the impact of rating deterioration is magnified by the strength and weaknesses of the relevant Legal Framework and supplementary structural features. Legal uncertainties and corresponding potential legal challenges, as well as lack or inadequacy of replacement mechanisms might increase delays and lengthen the time needed to transfer the CP to another bank or a special administrator in charge of maintaining timely payments to CB holders. These considerations lead to a reduced uplift for the CB rating vis à vis the IR in weaker LSFs notably in “Adequate” and “Modest” LSFs.

## THE THREE BUILDING BLOCKS

DBRS CB rating methodology is articulated around the following three building blocks:

### (1) *Issuer Rating (IR)*

The issuer is the primary source of the timely payment and repayment of CB. In addition, CB holders have recourse to the issuer if the CBs are not fully repaid through the Cover Pool (residual claim over “unsecured assets”, *pari passu* with unsecured creditors). As a result, the IR is the anchor rating of a CB programme. The IR is assigned by DBRS Financial Institutions Group (FIG) following the analytical process described in relevant methodologies<sup>8</sup>. Each rating has two components: Intrinsic Assessment (IA) and Support Assessment (SA). As a result, the CB rating incorporates the support element that may exist in the IR. Because of the importance of the issuer or support bank in CB transactions, DBRS will not be in a position to rate CBs if the issuer or the support bank does not maintain a DBRS public or private rating or internal assessment.

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8. Please refer to “Global Methodology for Rating Banks & Banking Organisations”



## *(2) Legal and Structuring Framework (LSF)*

The LSF assessment is the largest of the three pillars, as once the LSF assessment is completed, DBRS can determine the Maximum Achievable Rating for a CB programme. Additionally, the LSF assessment implicitly limits the number of notches a CB can be rated above the IR.

Assigning a LSF grade entails primarily an in-depth review of the dedicated CB legislations and the legal environment of the relevant jurisdiction. This analysis is supported by external legal opinions when necessary. The second element of the LSF assessment is an in-depth review of the structuring features supplemental to the dedicated legislation. When such dedicated legislation does not exist or when an issuer chooses to issue outside of the legislation, the LSF assigned reflects solely the contractual arrangements between the transactions parties. In addition, DBRS analyses the terms of each covered bond programme in the LSF assignment to assess if the issuer manages the CP in a more conservative manner than required by jurisdictional laws which may benefit the CB.

The LSF grade is assigned by DBRS Covered Bond team to each transaction. The Maximum Achievable Rating for a CB issuance is determined by the LSF grade and IR.

## *(3) Cover Pool (CP) Credit Assessment*

The Cover Pool Credit Assessment is based on the structured finance rating approach used to analyse similar types of assets in asset-backed transactions (e.g., RMBS, CMBS, etc). It is determined by incorporating the credit analysis of the cover pool, the hedging contracts, the expected cash flows from the issuer and/or cover pool (including the expected proceeds from the sale of all or part of the CP in case of issuer default), as well as the interest rate stresses<sup>9</sup> and currency stresses<sup>10</sup> into a multi-scenario cash flow analysis to ensure the CB issuance receives timely interest and full principal at the stated maturity date. The Cover Pool Credit Assessment is periodically reviewed as part of the CB on-going surveillance and therefore is reflective of the dynamic nature of CPs.<sup>11</sup>

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9. Please refer to “Unified Interest Rate Model for European Securitisations”.

10. Please refer to “Swap Criteria for European Structured Finance Transactions”.

11. As part of the surveillance of the CP Credit Assessment, DBRS monitors changes to the assets of the CP due to reinvestments and substitutions on a quarterly basis at a minimum. To the extent the quality of the Cover Pool degrades over time, the DBRS analysis may find that the over-collateralisation level is insufficient to maintain the outstanding rating of the CB.

## Appendices

### APPENDIX A: DBRS IDEALISED DEFAULT TABLE

Rating	Maturity in Years									
	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%

### APPENDIX B1: COVERED BOND DEFAULT PROBABILITY

Covered bonds are debt instruments in which the issuer's promise to pay principal and interest are collateralised with a Cover Pool. For the limited purpose of creating a matrix of CB ratings, DBRS considers the risk of the CP to be well described by a rating (Cover Pool Credit Assessment). Hence, the issuer has a (senior unsecured) debt rating and the CP has a debt rating. DBRS creates a straightforward model to determine the effective rating of the CB given a small number of assumptions and inputs.

A CB will default (i.e. fail to pay timely interest or full principal at maturity) only when an issuer defaults and the CP is separately unable to make the required debt service payments. If the default events of the issuer and CP were independent of each other, the joint probability of default would simply be the product of the separate issuer and CP probabilities. The DBRS idealised default table provides the default probability consistent with each debt rating as a function of the remaining weighted average life (WAL) of the debt.

