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METHODOLOGY

Rating European Consumer and Commercial Asset-Backed Securitisations

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Related Research

For a list of the Structured Finance related methodologies for our principal Structured Finance asset class methodologies that may be used during the rating process, please see the DBRS Global Structured Finance Related Methodologies document on www.dbrs.com. Please note that not every related methodology listed under a principal Structured Finance asset class methodology maybe used to rate or monitor an individual structured finance or debt obligation.

Table of Contents

Key Updates in this Methodology

For key updates in this methodology, please refer to the press release titled *DBRS Publishes Updated Rating European Consumer and Commercial Asset-Backed Securitisations Methodology* dated 4 December 2018.

Scope and Limitations

A methodology sets forth the key analytical considerations and applicable analytics used when DBRS assigns or monitors credit ratings or other opinions. DBRS applies approved methodologies in the evaluation of a structured finance transaction or debt obligation. Quantitative and qualitative factors set forth in a methodology or in a combination of methodologies are evaluated by a DBRS rating committee or discussion group that exercises analytical judgment and considers the regulatory environment, market standards and customary practices in addition to other factors deemed relevant to the analysis.

As part of the evaluation process, DBRS may opine as to whether a sponsor's proposed capital structure supports the assignment of a given rating(s), the loss level(s) the capital structure is able to withstand or the rating level(s) supported by a sponsor's proposed capital structure. Once completed, this process facilitates the assignment of a DBRS rating, at a given rating level.

In cases when an applicable methodology does not address one or more elements of a structured finance transaction or obligation, or such element(s) differs from the expectations contemplated when an applicable methodology was approved, DBRS may apply analytical judgment in the determination of any related analytical factor, assumption, rating or other opinion. For a methodology that incorporates the use of a predictive model, DBRS may also depart from the rating stress(es) implied by the predictive model. DBRS typically expects there to be a substantial likelihood that a reasonable investor or other user of the credit rating(s) would consider a three-notch or more deviation from the rating stress(es) implied by the predictive model to be a significant factor in evaluating the rating(s). When a rating committee determines a material deviation, DBRS discloses the material deviation and its analytical judgment for the material deviation.

Executive Summary

This methodology summarises DBRS's rating approach for consumer and commercial asset-backed securitisation transactions originated and/or set-up in European jurisdictions and it is most applicable to transactions and programs backed by receivables related to (1) revolving credit lines (such as credit cards, overdraft, etc.) or (2) consumer and commercial loans or leases (in this methodology generically addressed as asset-backed securitisation transactions or ABS transactions). The underlying pool of receivables typically arises from one or more large homogeneous pool of finance contracts.

This methodology is also deemed applicable to other non-European jurisdictions with sufficiently similar legal and regulatory regimes, provided that such jurisdictions do not fall under the scope of another existing DBRS methodologies. For instance, DBRS deems this methodology suitable for rating ABS transactions backed by Australian receivables because of the similarity of the legal and regulatory framework currently applicable in the Commonwealth of Australia to that of England and Wales. DBRS evaluates on case-by-case basis whether this methodology applies.

It is important to note that the approach described herein may not be equally applicable to all cases. Instead, this methodology is meant to provide guidance and should not be interpreted as a rigid template; as such it should be understood in the context of the dynamic environment in which it is intended to be applied.

Each jurisdiction exhibits different legal frameworks, market practices and product characteristics. This methodology focuses on historical performance data relevant to the asset class and jurisdiction under consideration, and therefore typically reflects market specificities without the need to introduce jurisdiction-specific adjustments.

However, DBRS recognises that each ABS transaction may be different, and that special risks and mitigating factors may lead to the modification of some of the criteria set forth in this methodology. ABS transaction rating analysis may materially deviate from the respective methodology from time to time. Many of the quantitative and qualitative factors that could result in a methodology material deviation are included in the following sections.

DBRS reviews the following qualitative and quantitative factors when assigning ratings to ABS transactions:

- Operational risks related to the originator(s) and servicer(s);
- Collateral and performance analysis;
- Capital structure and available credit enhancement;
- Cash flow analysis;
- Consistency of a transaction's legal structure and opinions with DBRS's *Legal Criteria for European Structured Finance Transactions* methodology; and
- Consistency with DBRS's *Derivative Criteria for European Structured Finance Transactions* methodology, where applicable.

DBRS's review typically comprises an operational risk review of the originator and servicer, including its origination, underwriting and servicing procedures and policies. The operational risk review and assessment provides insight into the manner in which these processes have affected past asset performance and assists in establishing an expectation of future performance of the asset pool to be securitised.

As part of the rating analysis, DBRS normally reviews[1] the characteristics of the asset pool to be securitised and analyses the originator's historical performance and/or assets of a similar nature to project a cumulative net loss expectation for the pool (expected net loss). DBRS then usually applies stresses to the expected net loss for each successively higher rating level. While the focus of DBRS's analysis is typically on the expected net loss and the past volatility of net losses, DBRS also analyses historical default (gross loss) data and historical recovery data. As for net losses, the aim of such performance analysis is to project cumulative defaults (expected gross loss), the expected average recovery rate and the historical variability of defaults and recoveries.

For each assigned rating, DBRS analyses the transaction structure under various stress scenarios to determine the ability of the notes issuer to repay investors in accordance with the terms of the transaction.

DBRS reviews the transaction's legal structure and opinions for consistency with DBRS's *Legal Criteria for European Securitisations* methodology.

Operational Risk Review

Originator Review

The originator review process evaluates the quality of the parties that play a relevant role in the origination process of the finance products that are securitised. While DBRS does not assign formal ratings to these processes, it typically conducts operational risk reviews to assess the quality of an originator in the context of the securitisation and incorporates the results of the review into the rating process.

DBRS typically begins the initial originator review process by sending a questionnaire to the company that outlines the topics to be covered during the discussion with management and includes a list of documents to be provided such as organisational charts, financial statements and underwriting guidelines. In instances where DBRS determines that the originator is below average, issuers may incorporate certain structural enhancements into a transaction such as additional credit support or a third-party firm to provide the requisite representations and warranties. DBRS may refuse to rate a transaction based on originator-related operational risk concerns.

The originator review process typically involves a review and analysis of the following:

1. Company and management;
2. Financial condition;
3. Controls and compliance;
4. Origination and sourcing;
5. Underwriting guidelines; and
6. Technology.

For details on the originator review process, please refer to the DBRS's *Operational Risk Assessment for European Structured*

1. Please refer to the DBRS methodologies (1) Operational Risk Assessment for European Structured Finance Originators and (2) Operational Risks Assessment for European Structured Finance Servicers.

Finance Originators methodology.

Servicer Review

The servicer review process evaluates the quality of the parties that service or may conduct backup servicing on the loans that are securitised. While DBRS does not assign formal ratings to these processes, it typically conducts operational risk reviews to assess the servicer quality in the context of the transaction and incorporates the results of the review into the rating process.

DBRS typically begins the initial servicer review process by sending a questionnaire to the company that outlines the topics to be covered during the discussion with management and includes a list of documents to be provided such as organisational charts, financial statements and performance statistics. In instances where DBRS determines that the servicer is below average, issuers may incorporate certain structural enhancements into a transaction such as additional credit support, dynamic triggers or the presence of a warm or hot backup servicer. DBRS may refuse to rate a transaction based on servicer-related operational risk concerns.

The servicer review process typically involves an analysis of the following:

1. Company and management;
2. Financial condition;
3. Controls and compliance;
4. Loan administration;
5. Customer service;
6. Account maintenance;
7. Default management:
    a. Collections,
    b. Loss mitigation,
    c. Bankruptcy,
    d. Fraud;
8. Investor reporting; and
9. Technology.

For details on the servicing review process, please refer to DBRS's *Operational Risk Assessment for European Structured Finance Servicers* methodology.

Collateral Analysis

Data Request

As part of the rating analysis[2], DBRS typically analyses historical performance data provided by one or more originators or sponsoring entities. When applicable, DBRS also considers the originator's experience and position in the context of the performance of the relevant market segment (e.g., existing transaction performance, peer data, market data). For consumer and commercial ABS transactions where the assets are sufficiently granular, DBRS utilises this historical data to help assess expected performance. Preferably, DBRS expects issuers to provide data and information, as described herein that cover performance during at least one economic cycle.

Static and Dynamic Pool Data

For transactions backed by a granular pool of term loans or leases DBRS loss analysis focuses on static pool data[3] from discrete and homogenous groups of loans originated over a relatively short period of time. Ideally, these time periods should be monthly or quarterly. DBRS elects to review static-pool cumulative defaults (or gross loss), their related recovery rate and the cumulative net loss data separately. DBRS usually prefers separate static pool recovery data to be provided to better understand the dynamics of the recovery process and to develop more appropriate stresses. For example, if only static pool net loss data was reviewed, periods of elevated defaults could be masked by strong recovery performances that may be incompatible with some rating scenarios. When only net loss data is available, DBRS typically estimates gross default and recovery inputs. For cases where adequate static pool data is unavailable or limited, DBRS may consider using managed portfolio data as an estimation, although this approach has certain limitations. Portfolio performance measures, such as defaults, write-offs and recoveries, may

2. In this report unless otherwise stated, the methodology should be understood to apply similarly to loans, leases and to any other relevant form of financing.
3. Static pool data presents on cumulative basis the evolution of certain events (e.g. prepayments or defaults) over a portion of pool statically identified (for instance by the origination month or quarter).

be concealed by a growing stock of loans during portfolio expansion: while it is possible to adjust the calculations to address this, these adjustments do not provide any insight into the timing of defaults and losses, which may be an important component of DBRS analysis. In addition, utilising only aggregate portfolio net returns makes it difficult to adjust for changes in asset composition, and the amount and timing of recoveries can also be obscured. DBRS may, therefore, request supplemental data to refine its default and loss projections, and may consider alternative data, such as the performance of similarly originated assets, within the same jurisdiction.

In contrast, for pools of revolving lines or credit cards, dynamic arrears and default data are central as opposed to static data analysis. Although the static default and recovery analyses[4] are still relevant DBRS determines its stresses on a dynamic basis due to the nature of the underlying contracts that are not repayable according to a fixed schedule or target and are, on the contrary, subject to further draws. DBRS typically analyses a full set of arrears by monthly or, at least, quarterly arrears buckets to assess transitions together with dynamic payment or pre-payment performance. Static recovery analysis is also deemed relevant to incorporate strong recovery performance (if any).

For granular commercial lease contracts DBRS usually assesses its stresses in a similar way as for consumer loans and leases; however, when the key risk is deemed to be enterprise risk, DBRS may elect to apply its *Rating CLOs Backed by Loans to European SMEs* methodology for the purpose of the gross loss stress determination and, thus, the data requests of the aforementioned methodology may apply. Static recovery analysis is still the focus to assess recoveries and related assumptions.

Typically, DBRS receives a minimum of five years of seasoned performance history from an issuer to perform a rating analysis.[5] The age of a vintage considered seasoned typically depends on the finance product and the repayment characteristics (e.g. original term, average life, balloon repayments, etc.). In cases where originator-specific data is limited or unavailable, DBRS may use alternative data from different relevant sources and benchmark its stresses against such data. DBRS may decline to rate ABS transactions if data is not sufficient or relevant performance history is not available.

Both static and dynamic pool data should be presented in such a way that default definition is consistently applied[6] and defaults are identified in a manner that is consistent or at least compatible with the definition of a defaulted receivable in the transaction documentation so that cash flow stresses can be constructed in a way that properly addresses the collateral's loss profile. However, in presence of sufficient liquidity data carved out on more restrictive definitions may be deemed representative.

Pool Characteristics

Typically, DBRS receives stratification tables and/or line-by-line details that provide a summary of the relevant pool's characteristics.

In general, the characteristics of the static pool default, recovery and net loss should mirror the characteristics of the securitised pool as closely as possible. However, DBRS recognises that pools with similar summary characteristics can demonstrate significantly different performance. For instance, two portfolios may have identical remaining terms to maturity but the underlying stratifications may indicate that one pool has a higher share of longer-term loans, which are likely to have higher losses. For this reason, it is important that issuers have the reporting capability to provide static pool performance data that can be stratified by various attributes such as credit score, finance product type, origination channel, customer type etc. and, specifically for leases and loans, contract original term, amortisation type, financed assets, etc. In cases where sufficient loss performance detail has been provided, DBRS can refine its loss analysis by using the data to determine an expected net loss for each distinct component of the pool and then use this information to develop a weighted-average (WA) expected net loss for the securitised pool based on the relative contribution of each segment.