It is not assumed the issuer and CP default independently. When a CB is issued under a statutory framework, the assets in the CP are assets of the issuer. Any losses incurred by the CP assets have a direct and negative impact on the solvency of the issuer. While it is likely that the CP represents only a small fraction of the assets of the issuer in any specific CB issuance, it is also likely that the issuer has large holdings of the types of assets (such as residential mortgage whole loans and securities) that comprise the CP. While a default of the issuer may occur in an environment that is benign for the CP collateral, the issuer's holdings provide good reason to expect that such assets will have elevated probability of distress in issuer default scenarios.



The joint probability of default of the two correlated entities<sup>12</sup> is defined as:

$$p_i p_c + \rho \sqrt{p_i(1-p_i)p_c(1-p_c)} \quad (1),$$

Where the issuer and CP default probabilities over a given time period are  $p_i$  and  $p_c$ , and a default correlation between the issuer and CP is assigned,  $\rho$ .

It is also held that the correlation  $\rho$  cannot have any arbitrary value. The joint default probability of equation (1) must be less than  $p_i$  and also less than  $p_c$ . In terms of the value of  $\rho$ , these constraints mean

$$\rho < \sqrt{\frac{p_i(1-p_c)}{p_c(1-p_i)}} \quad (2a) \quad \text{and} \quad \rho < \sqrt{\frac{p_c(1-p_i)}{p_i(1-p_c)}} \quad (2b),$$

Equation (1) assumes the CB investor will have a clear, unambiguous, and undisputed right to receive payments from the CP until the CB obligation is fully discharged. There exists a non-zero probability,  $\alpha$ , that the investors will not have the full benefit of the CP. The risk is that a bankruptcy court (or similar proceeding) or a key regulator will rule after the issuer's default that other claimants should have equal or greater claim on the CP than the CB investors. DBRS legal framework analysis investigates this possibility. The probability,  $\alpha$ , increases as the legal framework becomes weaker.

Incorporating this "legal framework weakness" into the analysis, the CB will default with probability  $\alpha$  when the issuer defaults and will otherwise obey equation (1) in the more likely scenario (with probability  $1 - \alpha$ ) when the CP remains ring-fenced for the CB following the issuer default. The CB default probability is:

$$\alpha p_i + (1 - \alpha) [p_i p_c + \rho \sqrt{p_i(1-p_i)p_c(1-p_c)}] \quad (3).$$

Four LSF matrices (Very Strong, Strong, Adequate and Moderate) are generated assuming a value of  $\alpha$  for each matrix, the WAL of the CB values for the  $p_i$  and  $p_c$  from the DBRS idealised default table, and a correlation assumption of 30% (see Appendix B3). As mentioned above,  $\alpha$  is a non-zero probability that a CB investor will not have the full benefit of the CP in case of issuer default. Since  $\alpha$  cannot be estimated based on historical data, DBRS assigned values to  $\alpha$  is each LSF by first assigning a value of 50% to the Moderate LSF. It is expected that a Moderate LSF (and the weakest of the four) would have legislation for CB laws but also the highest level of uncertainty regarding the benefit of the CP cash flows in case of issuer default. Given these two facts, DBRS assigns the probability of the CB holders having the benefit of the CP to be equal to the probability of not having the benefit in a Moderate LSF,  $\alpha = 50\%$ .

The four LSF categories are assigned so the probability of the full benefit of the CP to the CB holder increases as the LSF strengthens. Therefore, a stronger LSF Framework has a lower value of  $\alpha$ . DBRS assigns the following values of  $\alpha$  for the construction of the LSF matrices:

LSF Framework	$\alpha$
Very Strong	3.0%
Strong	7.5%
Adequate	12.5%
Moderate	50.0%

12. DBRS applies the same analysis in both a statutory and true sale framework.



If a CB programme is documented with all appropriate safeguards in a jurisdiction such as Germany with clear law and guidance supporting covered bonds, then such CB programme may be treated with a Very Strong LSF. In this case, the DBRS analysis is consistent with a low probability (less than 5% as per the table above) that the CP will not be fully available to CB investors upon issuer default. In cases where the CB law clearly defines the segregation of CP assets from the insolvency estate but some uncertainties exist surrounding a smooth transition from the issuer to the CP as the sole repayment of the CB (such as Spain or Portugal), an LSF of either Strong or Adequate will be assigned. The uncertainties may be due to an unclear contingency plan in case of issuer default or questions surrounding a regulator's ability to support a CB programme, increasing the likelihood of cash flow interruption from the CP to the CB. This increased uncertainty is consistent with an increasing value of  $\alpha$  as the LSF weakens as shown in the table above. In cases where CB law segregating CP assets from the issuer does not exist (such as the United States)<sup>13</sup> an LSF of Moderate will be assigned as the recourse to the CP after issuer insolvency is too uncertain. DBRS LSF Framework does not represent a legal opinion, but rather DBRS credit-based view about the potential de-linkage, if any, between an issuer and a CB rating.

The CB probability of default is calculated for each pairing of an IR and CP rating in each LSF matrix and assigned a rating from the DBRS idealised default table. Appendix B2 shows an example of LSF matrices based on a CB with a 5 year WAL. The LSF matrices are dynamic in nature and change based on the WAL of the liabilities of the CB programme.<sup>14</sup>

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13. This methodology does not apply to CB issued in the United States.

14. In some cases DBRS may apply this analysis individually to each CB in the programme where deemed appropriate.



## APPENDIX B2: COVERED BOND RATING TABLES

### Very Strong Legal and Structuring Framework

		Cover Pool											
		AAA	AA (high)	AA	AA (low)	A (high)	A	A (low)	BBB (high)	BBB	BBB (low)	BB (high)	BB
Issuer Rating	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
	AA (high)	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AA (high)	AA (high)	AA (high)	AA (high)	AA (high)
	AA	AAA	AAA	AAA	AAA	AAA	AAA	AA (high)	AA	AA	AA	AA	AA
	AA (low)	AAA	AAA	AAA	AAA	AAA	AA (high)	AA (high)	AA	AA	AA (low)	AA (low)	AA (low)
	A (high)	AAA	AAA	AAA	AA (high)	AA (high)	AA (high)	AA	AA (low)	AA (low)	A (high)	A (high)	A (high)
	A	AAA	AAA	AAA	AA (high)	AA (high)	AA	AA	AA (low)	AA (low)	A (high)	A	A
	A (low)	AAA	AA (high)	AA (high)	AA	AA	AA	AA (low)	A (high)	A (high)	A	A (low)	A (low)
	BBB (high)	AA (high)	AA	AA	AA (low)	AA (low)	AA (low)	A (high)	A	A	A (low)	A (low)	A (low)
	BBB	AA (high)	AA	AA (low)	AA (low)	AA (low)	A (high)	A (high)	A	A	A (low)	A (low)	BBB (high)
	BBB (low)	AA	AA	AA (low)	AA (low)	A (high)	A (high)	A	A (low)	A (low)	A (low)	BBB (high)	BBB (high)
	BB (high)	AA (low)	AA (low)	A (high)	A (high)	A	A (low)	A (low)	BBB (high)	BBB (high)	BBB (high)	BBB (low)	BBB (low)
	BB	AA (low)	A (high)	A (high)	A	A	A (low)	A (low)	BBB (high)	BBB	BBB	BBB (low)	BBB (low)
	BB (low)	A (high)	A (high)	A	A	A (low)	A (low)	A (low)	BBB (high)	BBB	BBB	BBB (low)	BBB (low)
	B (high)	A	A	A	A (low)	A (low)	A (low)	BBB (high)	BBB	BBB	BBB (low)	BBB (low)	BB (high)
	B	A (low)	A (low)	A (low)	A (low)	A (low)	A (low)	BBB (high)	BBB	BBB (low)	BBB (low)	BB (high)	BB (high)
	B (low)	A (low)	A (low)	A (low)	A (low)	BBB (high)	BBB (high)	BBB (high)	BBB (low)	BBB (low)	BBB (low)	BB (high)	BB (high)
	CCC (high)	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB	BBB	BBB (low)	BBB (low)	BBB (low)	BB	BB
	CCC	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB	BBB	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BB	BB
	CCC (low)	BBB	BBB	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BB (high)	BB	BB (low)