This methodology covers various finance products including amortising loans, leases and revolving lines, but also covers both substantially unsecured products (e.g., credit cards, personal loans) and secured products (e.g., some lease contracts or some auto loans). DBRS may analyse some pools in their entirety but in some cases where the type of financing products in the ABS transaction is varied or less representative of the originated pool separate analyses of the pool strata may be necessary to appropriately assign a rating.

Asset Characteristics

Some finance products such as some auto loans and leases and most of the commercial leases benefit from a security interest over an asset (or some assets) that are typically purchased with debt or leased through a finance contract. The ABS transaction may benefit from such security interest both as an incentive to pay and as a source of recovery through the sale of the asset. This

4. The concept of original amount is not common for revolving lines and credit cards where further draws are possible all over the life of the credit line. Static default analysis is thus only possible on the basis of number of accounts.
5. DBRS may consider rating transactions with limited data history provided that relevant alternative information of satisfactory nature and quality exist in form and quantity sufficient to form an opinion on the expected credit behaviour of the underlying pool. Such circumstances are considered on a case by case basis.
6. The same definition should be applied to the construction of arrears, defaults (static and dynamic) and recovery analysis.

is typically the case for auto leases and for some, but not all, auto loans.
DBRS typically reviews the characteristics of the assets being securitised on an aggregate basis. However, loan or lease level analysis may be relevant where there are concentration risks and/or a reliance on cash flows resulting from the sale of an asset. In a typical granular ABS transaction, DBRS may rely on pool stratifications and a review of the asset pool on a line-by-line basis is not usually performed. DBRS usually reviews any individual obligors or assets that represent an unusually large proportion of the pool. Where a securitised pool is composed of distinct sub-pools that are themselves homogeneous, but have exhibited different credit behaviour, DBRS normally analyses each of the sub-pools separately.

Asset deterioration may be affected by the existence of revolving or pre-funding periods (such as ramp-up or warehousing), since the characteristics of the underlying asset pool may change due to changes in origination or market standards, the evolution of economic cycles and other factors.

Revolving, Ramp-Up or Pre-Funding Periods

Some ABS transactions may be structured in a way that all or part of the funds collected, and/or additional proceeds funded by noteholders or sponsors may be applied to purchase additional pools receivables related to similar finance products.

Re-investment of collections and/or ramp-up typically prevents or reduces the amortisation of a transaction and extends the expected life of the securities to be rated.

Pool performance risks are generally higher for transactions including revolving, reinvestment or warehousing periods because of the potential deterioration of origination standards and the increased risk of an economic downturn occurring during the life of the transaction (naturally prolonged by the re-investment or ramp-up of portfolio). Furthermore, assignment of additional receivables after transaction inception may alter the characteristics of the portfolio backing the securities to be rated, for instance, by modifying the balance of the distinct homogeneous sub-components but also by introducing additional risk factors such as negative carry, excess spread leakage or asset liability mismatch. Within the transaction's legal documents, restricting conditions to further assignments included in a revolving transaction help to establish a threshold for asset quality and are an important part of maintaining pool consistency. Such conditions are usually in the form of eligibility criteria applicable to certain types of loans and concentration or performance limits, but also take the form of triggers related to transaction counterparties or structural events (e.g., insolvencies, termination of mandates or undercollateralisation). Lack of restrictions upon further assignments is usually addressed by DBRS assuming adverse selection, although DBRS may, to some extent, rely on the consistency and continuity of origination policies.

Revolving or ramp-up periods may be beneficial to some transactions since they can reduce negative carry and provide for an efficient use of collections. However, DBRS does not give credit to the benefits and typically analyses a transaction in its amortisation phase starting worse than initial portfolio and structural data.

Italian Salary-Assignment Loans

This asset class is specific to Italy and although it is sometimes identified as an unsecured personal loan, the typical loan benefits from several forms of protection. The product is specifically addressed in this methodology in the section of "Italian Salary-Assignment Loans".

Static Default Analysis

As outlined above, historical performance data may be provided on a dynamic or static basis, if the portfolio evolution is observed on managed portfolio basis, or if various vintages are analysed separately. In this section, the static default analysis typically conducted by DBRS is outlined.

Asset characteristics vary across jurisdictions, primarily as a result of different legal and regulatory frameworks, but also because of differing market practices and borrower behaviour. These different frameworks also result in different rights for creditors and lessors, as well as different optimal workout strategies for impaired assets. DBRS typically reviews the jurisdictional factors to assess whether historical performance data remains predictive of future performance and whether there is a need to introduce further jurisdiction-specific adjustments.

The expected cumulative net loss rate of a given pool of receivables is DBRS's expected cumulative default rate net of relevant recoveries. Typically, the relationship can be expressed as:

$$N = D\,(1 - R)$$

N = cumulative net loss rate, typically, expressed as a fraction or a percentage >0% and <100%
D = cumulative default rate

R = recovery rate (based on the default definition), and $(1 - R)$ = loss given default
In establishing the expected cumulative default rate estimate and the expected recovery rate for an ABS transaction, DBRS reviews the historical (static) performance data provided for assets with the same or similar characteristics to reach an expected net loss figure. The approach is substantially similar when DBRS receives data for net losses and defaults, or net losses and recoveries.

DBRS uses the historical static information as a foundation to construct an estimate of the expected cumulative default rate and related recoveries for the analysed pool considering factors such as the economic environment that existed as the pools seasoned and any changes in origination or servicing practices that might result in markedly different performance metrics across different vintages. Various vintages may be weighted or otherwise considered depending on their respective relevance.

Ideally, historical data should be sourced by the same originator of the securitised pool; however, DBRS may also contrast the performance metrics with those of other originators operating in the same markets.

Extrapolating Static Vintages

When sufficient data is available, DBRS may have to extrapolate or project recent vintages in order to reach the desired term and cover the expected life of the ABS transaction. The relevant term depends on a number of factors, including but not limited to the securitised pool characteristics, the repayment characteristics and the general framework as well as the ABS transaction structure.

DBRS typically develops a vintage-timing curve for the collateral pool or each sub-pool or for other discrete categories representative of key portfolio characteristics and uses these curves to forecast vintages which have not yet completed their life cycle or have not yet reached sufficient maturity. Typically, a suitable curve is a double exponential function that fits to the available vintages, but DBRS may consider alternative options, especially if the actual behaviour appears different.

There are a number of factors that DBRS takes into consideration when extrapolating losses for pools including:

- The extrapolation technique may magnify performance anomalies;
- Adequate adjustments should be made to properly account for changes in pool composition;
- Vintages covering a small number of observations may not be statistically significant.
- Increased vintage frequency usually provides useful insight but sometimes introduces variability.

Therefore, DBRS only extrapolates static pools that exhibit significant performance history compared to the asset life cycle (typically a minimum of 12 months) and checks that the pool has similar characteristics as the historical vintage performance data.

Expected Loss Parameters

Provided that available vintages are significant, DBRS analyses historical vintage data provided by the originator(s) to derive the expected loss parameters consisting of expected cumulative default rate, recovery rate and expected cumulative net loss. Typically, the rating analysis warrants that both the expected cumulative default rate and the recovery rate upon default are separately available and, thus, the expected net loss is also known. When separate gross loss and recovery vintages are available in separate data sets, the expectation is typically derived from the analysis of the series of the extrapolated vintage values.

The expected loss parameters are derived by applying qualitative techniques and by considering qualitative aspects, depending on the data and other factors. Since each vintage will perform somewhat differently, static analysis can also be used to estimate to what extent performance data has been deviating from the average. The analysis of past net loss volatility is another important step in DBRS's rating analysis, thus expected loss parameters may incorporate a stress based on past volatility.

The Approach Based on the Volatility Stress

DBRS examines the inherent volatility of the performance of the assets. To assist in this process, DBRS uses various statistical techniques to assess the expected asset performance.

The typical technique considers mathematical expectation and its related variance applicable to the relevant set of extrapolated vintages. Typically, weighted average is chosen for cumulative default rate and cumulative recovery rate. The expected loss values are sometimes expressed as a combination of mathematical expectation and its related variance as follows:

$$E + h\sigma$$

E:= mathematical expectation of series of extrapolated vintage,

σ:= related standard deviation,
h:= the stress factor, is an integer number or typically a small fraction (e.g. 0, ±1⁄4, ±1⁄2, ±1, ±2). The approach to recoveries is similar (assuming that recovery data are available in a suitable form), although the adjustment is likely to entail the use of a negative value of h.

The expected cumulative default (or the expected cumulative net loss) may incorporate the stress factor usually defined as a positive number. The stress factor is typically a negative number for recoveries so that the expected loss parameters may not reflect the historical data's mean performance, but reflect potential uncertainty related to the vintage data.

The stress factor and, in general the stresses applied to and included in the expected loss parameters, depend on both qualitative and quantitative factors including:

- The amount and relevance of data available.
- The economic cycle covered in the available history, and whether provided history is otherwise representative of an extremely benign or adverse phase of the cycle.
- Unevenness of the vintage curves[7].
- Presence of concentration, spikes and point in time events (such as policy changes or portfolio sales).
- Positive or negative performance trends.
- Corporate events and changes highlighted during an operational review.
- Originator driven phenomena such as high pre-payments, renegotiations, moratoria and competition by peer lenders.
- Eligibility criteria.

Usually, the lower the frequency of vintages provided the lower, typically, the observed volatility. Thus, a higher stress factor is likely to be used when only aggregated low-frequency vintage data is available.

DBRS may stress its expected loss parameters by applying alternative techniques, including qualitative considerations.

Other factors are also relevant to the definition of the overall stresses applicable to a pool, although not necessarily all are included in the expected loss parameters[8]. Other factors than the quantity and volatility of the available data that may typically affect the stresses applied when determining the expected net loss include the following:

- Consistency over time of the origination in terms of pool characteristics (e.g., contract or customer type), lender attitude and business model (e.g., origination policies, target or objective) or corporate structure (e.g. acquisitions, mergers or other corporate events, etc.);
- Collateralisation of loan (secured vs unsecured);
- Timing of recovery;
- Consistency of the legal framework; and
- The default definition used.

In some cases, DBRS may introduce variable stresses depending on the scenario being assessed. Such scenarios usually reflect different positions in the economic cycle which represent an important driver of the observed vintage volatility. In such circumstances, DBRS may reduce or remove the volatility stress to avoid double counting of similar stress factors. This is typical in cases where, for instance, recoveries are heavily reduced on scenario-based assumptions (e.g., some auto loans, Italian salary assignment loans, etc.).

7. The projection approach is designed to be applied to regular and smooth vintages. When it is applied to uneven vintages, it may produce artificially high parameters. In such instances, DBRS may consider lower stress factors.
8. As covered herein, DBRS also applies stresses in the form of multipliers and recovery haircut; thus some factors, when not covered under the expected cases, may be applied in the form of higher multipliers.

Dynamic Data Analysis

DBRS analyses dynamic data both to reinforce and verify its analysis of static data and to derive direct measures such as prepayments or arrears.

Some ABS transactions are backed by receivables related to revolving lines (such as credit cards), and the concept of cumulative default rate or cumulative net loss on a static basis is not indicative of the pool performance. Typically, static analysis is less relevant within DBRS's cash flow analysis as each credit line is not usually repayable in accordance with an agreed plan, but on more loosely defined principles and the outstanding balance may increase (rather than reduce) due to further draw-downs.

Due to the revolving nature, static data cannot be aggregated in the same way and dynamic losses are deemed more significant. However, DBRS still endeavours to evaluate vintage performance using dynamic metrics such as an annualised charge-off, yield rates and monthly payment rates for revolving facilities.