### Strong Legal and Structuring Framework

		Cover Pool											
		AAA	AA (high)	AA	AA (low)	A (high)	A	A (low)	BBB (high)	BBB	BBB (low)	BB (high)	BB
Issuer Rating	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
	AA (high)	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AA (high)	AA (high)	AA (high)	AA (high)	AA (high)
	AA	AAA	AAA	AAA	AAA	AAA	AAA	AA (high)	AA	AA	AA	AA	AA
	AA (low)	AAA	AAA	AAA	AAA	AA (high)	AA (high)	AA (high)	AA	AA	AA (low)	AA (low)	AA (low)
	A (high)	AAA	AAA	AA (high)	AA (high)	AA (high)	AA	AA	AA (low)	AA (low)	AA (low)	A (high)	A (high)
	A	AAA	AA (high)	AA (high)	AA (high)	AA	AA	AA (low)	AA (low)	AA (low)	A (high)	A	A
	A (low)	AA (high)	AA	AA	AA	AA (low)	AA (low)	AA (low)	A (high)	A (high)	A	A (low)	A (low)
	BBB (high)	AA	AA (low)	AA (low)	AA (low)	A (high)	A (high)	A (high)	A	A	A (low)	A (low)	BBB (high)
	BBB	AA (low)	AA (low)	AA (low)	A (high)	A (high)	A (high)	A	A	A (low)	A (low)	BBB (high)	BBB (high)
	BBB (low)	AA (low)	AA (low)	A (high)	A (high)	A	A	A	A (low)	A (low)	A (low)	BBB (high)	BBB (high)
	BB (high)	A	A	A	A (low)	A (low)	A (low)	A (low)	BBB (high)	BBB (high)	BBB (high)	BBB (low)	BBB (low)
	BB	A	A (low)	A (low)	A (low)	A (low)	A (low)	BBB (high)	BBB (high)	BBB	BBB	BBB (low)	BBB (low)
	BB (low)	A (low)	A (low)	A (low)	A (low)	BBB (high)	BBB (high)	BBB (high)	BBB	BBB	BBB (low)	BBB (low)	BBB (low)
	B (high)	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB	BBB (low)	BBB (low)	BBB (low)	BB (high)	BB (high)
	B	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB	BBB	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BB (high)	BB (high)
	B (low)	BBB	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BB (high)	BB (high)	BB
	CCC (high)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BB (high)	BB (high)	BB (high)	BB	BB (low)
	CCC	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (low)	BB (low)
	CCC (low)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB	BB	BB (low)	BB (low)



**Adequate Legal and Structuring Framework**

		Cover Pool											
		AAA	AA (high)	AA	AA (low)	A (high)	A	A (low)	BBB (high)	BBB	BBB (low)	BB (high)	BB
Issuer Rating	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
	AA (high)	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AA (high)	AA (high)	AA (high)	AA (high)	AA (high)
	AA	AAA	AAA	AAA	AAA	AAA	AAA	AA (high)	AA	AA	AA	AA	AA
	AA (low)	AAA	AAA	AAA	AAA	AA (high)	AA (high)	AA	AA	AA (low)	AA (low)	AA (low)	AA (low)
	A (high)	AAA	AA (high)	AA (high)	AA (high)	AA	AA	AA	AA (low)	AA (low)	A (high)	A (high)	A (high)
	A	AA (high)	AA (high)	AA (high)	AA	AA	AA	AA (low)	AA (low)	AA (low)	A (high)	A	A
	A (low)	AA	AA	AA	AA (low)	AA (low)	AA (low)	A (high)	A (high)	A (high)	A	A (low)	A (low)
	BBB (high)	AA (low)	AA (low)	A (high)	A (high)	A (high)	A (high)	A	A	A (low)	A (low)	A (low)	BBB (high)
	BBB	AA (low)	A (high)	A (high)	A (high)	A	A	A	A (low)	A (low)	A (low)	BBB (high)	BBB (high)
	BBB (low)	A (high)	A (high)	A	A	A	A	A (low)	A (low)	A (low)	A (low)	BBB (high)	BBB (high)
	BB (high)	A (low)	A (low)	A (low)	A (low)	A (low)	BBB (high)	BBB (high)	BBB (high)	BBB	BBB	BBB (low)	BBB (low)
	BB	A (low)	A (low)	A (low)	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB	BBB	BBB (low)	BBB (low)	BBB (low)
	BB (low)	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB	BBB	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BB (high)
	B (high)	BBB	BBB	BBB	BBB	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BB (high)	BB (high)
	B	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BB (high)	BB (high)	BB (high)	BB (high)
	B (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BB (high)	BB (high)	BB (high)	BB (high)	BB	BB
	CCC (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB	BB	BB (low)	BB (low)
	CCC	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB	BB	BB	BB (low)	BB (low)
CCC (low)	BB	BB	BB	BB	BB	BB (low)	BB (low)	BB (low)	BB (low)	BB (low)	B (high)	B (high)	