Loss Coverage and Rating Stresses

After establishing expected loss parameters for the analysed portfolio, DBRS normally applies various stresses to assess the default and recovery levels[9] and other components that can affect the amounts and timing of the cash flow for each tranche of debt issued against the receivables should be able to withstand at a specific rating level (the stresses). As such, stresses vary depending on several different factors including the rating level being considered, the pool characteristics (primarily the average performance and volatility), the transaction structure, the legal and regulatory framework, etc. This methodology focuses on the ranges of stress levels DBRS typically applies in relation to credit losses and other additional losses that are strictly related to some consumer or commercial products (such as, for instance, auto loan/lease RV loss or extension loss related to Italian salary-assignment loans) but it does not focus on the approach to other specific stresses (e.g., legal risk, counterparty risk, interest rate risk, market risk) that may be covered in other DBRS rating methodologies. Details of the relevant consumer and commercial ABS collateral stresses are described in the asset-specific sections of this methodology.

The DBRS approach aims to define rating specific stresses, including but not limited to the stresses detailed in this methodology. Such stresses, typically defined on a rating specific basis, are considered together with any relevant mitigating factor and applied to the transaction financial structure to verify that stressed cash flows are sufficient to repay investors in accordance with the relevant terms of investment. DBRS recognises that each ABS transaction may be different and that special risks/mitigating factors may lead to the modification of some of the criteria set forth in this methodology. As such, transaction ratings may materially deviate from the methods described herein from time to time.

Transaction Financial Structure

Priority of Payments

On a regular basis (e.g., monthly, quarterly or semi-annually), collections on the receivables are aggregated and then distributed to noteholders based on the priority of payments established in the transaction documents. Collections from the receivables may be combined to create available funds which are then subjected to a payment waterfall, or they may be segregated and then subjected to separate principal and interest waterfalls.

Collections pass through a payment waterfall that allocates them to transaction counterparties and noteholders in descending order of priority. Recurring transaction expense items, including servicing and trustee or transaction management fees, commonly rank the highest in the waterfall, after which noteholders receive interest and principal on either a sequential (senior to junior) or pro rata basis, as described below.

Repayment Structure

When more classes or series of notes are issued backed by the same pool of receivables, their hierarchy is usually clearly outlined in the transaction documents.

A sequential structure provides for all principal amortisation and prepayments to be allocated to the most senior class of notes until the notes are fully repaid; only then are principal and prepayments directed to the next class under the priority of payments. Losses, on the other hand, are allocated in a reverse sequential fashion. Losses in excess of the excess spread, the reserve account and overcollateralisation are absorbed by the lowest-ranked tranche. Once the lowest-ranked tranche is written down to zero, the losses are absorbed by the second-lowest-ranked tranche in the structure, etc.

9. Stresses primarily involve credit risk and are directly linked to default and recoveries but additional losses can be applicable including but not limited to, residual value (RV) losses, collection shortfalls, etc.

A pro rata structure typically allocates principal collections and prepayments proportionally to all outstanding notes to maintain constant credit enhancement levels. Under such a payment structure, subordinate tranches can receive principal payments while senior notes are still outstanding. Pro rata structures, however, typically contain performance triggers such that, should the transaction performance deteriorate, repayment of subordinated tranches would be stopped and interest and/or principal of the receivable pool would be redirected to repay senior tranches first.

Thresholds and Triggers

Depending on the structure of a transaction, performance thresholds or triggers can mitigate risk from deteriorating economic environments and/or collateral performance. These performance triggers are designed to assure that senior noteholders have preferential access to cash flows from the pool, thereby enabling the subordinated notes to absorb more losses. DBRS assesses the extent to which any additional credit enhancement may be built up as a result of such triggers and cash flow scenarios. Common transaction triggers include thresholds for minimum payment rates, seller's interest, cumulative defaults, current delinquency, default and net loss rates, and yield or excess spread falling below a predetermined level. In revolving transactions, triggers may also limit the issuer's ability to reinvest collections in new receivables. To the extent that the non-curable triggers were breached, the revolving period would stop and amortisation would commence.

Servicing[10]

Given the critical nature of the servicing function in structured finance transactions, DBRS considers the likelihood and consequences of a servicer failure and any ensuing collection disruption.

The servicing agreement is expected to contain provisions that allow the trustee or transaction manager to appoint a replacement servicer on behalf of the noteholders if the original servicer is unable or unwilling to perform its duties, or if the servicer defaults in certain of its material obligations. DBRS assesses whether the servicing fee provided for in the event of a servicer replacement is sufficient to induce a replacement servicer, who may not have been involved in the original transaction, to properly and profitably service assets. Consideration is also given to the amount of transition expenses provided for in the transaction documents and DBRS may stress these amounts to account for the costs of finding eligible replacements in a stressed scenario.

If a backup servicer has been designated in the transaction, DBRS typically considers the amount of preparation any backup servicer has undertaken with respect to the current transaction, such as data mapping with the servicer's systems and its ability to take over collection accounts to minimise payment disruptions.

Credit Enhancement

DBRS evaluates both the amount and form of credit enhancement when assigning and monitoring ratings. This analysis is performed concurrently with the cash flow analysis discussed in the following section. The appropriate form and amount of credit enhancement depends on a number of factors, including the overall amount and timing of losses, the extent of prepayments, excess spread and potential disruptions in servicing that may occur during a transfer of servicing. Credit enhancement in consumer and commercial ABS is usually provided through a combination of subordination, reserve fund and excess spread. Hereby, DBRS does not determine credit enhancement levels or transaction structures, but rather considers the level of protection provided by the amount of available credit enhancement in the context of a structure and related triggers.

Reserve Fund

Reserve funds are accounts that can supplement collections on the receivables. Such accounts may be funded at issuance or designed to trap excess spread to a pre-specified target amount. Reserve funds are typically held in a cash deposit account or in short-term securities with little default risk.

While credit enhancement in reserve accounts has the benefit of not being subject to erosion through collateral losses as is the case with subordination, reserve accounts typically earn a very low (or negative) rate of interest that can contribute to loss coverage. Reserve accounts do, however, have the benefit of providing liquidity to address servicing disruptions and/or unexpected spikes in losses. Reserve account floors can be used to provide back-end protection for noteholders.

Excess Spread

Excess spread consists of interest generated by the assets that exceeds the cost of funding on the securities and transaction expenses such as servicing, trustee, transaction manager and professional fees. Generally, excess spread is available on a monthly basis to absorb losses. To the extent that all obligations prescribed by the transaction liability structure are satisfied, excess collections can be released to the issuer or residual holder. Consequently, in the absence of mechanisms to trap excess spread, it is only available to cover losses incurred during the period when it is collected ("use it or lose it"). Excess spread may be trapped by transaction triggers related to collateral performance, but such spread is again only available in periods when it is collected and may be substantially reduced as prepayments and defaults increase. Excess spread may decline over the life of a transaction when high-interest rate loans default or prepay at a higher rate than the overall pool. DBRS evaluates this risk when reviewing

10. Please refer to the DBRS methodology Operational Risk Assessment for European Structured Finance Servicers.

collateral stratifications, and usually performs cash flow analysis to assess the ability of the transaction to withstand declining levels of excess spread under higher stress scenarios.

Cash Flow Analysis

The transaction financial structure is combined with the asset characteristics and with the relevant additional available information in a cash flow analysis for the transaction.

DBRS evaluates cash flow analysis results to assess the financial viability of a transaction, the sufficiency of available credit enhancement and/or liquidity at the assigned rating level(s) and the ability of the transaction cash flows to repay investors according to specific terms of investment.

The inputs of the cash flow analysis generally include the following:

- **Asset Pool Characteristics** such as the pool applicable composition, the expected repayment schedule, the portfolio yield and all cash available to the structure;
- **Losses:** typically expressed in terms of stressed gross loss levels for each assigned rating and relevant recovery rate but including additional collateral losses as the case may be (e.g. residual losses, counterparty risk, other additional losses, collection shortfalls, tax liabilities, etc.);
- **Default and Loss Timing Curve:** In addition to considering the historical distribution of losses, DBRS evaluates cash flow scenarios that capture front- and back-loaded loss scenarios;
- **Recovery Delays:** Cash flow scenarios may incorporate delays in recoveries from defaulted receivables, for example, due to ineffective servicing, a servicing transition or regulatory constraints;
- **Prepayments:** DBRS typically selects a finite number of prepayment scenarios defined by constant prepayment speeds, in general three scenarios are sufficient with an average (or expected) scenario comprised between a minimum (or low) and a maximum (or high) prepayment scenario[11];
- **Interest Rate, Basis Risk or Foreign Currency Swaps:** the cash flows assume interest rate, basis risk and/or foreign currency stresses as described in DBRS's *Interest Rate Stresses for European Structured Finance Transactions*. Hedging structures or derivative contracts may be considered as a mitigating factor as per DBRS's Derivative Criteria for European Structured Finance.
- **Transaction Structure, Priorities of Payments and Triggers:** The cash flow scenarios reflect the structure, priority of payments set forth in the transaction's legal documents, including the impact of defined triggers.

Term Contracts

Consumer and/or commercial term loan contracts and other term contracts falling under the scope of this methodology, include secured loans or leases, such as auto loans and auto leases, personal loans and other purpose loans (i.e. loans disbursed for the purchase of goods or services) but excluding credit cards and revolving lines that are analysed in this methodology on page 22. Real estate-related consumer loans (although not necessarily backed by mortgages) may not be in the scope of this methodology and are the object of other specific methodologies.

When evaluating a pool of term contracts, DBRS typically considers the following loan characteristics:

- **Contract Terms of Repayment**

  For the most part, term contracts are level-pay instalment receivables payable over a predetermined term. Some contracts (particularly auto loan contracts) or lease contracts are structured as balloon contracts (discussed in more detail in the following section). Balloon contracts have a large payment at maturity but may or may not have substantial RV risk (the typical contract with RV risk is the balloon auto loan where the obligor has the right to return the vehicle to the financing company at maturity).
- **Original Term and Remaining Term to Maturity**

  The original term of relevant contracts may vary depending on the product type, the borrower type and lending strategy of the originator(s). For example, a consumer loan usually has an original term up to ten years but an auto loan contract rarely exceeds a seven-year term.

11. In general the same prepayment speeds are applied across the rating scenarios but maximum and or minimum prepayment scenarios may vary depending on the rating assigned.

In many cases, longer-term loans are underwritten to more budget-constrained borrowers and may carry greater default risk than their shorter-term counterparts. However, the elevated credit risk may be offset by more restrictive underwriting policies.

- **Financing Rate**

  The contract yield (for consumer loans sometimes known as annual percentage rate or APR) charged on a loan is a function of the market environment, prevailing interest rates and the underwriter's perception of risk of default by the obligor. For floating-rate loans the yield is also influenced by the assumed interest rate development.

Cumulative Default Projections

Usually, DBRS establishes the expected cumulative default and recovery rate of a pool of term contracts through a static default analysis as referenced in the previous sections.

DBRS reviews the characteristics of the collateral pool separately considering the significant categories to check that the collateral characteristics of the securitised pool are similar to the collateral characteristics of the static pools in the data set. DBRS may consider parameters such as a credit bureau score or the issuer's internal credit score, new versus used vehicles and term to maturity.

DBRS typically defines expected loss parameters by applying a stress factor. However, the described approach based on static vintages is especially effective for consistent and granular pools but may be less adequate for assessing losses within a concentrated portfolio[12]. Expected loss parameters are usually defined for relevant pool components depending on the available information and combined to determine a transaction-specific expected case. However, in some cases, different portions of collateral may have to be treated and analysed separately (e.g., concentrated portion of the pool or longer terms as opposed to very short terms).

For some financing products, seasoned cohorts experience lower future losses because defaults tend to occur early in cohort lives. To determine losses for these pools, DBRS may estimate a whole-life loss timing curve for a cohort based on historical whole-life results for similar obligors, type of loan and jurisdiction. The above analysis assumes stable economic risk factors; anticipated economic deterioration may force reconsideration of prior seasoning assumptions. Furthermore, DBRS does not normally give any seasoning credit to revolving pools, since the WA seasoning of the underlying collateral may change during the revolving period.

Recoveries

It is optimal to analyse a transaction by separating defaults and recoveries. This distinction is especially relevant when the factors that influence defaults can be different than those determining recovery levels (especially collateral values). For example, automobile values as collateral can be influenced by many variables that may be unrelated to the default of obligors, such as new vehicle pricing and incentive policies of the auto manufacturers that favour new cars over old cars, body-style changes, product line discontinuances, fuel prices, regulatory changes and overall consumer tastes and preferences.

The expected recovery rate of a pool can also be derived by comparison between historical gross and net loss data, although when there is significant volatility observed between static vintages the result is more difficult to determine.

DBRS may define an expected recovery assumption but apply rating specific recovery assumptions. This is typically true if recoveries are influenced by factors that vary upon different rating scenarios or are directly related to market value decline of an asset.

Similar to its approach to expected cumulative default rate, DBRS evaluates an originator's historical recovery experience as well as third-party data relating to the relevant collateral market to develop recovery estimates. The expected recovery rate used may capture the risk of volatility in recovery values and timing as summarised in previous sections and, when applied to stressed base assumptions, recoveries may not warrant additional adjustments or reductions related to high rating scenarios.

Cumulative Net Loss

The loss upon default rate (one minus the recovery rate) is calculated and then applied to the expected default to arrive at the recovery-adjusted expected net loss.

However, if net loss data is provided and separate recovery data is not available, the expected default would be calculated based on the static loss analysis described earlier in this Methodology.

12. As previously stated, this methodology is not specifically designed for concentrated pools and other DBRS methodologies may be applicable. However, reasonable concentrations or risk concentrations may be addressed within the framework of this methodology.

Default Stress Multiples and Rating Specific Recoveries

DBRS applies stress multiples to determine to what extent the cash flows produced from the underlying receivables may reduce because of defaults in a deteriorating scenario. The stressed assumptions, reflecting the expected cumulative defaults compatible with a rating scenario, are thus applied to test features of a structure in accordance with the cash-flow analysis approach.

The multiple ranges below are representative but not prescriptive of those that DBRS applies to the expected gross loss that reduce collateral pool collections in term contract transactions.

The stress multiples aim to emulate the increasingly reduced or otherwise unfavourable cash flow of the receivable pool to probabilities equal to those of the DBRS expected default rates. The ranges below in Table 1 are indicative and may be lower or higher to the extent that DBRS has a particularly positive or negative view of qualitative factors or other uncertainties not captured in historical data that could influence transaction performance.

Table 1

Multiple of Expected Gross Loss	AAA	AA	A	BBB	BB
Middle Level Multiple	5.0	3.5	2.5	1.75	1.35
High Level Multiple	6.0	4.0	3.0	2.0	1.5
Low Level Multiple	4.0	3.0	2.0	1.5	1.2

Multiples applicable to ‘high’ and ‘low’ notches between middle ratings may be derived by interpolation (usually linear interpolation).

DBRS generally starts with the middle multipliers and moves toward higher or lower multiples based on qualitative and quantitative factors. Some quantitative or qualitative factors may already be included in the stressed case net loss and such factors would therefore not be reflected in a higher multiplier choice. The main factors typically included in the expected gross loss definition are listed in previous sections, but DBRS may elect to not to consider all or some these factors within its expected loss assumption, in which case such factor may affect the choice of multipliers. The alternative approaches are not typically equivalent for all rating levels, thus DBRS may apply different approaches to different proposals.

The expected loss and the combination of the relevant factors ultimately result in the multiple used to assess the amount of loss coverage for each tranche of notes. The factors specifically relevant for the definition of multiples typically include, but are not limited to:

- Sovereign risk[13].
- The industry outlook and the position of the sponsor within the market[14].
- The position in the economic cycle or local market which, for instance, may be exhibited by unusually low expected losses.
- The findings of an operational risk assessment from an originator and/or servicer perspective.
- Operating environment or macroeconomic conditions which have not been reflected in the determination of the loss parameters including the stress factor.
- Concentration of risk (not addressed otherwise) or exposure to a sector.

Typically, the absolute level of a pool’s cumulative expected defaults is capped at 100%; thus, lower multipliers may be chosen in cases of pools with unusually high expected cumulative defaults.

If all or part of the term contracts are granted to corporate customers (i.e. large, medium or small businesses) and/or the pool is not considered granular, DBRS may consider applying its *Rating CLOs Backed by Loans to European SMEs* methodology to define the level of stress applicable for the entirety or for part of a pool in respect of a rating scenario. The aforementioned DBRS methodology contains a specific approach to defining recoveries that may not be relevant for some asset classes, such as leases where the lender benefits from a security title over the leased asset. Accordingly, in such circumstances, DBRS may apply the approaches discussed herein.

Multipliers are typically applied to the expected cumulative default rate and the rating-specific cumulative net loss is affected as a consequence of a higher default rate. However, different recovery rates by rating scenario may be defined as highlighted in previous sections.

13. See also “Appendix C: The Impact of Sovereign Ratings on Other DBRS Credit Ratings” of DBRS’s “Rating Sovereign Governments” methodology (www.dbrs.com). DBRS may apply sovereign stresses in accordance with its sovereign approach.
14. The industry business model and/or the position of the lender within the local or global market may hide or enhance risk factors that cannot be properly reflected in the available data (e.g. refinancing risk)

Cash Flow Analysis

DBRS typically uses a cash flow engine that shows the cash flows from the receivable pool under rating-specific stresses as they pass through the transaction waterfall, giving effect to credit enhancement and performance triggers. These cash flows are then compared with the payment requirements of the notes within the transaction.

Concentration of Risk

DBRS deems this methodology suitable to analyse pools that show some degree of borrower or segmental concentration.

The concentration is typically addressed by isolating the concentrated portion of the pool. In this case, the non-concentrated, granular portion of the pool is reviewed in accordance with the analysis described herein, with an adjustment to the stressed scenarios to factor in risks related to the concentrated positions.

For example, concentration of risk from or around a single name (typically a sovereign institution, an insurance company or a banking institution or group performing several roles or providing some form of financial support) may create a certain degree of dependence upon the credit standing of one or few entities, in the absence of mitigating factors such as downgrade provisions, reserves, and regulations, etc.

Unless the capacity of the issuer to repay the notes is strongly tied to the ability of such parties to honour their financial obligations, DBRS may consider that the linkage is sufficiently weak for the notes to achieve higher ratings than those of such parties, if the structure can support additional stresses that may vary depending on the following:

- The level of concentration from or around each single entity;
- The availability of a DBRS internal assessment for the relevant entities;
- The likelihood that the financial support from the relevant party continues over a specified time horizon compared to the likelihood of repayment of the notes commensurate with the rating of notes; and
- The mitigating measures in place, such as transaction structural features or regulatory requirement.

Default Timing

DBRS analyses the historical performance data to develop a loss curve that reflects when gross losses are expected to be registered during the life of the transaction. Default timing is an important component of the cash flow analysis because it affects the availability of excess spread to cover losses and other potential liquidity stresses.

DBRS aggregates all of the available historical gross loss curves (or net loss curves when relevant or separate data is not available) to develop the average amount of gross or net losses experienced at each period since origination. This average curve is then subjected to a curve smoothing technique that determines the most representative loss curve shape by minimising the squared error among the historical curves and the predicted curve. The result of this analysis is a smoothed curve that expresses the distribution of losses.

After the base shape of the default curve is determined, DBRS develops alternative loss distributions to evaluate scenarios whereby default and losses materialise quicker or later than expected. Under a sequential structure, the front-loaded loss scenarios typically add more stress to the available credit enhancement levels of senior securities in the structure while back-ended losses cause more hardship on the subordinated bonds. Table 2 shows an example drawn from an average curve distributed over a period of four years.

Table 2

Loss Distribution Vector*

Year	Back-Ended	Front-Ended	Average
1	20%	40%	30%
2	40%	40%	50%
3	30%	15%	15%
4	10%	5%	5%

*Note: The respective amount of losses is spread evenly throughout the year.

Prepayments

Evidenced by historical performance, prepayments and other form of early termination other than defaults (voluntary prepayments) may vary from one jurisdiction to another and from one finance product to another. DBRS typically analyses the historical dynamic performance in terms of early repayment to assess a range of prepayments to be tested. DBRS typically runs low, medium and high prepayment scenarios. DBRS notes that very high or very low prepayments may affect the assumed timing of defaults or losses.

The definition of the high prepayment scenario is typically critical, since the high prepayment scenario is likely to cause adverse selection in the underlying pool. However, when the early repayment is not a contractual right and has to be separately negotiated and agreed with a sponsor or the receivables assignees, the level of stress may be limited. This is due to the likelihood that under a stressed scenario (when the sponsor may become insolvent) it is not usually expected to be in a position to authorise repayment above the scheduled amount without appropriate indemnification. This is typically the case in lease contracts where early settlement is not usually regulated by the contract and has to be agreed with the issuer (as the assignee of the receivables) that is not typically allowed to take additional losses.

Other forms of contractual or regulatory early termination that may cause losses are analysed on a case-by-case basis. Typically, early terminations with embedded losses for the lender will be treated by DBRS under the same approach described above for credit defaults.

Some specific cases are covered in the next sections.

Auto Loans and Auto Leases

Auto loans are loans disbursed by banks or motor vehicle dealers and their financing arms for the purchase of a car or another motor vehicle. In some jurisdictions the securitised receivables comprise a strong security interest over the financed vehicle (e.g. Germany and the U.K.) whereas in other jurisdictions the auto loan is considered unsecured since the security interest is not typically formed or is in weak form (e.g. Italy, France and Spain). Auto leases are similar to auto loans except that the security interest over the vehicle typically exists. However, for some auto leases the enforceability of the security interest is tied to the solvency of the originator or the manufacturer.

Some secured auto loans or leases provide for a right of the borrower or lessee to turn-in the financed vehicle instead of meeting some scheduled payments. When contracts are securitised in a way that the risk of remarketing of the turned-in vehicle is transferred to the securitisation, the transaction comprises RV risk. Although RV risk is a form of market rather than credit risk DBRS approach to it is covered in this methodology under a specific section.

From the credit perspective, auto loans and leases are treated as the other unsecured consumer loans with the exception of the RV risk (if any).

When evaluating auto loans and auto leases, DBRS typically considers some additional characteristics. Some of the specificities of an auto loan (or lease) securitisation are summarised in the following sub-sections.

Down Payment and Advance Rates

The advance rate is defined as the initial loan balance, or financed amount, as a percentage of the sale price of the motor vehicle. The financed amount typically includes the sale amount (less the value of any trade-in) plus taxes minus the cash down payments. The financed amount may also include additional costs such as the insurance premium and extended warranty as well as any other fees.

High advance rates and/or rapid vehicle depreciation, particularly in the first few years of vehicle life, can turn equity negative when the borrowers' obligation under the loan exceeds the market value of the vehicle, resulting in a loss to the transaction if the vehicle is repossessed and sold. In auto loans, the concept of advance rates is analogous to the concept of loan-to-value ratios in other asset classes.

New and Used Vehicles

Auto loans can be secured by either new or used vehicles. Used vehicles have flatter depreciation curves than new vehicles; however, used vehicles often experience higher default frequency due to obligors' credit quality. Whereas a new vehicle always has a list price to help establish a valuation, particular care must be taken when valuing used vehicles to avoid overadvancing, because there can be a wide discrepancy among the various industry guides in determining the vehicle's market value.

Make and Model
The value of a car is determined by an assortment of factors. Depreciation is the single largest reason for the decline in a vehicle's value. Depreciation levels vary by manufacturer, vehicle make, vehicle model and fuel type, and can be affected by economic and regulatory conditions and model discontinuances. The manufacturer's ability to maintain warranty coverage also affects the depreciation rate. As a result, it is beneficial to ensure that vehicles in the securitised pool are diversified across make, model and manufacturer.

Loan Amortisation, Balloon Payment and Vehicle Residual Value
Auto loans and leases usually repay principal during the life of the loan through broadly equal instalments but in some case (typically for leases but more often also for loans) the last instalment envisages a much bigger final repayment (balloon payment). Although not all of the auto loans or leases bear a real claim over the purchased asset, the balloon size is usually associated with the vehicle RV. In auto loans, the payment of the final balloon instalment is usually mandatory and the auto lender does not usually take RV risk. Thus, the analysis of an auto loan securitisation does not usually entail RV risk analysis although the RV is somehow related to the recoveries. However, some types of auto loans (e.g. the UK personal purchase contract) may envisage the option for the borrower to return the vehicle instead of paying the final balloon instalment, hence either exposing the lender or the securitisation to RV risk.

Size of the balloon payment is particularly important when the securitisation is exposed to RV and the actual payment of the final instalment is subject to risk of fluctuation in the vehicle market. When RV risk is relevant, DBRS addresses the risk as specified in the following sections related to RV risk.