**Modest Legal and Structuring Framework**

		Cover Pool											
		AAA	AA (high)	AA	AA (low)	A (high)	A	A (low)	BBB (high)	BBB	BBB (low)	BB (high)	BB
Issuer Rating	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
	AA (high)	AAA	AAA	AAA	AAA	AAA	AAA	AA (high)	AA (high)	AA (high)	AA (high)	AA (high)	AA (high)
	AA	AA (high)	AA (high)	AA (high)	AA (high)	AA (high)	AA (high)	AA (high)	AA	AA	AA	AA	AA
	AA (low)	AA (high)	AA	AA	AA	AA	AA	AA	AA (low)	AA (low)	AA (low)	AA (low)	AA (low)
	A (high)	AA (low)	AA (low)	AA (low)	AA (low)	AA (low)	AA (low)	AA (low)	A (high)	A (high)	A (high)	A (high)	A (high)
	A	AA (low)	AA (low)	AA (low)	AA (low)	AA (low)	AA (low)	A (high)	A (high)	A (high)	A (high)	A	A
	A (low)	A	A	A	A	A	A	A	A	A	A (low)	A (low)	A (low)
	BBB (high)	A (low)	A (low)	A (low)	A (low)	A (low)	A (low)	A (low)	A (low)	A (low)	A (low)	BBB (high)	BBB (high)
	BBB	A (low)	A (low)	A (low)	A (low)	A (low)	A (low)	A (low)	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB (high)
	BBB (low)	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB (high)	BBB	BBB	BBB
	BB (high)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BB (high)	BB (high)
	BB	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BBB (low)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)
	BB (low)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB (high)	BB
	B (high)	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB (low)	BB (low)
	B	BB (low)	BB (low)	BB (low)	BB (low)	BB (low)	BB (low)	BB (low)	BB (low)	BB (low)	BB (low)	BB (low)	BB (low)
	B (low)	B (high)	B (high)	B (high)	B (high)	B (high)	B (high)	B (high)	B (high)	B (high)	B (high)	B (high)	B (high)
	CCC (high)	B	B	B	B	B	B	B	B	B	B	B (low)	B (low)
	CCC	B (low)	B (low)	B (low)	B (low)	B (low)	B (low)	B (low)	B (low)	B (low)	B (low)	B (low)	B (low)
CCC (low)	B (low)	B (low)	B (low)	B (low)	B (low)	B (low)	B (low)	CCC (high)	CCC (high)	CCC (high)	CCC (high)	CCC (high)	

## APPENDIX B3: ESTIMATE OF CORRELATION

To estimate a correlation assumption between an issuer rating and a CP rating for construction of the LSF matrices, DBRS analysed daily 5-year Credit Default Swap spreads of 16 European banks<sup>15</sup> located in six sovereigns<sup>16</sup> covering the period of 1 June 2003 to 7 July 2011 from Bloomberg.<sup>17</sup> The data was aligned with weekly publication of RMBS spreads from “JP Morgan European ABS & CB Research”. The data was amalgamated to reasonably correspond to the issuer (bank)/country mix. After aligning the date structures, a Pearson Correlation was run to assess the strength of the relationship between the two measures.

$$PearsonCorrelation = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{(n-1)\sigma_X\sigma_Y}$$

Which is equivalent to

$$PearsonCorrelation = \frac{\sum X_i Y_i - n\bar{X}\bar{Y}}{(n-1)\sigma_X\sigma_Y}$$

where the  $X_i$  and  $Y_i$  denote the fractional changes in bank CDS levels and RMBS spreads. With the selected set of RMBS indices, the Pearson Correlation was found to be approximately 30%.

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15. Banca Monte, Banco Popolare, Barclays, BBVSM, BNP Paribas, Credit Agricole, Commerzbank AG, Credit Suisse, Deutsche Bank AG, Intesa Sanpaolo SpA, Lloyds, RBS Plc, UniCredit SpA, Santander, Societe Generale, and UBS AG.

16. Germany (2), France (3), Italy (4), Spain (2), Switzerland (2), and UK(2).

17. DBRS extracted the spread correlation between European bank CDS and RMBS levels as an indicative proxy for the default correlation of equation (1). While spread and default correlations are distinct concepts, DBRS considers the assignment to be appropriate and conservative given the available market data. Further, the correlation between the issuer bank default and CP collateral spread level bears directly on the collateral liquidation value. This observation gives further comfort that the use of the spread correlation is reasonable.



## APPENDIX C: ASSESSING LEGAL AND STRUCTURING FRAMEWORKS

To assign LSF grades, DBRS first assesses the CB legislation and second reviews how the contractual provisions may interact with the legal framework.

The LSF assessment on any CBs takes into consideration the following:

1. Core Criteria of CB Legislation.
2. Systemic Support and Market Environment.
3. Cover Pool Eligibility Criteria.
4. Structural Features Assessment.

### 1. Core Criteria of CB Legislation

The three driving factors of the strength of CBs and the associated degree of de-correlation from the issuer rating are:

- i. The bankruptcy remoteness of the CBs in case of an issuer default that avoids any cross-default occurrence, and
- ii. The segregation of the CP from the issuer's bankruptcy estate.
- iii. Regulatory involvement and contingency plans.