Servicing and Vehicle Remarketing
As repayment of the auto loans depends in part on the sale of repossessed or returned collateral, DBRS deems it important for servicers to strictly manage the vehicle remarketing process to ensure that vehicles are repossessed or returned and then sold in a timely and effective manner. Accordingly, in respect of defaulted contracts, DBRS assesses whether servicers' repossession policies are consistent with default and recovery timings prescribed in the transaction documents. Failure to do so could result in liquidity strains and reserve account draws in instances where the transaction does not receive the vehicle sale proceeds in a timely manner.

DBRS's review takes into account the legal framework of the jurisdiction, which governs how and when the lender or servicer is entitled to repossess and sell the vehicle, in an effort to refine its view of potential recovery delays.

Prepayments
In retail auto loans, early repayments, as a percentage of the vintage origination volume, are usually stable and generally independent of interest rates. Refinancing activity, the major driver of prepayments in the auto loan sector, is muted for two reasons: (1) the sharp initial fall in the market value of a vehicle when it leaves the showroom and over its first few years of use outpaces the amortisation of loan principal, giving lenders little incentive to offer refinancing against the depreciated collateral; and (2) auto loans have a relatively short term to maturity, reducing the amount of total interest savings to borrowers from refinancing. Conversely, consumer loans not secured by a vehicle may experience more volatile prepayment behaviour, due to a longer term to maturity or the unsecured nature of underlying collateral.

DBRS's expected loss parameters for prepayments reflect the actual rates experienced by collateral similar to securitised assets. High prepayments reduce the effective life of the asset pool for potential defaults to occur, while compressing available excess spread whereas slow prepayments lengthen the life of the asset pool to allow more time for defaults and excess spread to realise.

When RV loss risk at contract maturity is significant, prepayments may actually reduce the impact of losses on the structure. When prepayment is possible, DBRS applies a haircut to the prepayment rate experienced to determine a minimum level of prepayment speed to be considered.

Voluntary Terminations
In the United Kingdom, under the Consumer Credit Act (CCA), Section 100, an obligor is entitled to terminate an agreement after paying the financing provider half of the total price (a Voluntary Termination). The obligor is expected to take reasonable care of the goods and the lender is entitled to compensation should that not be the case. In essence, once a customer pays 50% of the total amount payable under the auto finance contract, he or she is permitted under the CCA to return the car to the credit provider. This may lead to a loss for the originator should it not be able to dispose of the vehicle at a price that covers the outstanding finance amount.

In assessing the risk of Voluntary Terminations to an auto loan transaction in the United Kingdom, DBRS reviews voluntary termination rates either on a static or line-by-line basis as part of the transaction's loss analysis. Static Voluntary Termination vintage curves are assessed in conjunction with the historic volatility observed in the used car market and, in line with its assessment of credit losses, a stressed multiple is applied to the expected Voluntary Termination. When DBRS considers that a transaction may be exposed to increased Voluntary Termination risk, typically as a result of longer contract terms, low initial deposits and vehicle depreciation volatility, DBRS may request loan-level data that allows an assessment of vehicle depreciation against the amortisation of the underlying financing agreement.

Lease ABS

Leases in ABS transactions include leases for both road-going and industrial vehicles; industrial, medical and computing equipment; and sometimes real estate, in addition to other types of assets. The participants in the lease market include banks, captive finance subsidiaries of vehicle and equipment manufacturers and independent finance companies.

A finance lease is a contractual arrangement whereby a lessor makes an asset available to a lessee (or obligor) for the term of the lease in exchange for the payment of repayment instalments. Consumer leases typically provide for level instalments, whereas commercial leases may be more complex (including interest-only periods or tailored instalments). At the end of the lease contract, the lessee may have an option to acquire the asset at a predetermined price (a closed-end lease) or is committed to purchase the asset at a predetermined price (an open-end lease). The predetermined price, or RV, is set so that the net present value of the instalments plus the RV is equal to the amount financed upfront by the lessor.

At the end of a closed-end lease term, the obligor, with an option to purchase the asset for a predetermined amount, is likely to evaluate the value of the asset versus the cost of acquiring the asset from the lessor. If the value of the asset is lower than the cost of buying it, the end user is likely to forfeit the option.

An operating lease is a contractual arrangement similar to a finance lease with the difference that at the end of the lease contract, the lessee always has to hand back the asset and has no contractual right to purchase it. In such contracts, the asset is usually sold in public auctions at the then prevailing market price. Although there may not be any contractual RV specified, the concept still exists for the lessor as the difference between the amount financed upfront and the discounted instalments payable by the lessee (this being equal to the discounted value of the RV of the asset). Operating leases may be closed-end or open-ended leases through a more or less complicated mechanism of adjustment whereas the lessee may take the risk or sometimes benefit from a positive change in the price of the asset.

Both financial and operating closed-end leases entail that the lessor (or its assignee) bears the risk that the remarketing price of the asset is that the RV risk.

The prevalence of open-end or closed-end and financial or operating leases varies by jurisdiction, driven by the legal and tax environment and customer preferences. Lease ABS transactions may involve the securitisation of payments from closed-end leases, open-ended leases, the separate sale of lease instalments or solely the RV payments. In fact, depending on the mechanism of assignment, the securitisation may or may not be exposed to RV risk. In circumstances where the RV risk is appropriately mitigated[15] the RV may be disregarded. Otherwise, where the securitisation is exposed to RV risk and mitigating factors are not sufficient, the risk of loss is separately analysed by DBRS assuming a haircut to collections at contract maturity. DBRS approach to RV risk is covered in another section of this methodology.

The analysis of the obligors, collateral assets, term and payments of the leases backing a securitisation help to assess how the securitised pool of receivables is likely to perform. This analysis is substantially similar for a pool of loans with an additional consideration of potential RV risk in closed-end lease transactions.

Residual Value Risk

In some securitisations the RV risk of loans or leases may be transferred to the holders of the bonds and the risk that remarketing of assets turned-in may not produce sufficient cash flows to fulfil the issuer's obligations may result in a loss for some of them. This is typically the case for balloon payments of auto leases and certain auto loans.

This section outlines the DBRS approach to RV risk and the determination of rating-specific RV losses in auto loan and auto lease securitisations. The same approach could be applied to other assets provided that, made few necessary alterations, appropriate information is available to assess the RV risk and quantify the RV loss.

15. For instance, if the residual value is not securitised or, if securitised, it is not paid or there is appropriate guarantee in place that meets the DBRS European Legal Criteria, or other situations that DBRS may consider on a case-by-case basis.

Collateral Analysis in Auto Loan Securitisation with RV Risk

For securitisation of auto leases or auto loans with RV risk, DBRS focuses on:

- Original Term;
- Remaining Term Distribution;
- Vehicle Make and Model;
- New versus Used;
- Geographic Distribution; and
- Residual Value

Original Term

The terms of consumer auto loans with RV or leases typically range from 24 months to 36 months, but may be as short as 12 months or as long as 60 months. As a result, the average term of securitised pools of leases is much shorter than the average term of auto loans, typically 24 months to 48 months although in recent years a tendency to grant such loans and leases on longer terms was observed in some jurisdictions.

Most vehicles depreciate sharply in the first year, with an average decline of 15% to 25% of the purchase price in first year. Over the following years, a vehicle may lose an additional 10% to 15% per year; however, there is wide variability in these depreciation rates, based on makes and models, as well as operational factors such as vehicle condition and mileage. Furthermore, the resale value at the end of the leases' or loans' term can be affected by wholesale market conditions, such as supply of similar used vehicles and health of the original manufacturer (which may reduce brand value and threaten future parts and service availability), as well as broader economic factors, such as fuel prices, the regulatory framework, personal income and employment. Consequently, the longer the term of the lease or loan, the higher the uncertainty associated with the depreciation rate and future wholesale market conditions, leading to higher RV volatility.

Remaining Term Distribution

DBRS examines the distribution of lease-term maturities within the securitised pool. A large portion of the lease contracts maturing in a short period concentrates and increases RV risk in a weak wholesale used car market. An even distribution of lease maturities diminishes the proportion of the pool subject to a brief downturn in used vehicle prices. Nevertheless, in deeply stressed environments downturns are more severe and longer, creating a sustained, higher exposure to the financing company for vehicles to be returned at a loss against RV.

Vehicle Make and Model

Diversifying the distribution of vehicle make and model reduces concentration risk due to any particular make or model. RVs can fall due to economic factors, as well as manufacturer-specific items, such as body-style discontinuances or deterioration in the financial condition of the manufacturer, resulting in concerns about their ability to satisfy warranty claims.

Residual Value Determination

The RV or the amount for which the lessee may buy the vehicle directly from the financing company at the end of the lease is determined at the inception of a lease by the finance company. This is sometimes referred to as contractual RV to distinguish it from the resale value of the vehicle at the end of the lease term. RV affects not only monthly lease payments, but also the likelihood that the consumer will turn in or buy the vehicle at the end of the lease term.

Leases with lower contractual RV will entail higher payments from the lessee, but can offer the opportunity for the lessee to take ownership at the end of the term by paying less than the price of a similar used vehicle. From the noteholders' perspective, this is a conservative RV policy which assures a predictable cash flow at lease maturity when the obligor (or the dealer on his or her behalf, if taking the car in a trade) will tend to pay the RV amount. From a manufacturer's perspective, the higher lease payments might slightly dampen initial vehicle sales, but may help the brand over the long term by giving dealers the opportunity to engage the lessees by using the equity they have in their leased vehicle to offset some portion of the costs of a new vehicle.

Leases with a higher RV offer low lease payments, which helps manufacturers to move vehicles from dealer forecourts, but they pass more risk to noteholders, as a large share of vehicles may be returned for resale at lower prices potentially resulting in RV losses.

Credit Losses

RV losses can only take place when contracts reach their maturity; thus RV loss and credit loss (as following contract termination) are mutually exclusive. The credit losses in a transaction can actually reduce RV losses (although typically not the overall loss of a pool) by impeding contracts to reach their scheduled maturity.

To determine credit losses on a pool of lease contracts, DBRS analyses static pool gross and/or net loss data in the same manner as for other term contracts, utilising the techniques previously described in this report. The typical expected loss coverage multiples are summarised in Table 1 above.

The ranges outlined in this methodology are indicative and may be lower or higher to the extent that DBRS has a particularly positive or negative view of qualitative factors that can influence transaction performance.

Turn-In Rates and Residual Value Losses

The RV risk depends on two factors: (1) the percentage of vehicles returned to the lessor at the end of the lease term (turn-in rate); and (2) the market value of the returned vehicles compared with the contractual RV at the end of the lease term.

DBRS examines the finance company's policy for setting future repurchase prices to gauge the expected baseline RV exposure for each securitisation. DBRS has observed that RV setting policies in many markets in Europe are relatively conservative, contributing to turn-in rates that have been less than those experienced in North American markets.

Turn-In Rates

The aggregate turn-in rate at maturity for a securitised pool depends in part on the lessees' exercise of the vehicle purchase option at lease maturity (if permitted), in addition to defaults and early terminations. The higher the percentage of lessees with purchase options who choose to purchase the vehicles at lease maturity[16], the lower the turn-in rate and the lower the RV risk. As a share of total lease outcomes in the pool, aggregate turn-in rates are reduced by customer defaults, insurance proceeds collected in connection with accidents or early prepayments (potentially substantial in some markets). Turn-in rates at maturity can vary widely and tend to rise when market prices for similar vehicles fall substantially below contractual residual values.

DBRS expects that a consumer who has the option to purchase a vehicle at a RV less than used-market value will do so as a rational economic behaviour. Conversely, a consumer facing a RV repurchase price higher than the market value will return the vehicle to the lessor, in effect transferring that loss to the lessor.

In establishing a turn-in rate at maturity for lease contracts, DBRS assumes that when the RV payment is paid by the lessee (or dealer on the lessee's behalf) this will be done at a gain for the lessee, but it results in a loss compared to the amount securitised against the RV in the pool. As a result, lower turn-in rates are more beneficial to a lease securitisation.

DBRS establishes an expected turn-in rate by examining a sponsoring entity's historical data, where past turn-in rates per make and model in a recession and where market values fell substantially below contractual RV are used as a proxy to interpolate future turn-in rates for similar makes and models in progressively worsening economic and wholesale vehicle market conditions. This analysis includes application of stresses to the expected case, considering the manufacturer's aims of using the RV provisions as short-term sale, neutral or longer-term repeat sale strategy, economic risks or competitive pressures, all of which could drive used car prices below projections.

The projection of the aggregate turn-in rate of the original pool first depends on the survival rate, which is the proportion of all leases on which all scheduled payments are successfully made to the end of term. This leaves a portion of the lessees in good standing with the choice to turn in the vehicle or exercise any available purchase option. Before this point, however, both stressed and unstressed environments will produce early terminations such as default-triggered repossessions, stolen or written-off vehicles because of accidents, lessees moving abroad or otherwise experiencing lifestyle changes that may contribute to their need for a replacement vehicle. In these cases, the lease will expire prior to its scheduled termination but, due to its low frequency and/or sufficiency of insurance (generally a condition of the lease), is unlikely to generate a meaningful loss to the lessor. Of the many factors leading to early termination of a lease, the repossession rate has the largest influence on turn-ins or survivorship, particularly in a stress scenario where the repossession rate is assumed to be several multiples of the historical level. DBRS also considers the total number of vehicles in the pool that can be deemed as scheduled turn-ins during the term of the transaction because of the expected negative equity position of the lessee at the end of the term.

For leases, there is a natural turn-in ceiling at 100% (i.e., the worst-case scenario will be that the entire portfolio is returned to the originator). The turn-in rate assumptions for lease agreements at maturity are typically 100% for AAA (sf) ratings. A lower turn-in rate may be considered in light of mitigating factors and for lower rating scenarios.

16. This includes settlements with dealers for purchase of a new vehicle. In these cases, the financing company will have received contractual payment instead of a physical vehicle. The dealer will then end up owning a fresh off-lease used vehicle which, after its negotiations with the lessee, it expects to sell for profit.

Impact of Early Settlements in Personal Contract Purchases

In the case of personal contract purchase (PCP) agreements, early settlements are typically very high, because car dealers and/or manufacturers actively solicit customers throughout the life of the agreement to use potential equity in the underlying vehicles to prepay their lease contracts and to purchase new vehicles. The percentage of early settlements is a function of the contractual RV level, actual depreciation rates and the performance of the used car market. When analysing a transaction, DBRS determines a base case cumulative early settlement rate for PCP contracts derived from historical data to identify the volume of vehicles that is not returned in addition to defaults. The early settlement rate is then stressed by applying the following rating-dependent haircuts:

Table 3

Rating	Haircut Applied to Base-Case Cumulative Early Settlements
AAA	75% - 90%
AA	65% - 75%
A	55% - 65%
BBB	35% - 55%
BB	15% - 35%

Although the reduction in the early settlement rate may lead to an increase in interest collections on the receivables, this is typically offset by the increased RV exposure. DBRS, therefore, assesses early settlements under both base case and stressed scenarios. Examples of how this affects DBRS's approach to determining turn-in rate are outlined in Table 4:

Table 4

Rating Level	A % of Loans Defaulted (stressed)	B % of Loans Early Settled Prior to Maturity (after haircut)	Reach End of Term (100%-A-B)	Turn-In Rate at Maturity	Aggregate Turn-In Rate
AAA	15.0%	10.0%	75.0%	100.0%	75.0%
AA	12.0%	15.0%	73.0%	95.0%	69.4%
A	9.0%	20.0%	71.0%	90.0%	63.9%
BBB	6.0%	30.0%	64.0%	85.0%	54.4%

Notes:
A Defaults are stressed according to credit loss multiples.
B Assumes that a base case of 50% of contracts are early settled prior to maturity.

Residual Values

Contractual RVs, or guaranteed purchase prices at lease-end, are typically set according to published industry guides on future value or proprietary models of the originators, which then may be further subsidised by the manufacturer to be set at a higher level to make monthly payment amounts lower and more affordable and to increase sales. To the extent that contractual RVs in the securitised leases is set above the predicted future value of the vehicle, DBRS would expect the transaction to incorporate sufficient credit enhancement to accommodate the anticipated amount of embedded loss on the resale of returned vehicles. DBRS only gives limited benefit to any manufacturer subsidies to cover losses, particularly for lower-rated manufacturers.

To analyse an originator's historical RV performance, DBRS compares its original forecast of the value of the vehicle at lease-end to actual sale proceeds upon disposal. DBRS requests that this information be provided for the prior three to five years, by lease term for each make and model. DBRS also uses this data to assess the capacity for the financing company to face losses on sales of turned in vehicles compared with the contractually priced purchase.

To determine the adequacy of protection for noteholders, DBRS assumes volatility in the underlying market value of the vehicles caused by unanticipated market and economic developments, leading to a systematic overestimation of contractual RVs. The DBRS analysis is based on the assumption that any industry guide forecast will not reflect all potential factors that could result in a systemic devaluation of the vehicles at the end of the lease term.

DBRS derives a base case RV haircut by assessing at least two out of the following three sets of data:

- A minimum of three years of the originator's historical realised vehicle data versus contractual RV and variability;
- Five years or more relevant market used car price data and variability; and
- An assessment of future market prices of used vehicles compared with the securitised contractual RVs by an independent third-party provider.

DBRS may consider alternative RV data available to assess whether the RV haircut can be determined. The base case RV haircut, as a percentage loss, is typically the worst historical realisation of the contractual RVs versus the then-current vehicle market values. Rating-dependent multiples are then applied to this base case, according to Table 4 shown below:

Table 5

Residual Value Haircut Multiples	AAA	AA	A	BBB
Maximum	3.00	2.50	2.00	1.75
Minimum	2.25	2.00	1.50	1.25

In determining RV losses, DBRS reviews other quantitative and qualitative factors that include the strength of an issuer's claim over the underlying vehicle sale proceeds.

Cash Flow Analysis

DBRS applies various of stresses to assess the ability of the notes issuer to repay the notes in full in accordance with the terms of the transaction documents. DBRS performs this analysis within a cash flow analysis that incorporates (1) increasingly stressed cash flows (including the stressed gross/net loss and RV loss assumptions) from the receivable pool for each successively higher rating and (2) the flow of these funds through the securitisation, considering triggers and credit enhancement. DBRS compares the amounts and timing of the receivable pool collections under a given set of rating-specific stresses as shown above, including available credit enhancement.

Credit Cards and Revolving Lines of Credit

Credit card ABS are securities that depend on payment of outstanding credit card balances, usually of thousands of credit card holders. Credit card issuers (including large retailers, which issue private label cards) use this form of securitisation to raise funds from third-party capital market investors. Credit card ABS have proven to be one of the more stable asset classes within securitisation.

As a revolving credit product or a personal line of credit functions similar to a credit card in many ways, except for the lack of physical access cards in some instances, the approach to rating revolving credit (excluding home equity lines of credit) is incorporated in the discussion here.

Credit card ABS may differ from other consumer ABS in the following ways:

- Receivables are unsecured, and cardholders may have lower credit quality than other ABS, based on expected charge-offs;
- Excess spread, which is typically high compared with other ABS classes, may also be volatile because of potential variation in finance charges to cardholders and funding costs of the issuer, itself dependent on future access to securitisation;
- The higher the utility of the credit card (more acceptance in more places or special rewards from the issuer), the higher its value to the credit card holder and implicit priority in personal financial payments;
- The notes are issued by a single trust of revolving receivables with frequent repayments and purchases of assets, securing several series of notes simultaneously. This means:
  - The business strength, competitive position and underwriting quality of the originator to assure new receivable generation through its franchise, carry over into the stability of securitised assets;
  - The allocation of payments from the receivable pool between several series of notes after an amortisation event (paying down notes issued by the trust and potentially winding down the trust itself) may have rating implications that are different than the usual sequential priorities of senior and subordinate payments from discrete pools.
- Given their high finance charges and increasingly pervasive use in personal finance, they have a higher potential to attract regulatory action, which may limit finance charges and payments.
- Because of these and other differences, as explained below, the dynamics and risks of cash flows from the collateral pool supporting credit card ABS necessitate different evaluation tools.

Credit Card Receivables

A credit card typically provides a cardholder with a maximum amount that may be borrowed and stipulates an interest rate to be applied to balances that are not paid in full each month. The interest rate on credit cards may be either fixed or floating. Outstanding card balances increase as charges are made and decrease when outstanding principal is repaid. Finance charges may include late payment, overlimit fees or annual fees, in addition to interest charges that accrue on unpaid balances. Finance charges may also include interchange, which represents fees received by card issuers from entities such as MasterCard Worldwide and Visa Inc. to compensate the card issuers for assuming cardholder credit risk on a given transaction, for fraud and for the cost of funding receivables. Interchange fees are typically paid by the merchants accepting the credit card transactions, not paid by cardholders and they are remitted to the card issuers and contributed to some but not all credit card securitisation structures to supplement the yield.

Cardholders that pay their entire balance in full each month are often referred to as convenience users or transactors. Other cardholders that make only partial or minimal monthly payments are referred to as revolvers and, therefore, often carry or revolve an outstanding balance from month to month.

Originator and Servicer Review

DBRS believes that the quality of the seller and originator directly affects the likelihood that the notes will be fully repaid and that credit card receivable sellers typically maintain a strong vested interest in maintaining the credit quality of the receivables backing the rated debt, as excess spread is typically released to the seller until the amortisation of notes occurs. Many sellers expend considerable resources to actively manage their accounts and corresponding receivables in order to promote consistent and robust levels of profitability. This active management includes originating receivables amid intense competition, reviewing and modifying credit limits, adjusting the APR for better risk pricing and performing collection activities to minimise credit losses.

Although the entity involved in the securitisation transaction is a bankruptcy-remote special-purpose vehicle, distinct from the seller, an evaluation of the seller is integral to the sustainability of the securitisation because the seller typically provides critical ongoing services as the (initial) servicer of the receivables. In the event that the seller becomes insolvent, the generation of additional receivables would likely dramatically decline or stop and the ability of the special-purpose vehicle to collect outstanding receivables through a replacement servicer could become severely impaired or uncertain.

Performance Metrics

Generally, DBRS first establishes expected loss parameter for each key collateral performance metric, including charge-offs, yield, payment rate and purchase rate as inputs in the cash flow analysis. DBRS assesses the data provided by the seller or arranger based on the collateral characteristics for the historical portfolio. If the receivable parameters are considered to be a good proxy for the potential performance of the transaction portfolio, DBRS may use the data to derive a base case scenario. DBRS also expects the receivables balance reported to reflect principal balances, excluding any interest billed.

Charge-Off Rate

Delinquent credit card receivables are typically charged off by the servicer after 180 days of delinquency or by other criteria usually defined under national regulations. Charge-off timings may differ between originators depending on their servicing and collection procedures; DBRS has observed charge-off timings in Europe from 90 up to 360 days in arrears. Account holders that file for bankruptcy or equivalent proceedings are also typically charged off by the servicer and in line with transaction documents. The charge-off rate is calculated as an annualised percentage of the amount charged off in the month of the amount of receivables outstanding. Because of the unsecured nature of credit card lending, recoveries are usually low. While a recovery rate of zero is typically assumed in the cash flow analysis, DBRS recognises recoveries in some jurisdictions may be higher due to charge-off timings, legislation or credit culture, if supported by adequate recovery data.

Charge-off rates are generally affected by three main variables: (1) macroeconomic factors, such as unemployment trends, consumer wealth formation and household leverage ratios, addressed by DBRS's view of the originator's market; (2) issuer underwriting (UW) and servicing capacities, addressed in the operating review; and (3) the consumer's personal situation, such as divorce, job loss or medical issues, which is an idiosyncratic risk typically embedded in past performance.

Adjustments to the Charge-Off Rate

Adjustments to the expected charge-off rate are typically based on factors such as the originator's financial strength, origination consistency, account management, collection and servicing practices, and overall variability, sufficiency and trends of the provided performance data.

The nature of a credit card may also affect the expected charge-offs. For example, private label retail cards typically incur higher expected charge-off assumptions than a general-purpose card because of the more limited utility of retail cards in a stressed scenario that the retailer and the originator are both in financial difficulties. The utility of retail cards drives the originator's ability to transfer or sell its receivables, which affects the financial viability and overall health of the originator. This is related to the retailer's ability to be maintained as a viable entity and to sell merchandise.