The first two factors constitute the main elements for the de jure de-linkage within each jurisdiction. However, DBRS also considers that there are differences within each legal framework regarding how key practical considerations would be treated. This results in a varying degree of de-correlation between an issuer and its CB risks. Therefore, DBRS reviews if the de facto de-correlation can be obtained. In particular, DBRS looks at the following:

- The degree of CB remoteness from an issuer's insolvency and the enforceability of the CBs' preferential treatment.
- In case of an issuer default, the existence of provisions against automatic acceleration of the CBs.
- The hedge agreements status vis a vis the segregated CP, whether they are part of the CP or not.
- Asset Liability Management (ALM) matching requirements and potential cash flow mismatches.

The regulator's involvement and contingency plans complement the first two factors in assessing how the CP would be managed in the event of issuer default. Factors reviewed to assess a regulator's involvement and contingency plans include:

- Existence of a specific supervisor in charge of the issuer CB program in the normal course of operations. How independence of the supervisor from the issuer is ensured? What is the scope of the actual supervision? Is the regulator in charge of the appointment of the CB programme supervised?
- Quality and content of the contingency plans in case of an issuer default. The soundness and applicability of the contingency plans include and emergency measures such as pre-appointment of a CP administrator before an issuer's insolvency, if necessary, or the nomination of a regulator as standby service provider.

### 2. Systemic Support and Market Environment

The factors reviewed to assess systemic support and market environment include:

- The likelihood of a regulator's systemic support toward the CBs, which depends on the existence or not of public statements to this effect, the size of the CBs outstanding, the size of the issuers, the level of regulator's ongoing involvement, past evidence of intervention to improve the legislation, etc.
- CB outstanding volume, history and depth of the CB market, liquidity of the secondary market, number of issuers, efficiency of market-making arrangements and transparency of the trading systems.



The criteria described in C1 and C2 are the driving factors in the LSF assessment as they reveal how much the CB rating can be “delinked” from the IR. C3 and C4 below serve as descriptive features of the LSF assessment and provide valuable information when comparing programmes within and across jurisdictions.

### 3. Cover Pool Eligibility

Whether contractually defined or legally prescribed, key eligibility criteria include:

- Nature of the eligible assets (e.g., exposures to public sector entities, mortgage loans, exposures to credit institutions, senior tranches of MBS, shipping loans or substitution assets).
- Geographical scope for CPs (public and mortgage assets).
- Maximum loan to value (LTV) levels allowed or status and given to loan portions above a LTV threshold.
- Property valuation regulations: basis for valuation, mortgage lending value and valuation check (e.g., legal provisions or contractual principles for property valuation, appraisal of mortgage lending value or prudent market value, frequency of re-valuation, verification of the valuations by the CAM, etc.).
- Nature and treatment of the substitution assets in the CP.

At all times, the CP must meet the eligibility criteria prescribed in the dedicated CB legislation or contractual provisions.

### 4. Structural Features Assessment

DBRS reviews the structural features of each CB programme for provisions that may be supplemental or complementary to the covered bond law in each jurisdiction. The features assessed include but are not limited to:

- Liquidity provision and ALM considerations – Liquidity risk arises from the mismatch between the CP and CB cash flows as the CP and the CB cash flows as the maturities of the assets in the CP are generally longer than that of the CBs. CB programs typically have covenants defining static matching tests (nominal coverage matching test, revenue matching test, weighted average maturity tests, etc.), dynamic matching tests (NPV tests, duration gap tests, etc.) and liquidity provisions (e.g. cash must be equal to one year interest payments) to manage liquidity risks. DBRS analysis focuses on the sources of liquidity as well as their sufficiency after an issuer default.
- Hedging Agreements<sup>18</sup> – Swap Criteria for European Structured Finance Transactions applies to DBRS rating of CB. In addition, DBRS looks at the legal status of the hedging agreements to determine if they are part of the CP and if they would survive independently or be transferred in case of an issuer default. Also, the type and nature of the swaps are taken into consideration as they may be off-market swaps which may cause a delay in finding replacement counterparties
- Transaction Parties’ Replacement and Contingency Plans – Structuring features and contractual provisions aiming to ensure a smooth and flawless replacement of transaction parties may prove to ensure stability of liability payments for a CB programme. Historically, and for cost considerations, CB issuers have been responsible for most if not all the functions to operate a CB programme. This over-reliance on the issuer and concentration risk associated are, however, more and more frequently being addressed through provisions to replace transaction parties. Such dispositions include without limitation the replacement of: the transaction account bank, the asset servicer, the swap counterparties, the collection account bank, etc.