To the extent that DBRS determines changes have occurred to the criteria used in receivable origination or in collection practices which may affect future performance, an adjustment to the expected charge-off rate may be warranted. An adjustment to the expected charge-off rate may also occur as a result of changes in underwriting criteria and servicing practices of the originator, most notably the use of repayment plans and the re-aging of delinquent accounts.

In jurisdictions where the recovery process is helped by legislation and/or historical static data shows noticeable outcomes, DBRS would determine a lagged expected recovery, which may be subject to rating-specific adjustments.

Monthly Payment Rate
Payment rates represent total monthly collections received divided by the receivables balance. Payment rates are a critical factor affecting credit enhancement, as higher payment rates mean that more funds are available to repay the notes during either controlled accumulation or amortisation periods and typically result in lower enhancement.

Monthly payment rates are affected by several variables, such as delinquencies, which are inversely correlated to payment rates. In addition, the combination of the specific contractual minimum monthly payment and the percentage of cardholders in the pool who make the minimum monthly payment can have a significant impact on a portfolio's payment rate.

When determining the base case payment rate, DBRS typically uses principal payment rates and expects that the sponsor supply such data. If total payment rates including finance charges and principal are reported, DBRS typically nets out the finance charge component embedded in the total payment rates to determine the base case for monthly payment rate.

In determining an appropriate base case, DBRS also considers the underlying contractual payment terms to evaluate whether there is a requirement that a percentage of outstanding principal balance must be repaid on a timely basis.

Portfolio Yield Portfolio yield is typically generated from finance charges, annual fees, interchange fees, late payment fees, cash advance fees, over-limit fees and other miscellaneous fees levied on the cards. In general, portfolio yield is calculated as the annualised ratio of the monthly income collected (not billed) on the receivables divided by the principal receivables balance. Recoveries may be included in the calculation of yield (an additive item) or charge-off (a subtractive item), depending on the transaction documents or originator's practices.

Credit cards typically have annual percentage rates (APRs) that are fixed or based on a floating reference rate, plus a premium. The premium is often reflective of risk pricing and is based on the credit quality of the obligor and the obligor's performance as a cardholder. While credit card interest rates are intended to attract certain types of consumers, the card issuer's ability to reset the APRs is an effective risk-management tool. DBRS notes that lenders may not reset APRs quickly or frequently in response to the change in base rates due to the legislation (usury rate) or market competition.

The net yield on a credit card portfolio is affected by the charge-offs, payment rates and delinquencies: charge-offs are inversely correlated to net yield, so the higher the charge-offs, the lower the net yield. On the other hand, there is typically a positive relationship between delinquencies and yield because of late fees (if permitted under the legislation) levied on delinquent accounts and interest charges on outstanding balances. However, these billed fees and interest charges may not be collected if the delinquent receivables are written off eventually.

The impact of payment rates (and the mix of transactors and revolvers in the pool) on yield is more intricate. While high payment rates typically mean faster turnover of receivables and higher transaction volumes, the interchange fee cap by EU directive substantially reduces the yield contribution from transactors seen in portfolios of other jurisdictions without such a fee cap. This means that net yield is more positively impacted by lower charge-offs from transactors paying in full and to a lesser degree by the increase in gross yield, when a portfolio has higher payment rates and more transactors.

When determining the expected case for portfolio yield, DBRS requests the data for monthly interest income collected in addition to the amount billed. As the billed income or yield figure typically is not adjusted for delinquencies, waived fees and/or waived charges, DBRS may discount billed yield to estimate the collected yield.

As the yield figure may include interchange and other fees, DBRS may reduce or remove these fees from the reported yield for the expected case and/or in the cash flow analysis.

Cash Flow Analysis and Stress Scenarios
Cash flow scenarios are executed for each class of debt, with each higher-priority class subjected to successively more severe assumptions. The basis of the cash flow analytics include the base cases for the portfolio yield, monthly payment rate and loss rates; capital structure; priority of payments; transaction expenses; and interest rate and basis-risk assumptions.

Credit card securitisations normally incorporate the concept of an early amortisation event that, when triggered, ends the revolving period and begins paying down the notes sequentially. The trigger may be a result of declining performance of the receivables, insolvency of the sponsor or seller and other sponsor-related issues. DBRS typically assumes a transaction enters an early amortisation period as a result of trigger breach due to the deteriorating performance of the collateral for all rating levels.

The cash flow scenarios impose increasingly severe stress multiples on the base case assumptions for each higher rating level. The stresses applied by rating level are summarised in Table 6 as general guidelines and the actual stresses applied are determined on a case-by-case basis. The following factors are considered in determining the ultimate stress parameters:

- The absolute levels of performance metrics;
- The nature and utility of credit card products; and
- Jurisdiction and/or transaction-specific features.

For example, DBRS, absent other factors, may apply a lower multiple in the stress range on a portfolio with a high loss expectation to account for lower anticipated volatility relative to the loss expectation or premature triggering of performance-related amortisation. Conversely, DBRS may apply a higher multiple in the stress range on a portfolio with relatively low loss expectations which may be expected to have higher volatility relative to the loss expectation.

In jurisdictions such as Belgium and France where the minimum monthly repayments for credit cards and revolving lines of credit are legislatively mandated and the related receivables are essentially turned into amortising portfolios from a specific point in time with a finite duration, the stressed payment rates would be subject to a floor that is below the statutory minimum payments to reflect delinquency and charge-off assumptions.

In addition, DBRS may apply more punitive stresses on portfolios of private label cards as these cards are expected to perform worse than general use cards when the sponsor or co-branded entity is under stress and/or the utility of the cards may be severely limited.

Table 6

Summary of Stresses by Rating Category	AAA	AA	A	BBB	BB
Portfolio Yield (reduction of base case)	30-45%	25-35%	20-30%	15-25%	5-10%
Monthly Payment Rate (reduction of base case)	35-50%	35-45%	30-40%	25-35%	10-20%
Charge-Off Rate (multiple of base case)	4.0-5.0	3.0-4.0	2.5-3.5	2.0-2.5	1.5-2.0

The analysis typically begins with base case assumptions (which are generally equivalent to a B rating scenario) in a normal, non-eventful period for the first five months, followed by a simultaneous deterioration of charge-offs, principal payment rate and portfolio yield commensurate with the assigned rating beginning in the sixth month. In the cash flow stress scenarios, yield, principal payment and charge-offs are assumed to reach their respective stress multiples within a period of up to 12 months for a AAA (sf) rating and hold constant thereafter. The ramp-up curve is typically assumed to be linear but could be amended, depending on the nature of portfolio and/or obligor behaviours. For example, where a portfolio has a high proportion of transactors, DBRS may elect to use a shorter stress period to reflect the possibility that the composition of the pool may change quickly. DBRS may stress the subordinated notes over a longer period, but typically no longer than 18 months.

Early Amortisation

From a cash flow analysis perspective, DBRS assumes that a transaction ceases investing in additional receivables and enters early amortisation due to a trigger breach, as defined in the transaction documents. Depending on the severity of the stress scenarios being analysed, the breach typically occurs between months eight and ten in the cash flows for the senior bond rating category and between months ten and 18 for the subordinate bond rating categories.

Additional stresses that are not covered by the stresses above are discussed below.

Purchase Rate

The purchase rate is the rate at which new receivables are created under designated accounts in the trust and is generally calculated as the ratio of new purchases (the pool's new receivables of credit card charges) over the outstanding balance at the end of previous month. The receivables balance increases when the purchase rate exceeds the payment rate and loss rates combined and vice versa.

The purchase rate affects the repayment of the notes during the amortisation period. If all other factors are held constant, the higher the purchase rate, the larger the receivables generated and the related cash flow to the trust from the repayment of those new receivables. This improves the trust's ability to repay the notes in full.

In the assessment of credit enhancement sufficiency, DBRS stresses purchase rates based on the type of card and/or the sponsor's strength. In general, private label retail cards or co-branded cards with retailers are stressed with a zero-purchase rate assumption as the usage of these cards in an early (or unscheduled) amortisation scenario (such as a retailer's insolvency or deterioration of performance) is likely limited or severely impaired and the sponsor is constrained or has limited capacity to fund new receivables generated. This essentially transforms the receivables into an amortising pool. Unrated or financially weaker sponsors are also typically stressed with a zero-purchase rate to assess a declining ability of the sponsor to fund new receivables over time as the linkage between the card usage and issuers' financial strength is considered high.

On the other hand, generic cards are given the benefit of a positive, albeit low, purchase rate as the usage of these cards is not limited to particular merchants or locations and the card usage is less likely to be severely curtailed. For lower rating categories, more benefit may be given to the purchase rate.

In the case of accelerated amortisation, such as the insolvency of a sponsor, the purchase rate or card usage is typically assumed to be zero; however, the timing of such occurrences is not predictable and such scenarios are typically not considered in DBRS's cash flow analysis.

Interest Rate and Basis Risk

Interest rate risk in credit card transactions stems from the mismatch between the timing of the rate resets for credit card receivables and the note coupon rates. Basis risk stems from the difference between the interest rate indices used to calculate interest and finance charges billed to credit card customers and the coupons of the notes.

Credit cards may be subject to finance charges that float, based on criteria typically prime rate set by the credit card issuer. Coupons for credit card securities may, on the other hand, be fixed or a different floating rate from that of the receivables (usually one- or three-month Euribor[17] or LIBOR[18]). To assess the impact of basis risk on a transaction's excess spread, DBRS assumes that floating-rate credit receivables will be re-priced by the originator on a lagged basis. To assess the impact of interest rate risk, DBRS assumes that floating-rate ABS note coupons are subjected to a stress in accordance with DBRS's *Interest Rate Stresses for European Structured Finance Transactions* while credit card rates remain fixed.

As excess spread from credit card receivables is generally high compared with other asset classes, a swap to mitigate the interest rate exposure and possible spread compression is not always utilised for credit card ABS because such spread compression is part of the stressed scenario(s). To the extent that this risk is hedged, DBRS considers the counterparty risk of the swap provider and the comprehensiveness of the hedge to address both rate and timing differences between the receivable interest payments and those of the notes.

Securitisation Structures and Cash Flow Allocations

Master Trust

Credit card securitisations may employ a master trust structure, under which all receivables of designated accounts for a given issuer's brand or brands of cards pay into a single pool and from which all notes are paid. This approach provides a sponsor with the ability to issue multiple series backed by the same asset pool.[19] As credit card receivables tend to have relatively short average maturities, master trust structures typically incorporate a revolving period whereby principal collections are re-invested in new receivables. This feature extends collateral cash flows, allowing the creation of notes with longer tenors against shorter-term assets.

Most credit card trusts utilise a senior subordinate financial structure, with the senior class of notes holding a higher priority to the subordinate notes. When excess spread is exhausted, charge-offs are typically first absorbed by reserve accounts and then allocated against note principal in reverse sequential order, beginning with the most subordinate classes of notes.

Master trusts are generally divided into investors' and seller's interests. The investors' interest, designated for repayment of the notes, is determined by the aggregate amount of notes outstanding divided by the larger amount of master trust receivables balances.

The seller's interest is the residual amount, with a minimum required seller's interest as a percentage of the trust note balance. The minimum seller's interest exists to absorb fluctuations in the trust receivables balance that may occur because of changes in cardholder account balances or reductions in the receivables balance that stem from factors other than defaults or payments, such as merchandise returns, rebate or rewards programmes, non-complying receivables and fraud. The seller's interest also absorbs declines in receivables resulting from a breach of a representation or warranty by the seller/originator. The seller's interest ranks pari passu with the investor interest in terms of monthly cash flow allocations and is typically not considered by

17. Euro Interbank Offered Rate.
18. London Interbank Offered Rate.
19. This is in contrast to a discrete securitisation structure, where a separate collateral pool backs each series of notes.

DBRS as part of credit enhancement in securitisations. Generally, when the seller's interest falls below a level specified in the transaction documents, the sponsor must add receivables in an amount that restores the seller's interest to the minimum level. Normally, when the minimum seller's interest is not restored within a preset period, an early amortisation event is triggered and the notes begin to amortise.

Master Trust Cash Flow Allocations

Cash flows from the credit card receivable pool are typically segregated into two components: principal collections and finance charge collections. Allocations from these two components to each series of notes depend on whether the series is in the revolving, accumulation or amortisation period.

- The accumulation period is when cash is accumulated for the future redemption as a single scheduled (bullet) repayment of a particular series of notes.
- The amortisation period is when collections are applied as and when available to amortise the notes progressively. The amortisation period may be controlled or partial, used as an alternative to scheduled maturities of the notes under sound asset performance. The amortisation period may also arise from the breach of a performance trigger or the failure to repay a soft-bullet note in its entirety on its scheduled repayment date.

Fixed and Floating Allocation Methods

Finance charges are typically allocated pro rata (floating allocation) among outstanding series. For some transactions, finance charges may be allocated using the fixed allocation method if an early amortisation event occurs. On the other hand, principal collections are accumulated or used to amortise the notes once the revolving period ends, based on either the fixed or floating allocation method. Under the fixed allocation, principal collections are allocated to a series based on its respective interest in the master trust as at the end of its revolving period: the numerator of the allocation ratio is held constant at the amount of its outstanding note principal balance as at the end of its revolving period, and the denominator of the allocation ratio is the outstanding principal amount of receivables pool of each determination period, which can change with each period. As the numerator remains constant and the trust receivables balance declines due to the cessation of new receivable additions, the use of the fixed allocation method generally amortises a specific series more quickly than a floating allocation. As the fixed allocation could advantage the note series with earlier scheduled redemption dates as it would receive proportionately more allocation than under the floating (or pro rata) allocation, it is typically allowed only when there is no early amortisation event related to the trust or to all the outstanding series of notes to avoid time subordination among the outstanding series.

The use of different allocation mechanisms in different periods of the transaction's life provides the sponsor the flexibility to issue as much or as little debt as desired while ensuring adequate asset cover and credit protection for noteholders.

Master Trust Cash Flow Analysis

As mentioned above, a master trust allows the sponsor to issue multiple series of notes at different times that are backed by the same revolving asset pool. As such, master trust structures have relatively more variability on the asset and the liability sides than other types of securitisation structures. To address this potential variability, DBRS stresses many variables simultaneously to assess the sufficiency of credit enhancement for the assigned rating in a number of scenarios. The results of the scenario analysis are typically used as guidance and are not considered determinative or predictive.

As master trusts typically have ongoing issuance, the expected collateral performance is re-assessed by DBRS upon each new issuance. DBRS typically does not set its expected case under a theoretical worst-case portfolio composition unless there are concentration limits by specific card types with noticeable, diverse performance. DBRS also reassesses its expected case upon other significant changes to the asset pool. However, given that master trust structures provide the flexibility on both the asset and liability sides, DBRS generally does not take positive rating actions without significant structural improvements, even if collateral performance is better than the expectation and/or the then-current portfolio and related cash flow analysis based on the current performance would have warranted a higher rating in a comparable static or stand-alone transaction with a pre-determined revolving period.

On the other hand, in the surveillance of key performance metrics to analyse the general trend, unfavourable material deviations from DBRS's expectation may have a negative rating impact.

Italian Salary-Assignment Loans

Italian salary assignment loans (SAL) are amortising consumer loans where borrowers commit a part of their monthly income to the repayment of the loan, such that the monthly instalments under the loan are paid to the lender directly by the borrower's employer or pension provider. SAL may take the form of a salary or pension assignment loan (respectively *prestito estinguibile con cession del quinto di stipendio or prestito con cession del quinto di pensione*), or a payment delegation loan (*prestito estingui-bile con delega di pagamento*). Salary and pension assignment loans are governed by the same regulation[20] and only differ by the type of income that secures the repayment. Italian law prescribes certain characteristics to the loans, including, most importantly, that the amount of net monthly income devoted to payment of the loan instalment may not exceed 20%. The loans can have up to a ten-year term and insurance must be taken out for the benefit of the lender to cover the risk of death of the borrower and, for employees, termination of employment. Lenders also benefit from a security interest over the severance payment payable to the employee upon loss of employment.[21] Payment delegation loans are designed to replicate a salary assignment loan (or, more rarely, a pension assignment loan) in the more general (and less restrictive) framework of the Italian Civil Code[22]. A borrower could take out both an assignment loan and a payment delegation loan, resulting in the total commitment of up to 50% of income.

Due to the irrevocable commitment of the borrower's income and the presence of insurance against the main causes of income interruption, SAL historically exhibit much lower credit losses than other regular unsecured consumer loans. Losses arise under SAL because the insurance policy sometimes covers only the scheduled principal balance of the loan, not interest or arrears. As the protections present in SAL depend on the performance of the insurers and employers, the analysis of a SAL securitisation should address risks related to these parties. To properly assess the extent of loss mitigation they provide, DBRS also considers the terms of the insurance agreements, such as the amount of cover, the time limits and the events covered.

Salary and pension assignment loans provide more solid framework for the lender compared to payment delegation loans. In fact, a payment delegation is an ordinary loan agreement with a third party, the employer, that undertakes the irrevocable obligation to pay the lender on behalf of the borrower. Instead, under a salary assignment, the obligation to pay the lender is enforceable upon notice without any formal acceptance of the employer.

Payment delegation loans, thus, are perceived to be riskier than assignment loans and are generally granted on top of assignment loans, so that the payment delegation borrowers are more indebted.

Although a payment delegation loan is an irrevocable undertaking, contrary to a salary assignment, it may be voided by a receiver or liquidator[23]. Under such circumstances, it is likely that a job event would occur, allowing a claim under the insurance and limiting any incremental losses.

Upon loss of employment (whether voluntary or not) the first stage of recovery of a SAL is through seizure of the severance payment, due by the employer and guaranteed by the sovereign. With respect to their claim over a severance payment, salary assignment creditors are expected to rank pari passu, but are expected to rank in priority to any payment delegation creditors.

Framework

In analysing securitisations of SAL, DBRS first assesses the level of defaults[24] likely to occur under different stresses as a result of idiosyncratic borrower behaviour, employer default and the decisions of the Italian sovereign. DBRS then considers the extent to which insurance policies will mitigate the losses based on the terms of the insurance contracts and the credit strength of insurers.

Default Risk: Assessment of Generic Default Rate

As with other consumer loans, DBRS analyses the historical performance of loans similar to those being securitised to reach an expected case for the default rate and determine appropriate stress multiples for different rating levels.[25]

Default Risk: Credit Risk of Private Sector Employers

Besides a borrower's behaviour, a cause of loan default is the failure of the borrower's employer. Provided the securitised pool does not contain any significant exposure to a single employer, the typical analytical framework for consumer loans is used. If a significant proportion of the borrowers are employed by a small number of employers, DBRS considers the concentration risk of one or several of the employers defaulting and multiple borrowers losing their jobs by using the *Rating CLOs and CDOs of Large Corporate Credit* methodology, as described herein. The resulting stressed default level is then applied to the portion of the pool with concentrated exposure to employers.

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20. Presidential Decree n. 180 of 05/01/1950, as subsequently amended (Law n. 80 of 14/05/2005 extends the framework to pensioners).
21. Trattamento di fine rapporto.
22. *Codice civile italiano and Codice di procedura civile italiano* originally introduced in 1942 and subsequently updated and reformed.
23. Where relevant concentration of payment delegations exist on individual defaultable employers DBRS may consider additional stresses.
24. In the context of SAL, the term "default" should be understood as a loss of job event or a loss of life event.
25. DBRS uses lower multiples for pension-assignment defaults as mortality risk is a lot less volatile than traditional consumer credit risk.

Default Risk: The Special Case of the Italian State

The biggest exposure to a single employer is usually to the Italian state. Employees of the Italian state and sub-sovereigns have strong employment protection, reflected in the result that historical losses on loans to civil servants are usually much lower than those on loans to private sector employees. Furthermore, salary assignments by civil servants automatically convert into pension assignments upon retirement so that the primary risk for loans to civil servants, like pensioners, is death of the borrower (loss of life event).

Contrary to private sector employers, it is unlikely that a default by the Italian state would result in significant job losses amongst civil servants; nonetheless, extraordinary measures are likely to be taken in such event. DBRS assumes that significant financial stress would result in reductions in pensions and civil servant salaries (see Table 7). Significant reductions would in all likelihood cause a reduction in the monthly instalments and an extension of the loans. This increases the risk of a borrower's loss of life event during the term of the loan. To obtain an estimate of the incremental balance of defaults in each rating stress case, DBRS uses mortality tables[26] to compute the probability of each loan defaulting in each year and multiplies these probabilities by the updated exposure at default for each loan resulting from the relevant reduction.[27]

Table 7: Salary and Pension Reduction/Redundancy Stress Assumptions

Rating Stress Level	Assumed Pension/Salary Reduction and Redundancy Stress
At or below the rating of Italy	0%
1 notch above	10%
2 notches above	20%
3 notches above	30%
4 notches above	40%
5 notches above	50%
6 or more notches above	100%

Default Risk: Publicly Held Private Companies

Employees of private companies owned, partially or fully, by the Italian state (semi- or para-public) also exhibit good historical performance. Nevertheless, DBRS believes it is likely that there could be job losses or privatisation in an environment where the Italian state was financially distressed, contrary to civil servants. DBRS assumes that the rate of job losses would occur in the same proportion as salary/pension reductions described above in Table 7.

Recoveries

DBRS analyses the historical recovery levels[28] of loans similar to those being securitised to determine an expected recovery rate. DBRS then considers the terms of the insurance contracts to assess the level of cover in each stressed rating scenario described above, especially in the case of a loan extension as life insurance coverage is typically limited to a certain period of time (e.g., until the 85th birthday of the borrower). DBRS assumes no recoveries if death were to occur after the insurance policy expires.

In a SAL the lender seeks protection through insurance cover, but the borrower remains responsible for repaying the full amount due;[29] Amounts that cannot be recovered from the insurance company may still be recovered if the borrower is still alive. DBRS considers such potential recoveries. However, DBRS notes that payment delegation borrowers are usually more indebted and thus unsecured recoveries are likely to be lower.

Recoveries: Credit Risk of Insurers

The collection of recoveries from the insurers depends on their credit performance so that DBRS analyses the credit risk of the insurers present in a portfolio using its *Rating CLOs and CDOs of Large Corporate Credit* methodology. Provided the distribution of insurers is broadly similar across the different types of borrowers (i.e., employees of granular private sector, concentrated private sector, public, semi- and para-public sectors and pensioners), DBRS applies the relevant stressed default rate to reduce the recoveries on the defaulting SAL.

26. See http://dati.istat.it/Index.aspx
27. Where line-by-line information is not available, DBRS uses the pool-level information to determine a conservative assumption regarding the age of borrowers and terms of the loans.
28. In the context of SAL, the term "default" should be understood as a loss of job event or a loss of life event.
29. Through the payment of the indemnity the insurance company acquires the right to claim the paid amount from the borrower.

For ratings below or at the sovereign's rating, DBRS considers the beneficial effect of severance payment collateral. In fact, Italian law provides that amounts set aside and accumulated for the severance payments are held by employers and are deemed payable during liquidation if the employer is insolvent or under receivership, but such amounts are guaranteed by the sovereign state[30] and are assumed payable (although not timely) even in cases of defaulted employers. Credit given to severance payments is subject to availability of information and to the existence and validity of the pledge over such amounts. DBRS observes that severance payments cannot be validly pledged for some state employees and civil servants.[31]

Liquidity Considerations

When rating securitisations backed by SALs, DBRS analyses whether the transaction structure benefits from sufficient liquidity as a mitigant against the potential delay in the payout by insurance companies. Likewise, the transaction structure should provide for sufficient liquidity in a scenario where private or public sector employers and/or pension providers temporarily stop salary and/or pension payments to the borrowers. DBRS understands that such a scenario would not qualify as loss of job event or loss of life event, which are insured.

30. The guarantee is provided by the pension fund of INPDAP (Istituto nazionale di previdenza e assistenza per i dipendenti dell'amministrazione pubblica) subsequently transfered to INPS (Istituto nazionale della previdenza sociale) in 2011, that is the main entity issuing pensions in Italy.
31. Only the so-called trattamento di fine rapporto (TFR) can be validly pledged, whereas trattamento di fine servizio (TFS), typically applicable to civil servants and state employees, cannot.