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18. Please refer to “Swap Criteria for European Structured Finance Transactions”.



## APPENDIX D: COVER POOL CREDIT ASSESSMENT

DBRS conducts a Cover Pool Credit Assessment to determine if a CB can be paid timely interest and principal solely from the CP for a given rating scenario, as is the case in event of issuer insolvency. In addition, this allows DBRS to calculate a target OC level for the Cover Pool Credit Assessment at each rating category for a given IR. The Cover Pool Credit Assessment is similar to the analysis of a securitisation for a pool of similar assets (RMBS, CMBS, etc.). It begins with an estimate of the Probability of Default (PD) and Loss Given Default (LGD) for each rating category based on the underlying assets, followed by an analysis of the stressed asset cash flows (including interest rates and exchange rates) on the underlying assets and how the cash flows are distributed to the liabilities based on the transaction documents.

Additional factors for the Cover Pool Credit Assessment are the timing of issuer default and how the issuer default affects cash flows. This requires an analysis of the periodic defaults on the underlying collateral versus a lifetime default expectation; assumptions regarding principal amortisation and reinvestment; assumptions about collections in case of issuer default; and, an estimate of the liquidation value of the underlying collateral in event of issuer default.

Covered bond laws typically have criteria where delinquent loans are ineligible for the CP and must be substituted by the issuer. In the case where an issuer is solvent, delinquent loans will be removed from the CP and substituted with an eligible loan; therefore, the CB holder is not exposed to credit risk on the underlying CP. In the case where the issuer is insolvent, the CB holder is exposed to the credit risk of the defaulted loans as it is assumed they will not be substituted by the issuer. DBRS Cover Pool Credit Assessment requires a cumulative default analysis of the CP for the tenure of the CB. For example, if the CB has a five year WAL, DBRS estimates a five year cumulative PD assumption which includes marginal default rates for each year. If an issuer were to default after year two, the assumption for the Cover Pool Credit Assessment would be no defaults until year two after which point the cumulative defaults for years three to five would flow through the cash flow analysis.<sup>19</sup>

While an issuer is solvent, the programme manager has the option to reinvest principal proceeds into eligible loans or to hold the cash as an asset for the CP. DBRS assumes in the Cover Pool Credit Assessment that principal proceeds will be reinvested in eligible collateral with similar characteristics to the current CP.<sup>20</sup> In the case of issuer insolvency, principal proceeds remain ring-fenced for the benefit of CB holders to redeem principal at maturity.<sup>21</sup>

CB programmes have static matching tests (such as revenue matching test to ensure interest received exceeds interest paid on the CB) and/or liquidity requirements (cash equal to at least one interest payment) to ensure liquidity for the CB. If an issuer is solvent, DBRS assumes interest payments on the CB will be made by the issuer and interest collections will remain an asset of the CP. In case of issuer insolvency, interest payments on the CB will be made from the CP collections which remain ring-fenced for the benefit of CB holders.

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19. For recovery of liquidation proceeds, DBRS applies LGD assumptions and the time to recovery as in any other structured finance transaction.

20. As an estimate of expected defaults for reinvested principal proceeds and substitution of defaulted loans by the issuer, DBRS assumes the assets added with the cumulative sum of these two cash flows during the time of issuer solvency will have the same expected cumulative default rates and timing of default as that of the original collateral pool but with the timing curve offset to begin at the issuer insolvency. The periodic expected defaults from these two sources are added to the cumulative default analysis of the original collateral pool to arrive at the total expected defaults after an issuer default.

21. DBRS assumes a 0% CPR in the Cover Pool Credit Assessment on the underlying assets versus the multiple prepayment stresses in a structured finance transaction. A 0% CPR is considered more appropriate in the Cover Pool Credit Assessment as it maximises the amount of collateral available at the CB maturity which may need to be liquidated to pay principal on the CB versus accumulating cash from prepayments.



DBRS Cover Pool Credit Assessment assumes that the principal payment of the CB at maturity will be solely from the CP. In cases where the issuer is solvent proceeds from the CP are redeemed at par to make principal payments on the maturing CB. Where the issuer is insolvent, DBRS estimates a liquidation value<sup>22</sup> on the underlying CP by estimating the lifetime cash flows of the CP at 0% CPR and discounting the cash flows by a market value stress to calculate an NPV at liquidation.<sup>23</sup>

The NPV at liquidation is the driving factor to the DBRS Cover Pool Credit Assessment as the main source of funds available to repay principal at the CB maturity. Assets in a CP typically have a longer WAL than a CB. In addition to a long WAL, the CP assets typically have an amortisation profile where the principal collections are heavily back-loaded towards the maturity date. This results in a large duration gap between the CP and CB. In the scenario of an issuer default, the sale of some or all the CP at the CB maturity may be the sole source of cash flow to repay the principal of the CB.

DBRS analysed weekly market spreads for senior RMBS securities from Ireland, Italy, Netherlands, Portugal, Spain and the UK<sup>24</sup> as a proxy of spread widening on the CP. Given the lack of secondary market data for assets in a CP, DBRS determined this to be the best data available to estimate a distressed spread widening within each jurisdiction. The data set covered the period from May 2008 to July 2011, a period of high volatility in global financial markets. DBRS calculated the range (maximum less the minimum) and the standard deviation for each country. DBRS calculated the range (maximum less the minimum) and the standard deviation for each country. DBRS then grouped the countries into three tiers based on the standard deviation and assigned an “AAA” market value spread to each tier based on the ranges within each tier:

Tier	Country	Standard Deviation	Range	“AAA” Market Value Spread
1	Italy	84	325	350
1	UK	85	335	350
1	Netherlands	89	355	350
2	Portugal	136	510	500
2	Spain	150	500	500
3	Ireland	185	645	650

For rating level stresses below the “AAA” scenario, DBRS consulted the idealised default table for the appropriate confidence levels. DBRS assumed a normal distribution and inferred the standard deviation consistent with “AAA” spread for each tier. With the standard deviation for each tier and the idealised default table confidence levels<sup>25</sup>, DBRS calculated the spread widening stress at each lower rating category:

22. DBRS believes that in a scenario where collateral would need to be liquidated to make CB payments, the price of the collateral would be affected by a prepayment and a loss assumption in addition to a spread widening assumption, as well as an assumption regarding the financing of the collateral by a third party. Given the high quality of assets typically included in a CP, DBRS finds a 0% CPR and no loss scenario to be a convenient and conservative assumption for estimating the liquidation price of the collateral. In the case of riskier assets, DBRS may find it necessary to depart from this approximation.

23. When an NPV is provided by legislation or the transaction documentation, DBRS reviews the modus operandi of such test and the underlying assumptions, but does not link this to the market value stress assumption.

24. JP Morgan European ABS & CB Research.

25. Assumed a 10-year WAL for default probability values from the idealised default table.



Tier	1	2	3
AAA	350	500	650
AA (high)	328	469	610
AA	313	448	582
AA (low)	298	426	554
A (high)	276	395	513
A	268	383	498
A (low)	247	353	459
BBB (high)	218	311	405
BBB	207	295	384
BBB (low)	193	275	358
BB (high)	143	204	265
BB	128	182	237

The DBRS Cover Pool Credit Assessment incorporates multiple cash flow analyses to take into account an issuer default at different periods of time. The number of scenarios to be analysed is equal to the WAL of the CB plus one. For example, assume a CB is issued with a WAL of five years. The scenarios to be analysed are:

1. Issuer defaults at year 0.
2. Issuer defaults at year 1.
3. Issuer defaults at year 2.
4. Issuer defaults at year 3.
5. Issuer defaults at year 4.
6. Issuer defaults at year 5.

In each scenario, the cash flow estimates from the CP are generated using a cash flow model based on the assumptions described above. Cash flows for each scenario differ due to timing of issuer default. DBRS calculates an OC level for each scenario based on the assumption that each CB in the programme will be paid timely interest and principal at each CB maturity as described in the CB terms. DBRS then determines a target OC level for each Cover Pool Credit Assessment. The target OC level is the OC amount required to ensure the CB will not default in the case of an issuer default for each scenario. The CB rating is then assigned from the LSF matrix where the programme OC level exceeds the target OC level for a given Cover Pool Credit Assessment.

Beginning with the “AAA” Cover Pool Credit Assessment scenario, DBRS conducts the cash flow analysis described above. If the programme OC level is below the determined target OC level, the Cover Pool Credit Assessment is repeated with stresses to the CP at the next lowest rating category. Each analysis with a lower Cover Pool Credit Assessment results in a new target OC level. The CB rating is then assigned from the LSF matrix where the programme OC level exceeds the target OC level for a given Cover Pool Credit Assessment.

The DBRS Cover Pool Credit Assessment stresses interest rate risk using stresses from the Unified Interest Rate Model and haircuts un-hedged cross-currency cash flows as described in Swap Criteria for European Structured Finance Transactions. DBRS CB rating approach uses the same swap criteria as in other structured finance transactions.<sup>26</sup> In addition, DBRS also models transaction specific features (extendable maturity, liquidity facilities, etc.) in the Cover Pool Credit Assessment.

26. Please refer “Swap Criteria for European Structured Finance Transactions”.

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