MOODY'S
INVESTORS SERVICE

RATING METHODOLOGY

Moody's Global Approach to Rating Auto Loan- and Lease-Backed ABS

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This rating methodology replaces *Moody's Global Approach to Rating Auto Loan- and Lease-Backed ABS* published in July 2022. In this update, we clarified our approach to analyzing transactions backed by auto balloon loans as described in Appendix 5, "Characteristics of Securitized Auto Finance Products and Specific Jurisdictional Risks," and we made limited editorial updates.

1. Executive Summary

This methodology describes our global approach to rating asset-backed securities (ABS) backed by pools of auto loans and auto leases to individuals.[1] In general, we apply the same methodology to similar transactions in all regions. In practice, because of differences in the availability of data in different regions, we may adjust our analysis.

Our approaches to rating securities backed by auto loans and by auto leases are similar. Both loan and lease transactions face risks arising from (1) potential defaults by obligors (credit risk), (2) transaction structure, (3) counterparty defaults, and (4) operational, legal and sovereign factors. However, transactions backed by auto leases may face an additional risk – residual value (RV) risk.[2]

THIS METHODOLOGY WAS UPDATED ON MARCH 23, 2023. WE HAVE CORRECTED A TYPOGRAPHICAL ERROR ON PAGE 16 AND A DESCRIPTION OF DATA WE MAY USE TO ASSESS VEHICLE MARKET VALUES ON PAGE 37. WE ALSO UPDATED THE ANALYST CONTACTS.

1 This methodology may also apply to auto lease pools in EMEA and Asia-Pacific which have exposures to small and medium-sized enterprises (SMEs) as long as the pool is predominantly auto loans or leases to individuals or the pool consists of a large number of small loans or leases to SMEs, with no material concentrations. If this is not the case, the credit analysis of corporate concentrations is supplemented by the relevant commercial asset methodologies. This methodology does not apply to US fleet lease ABS transactions where the lessee bears the residual value risk. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

2 Other differences between auto loan ABS and auto lease ABS are discussed throughout this report, including the following: (1) in auto leases, the lessor or originator remains the owner of the vehicle, while in auto loans the borrower has title to the vehicle; and (2) auto leases are subject to termination risk in many jurisdictions.

Residual value risk arises as a result of the typical auto lease structure. Lessees make fixed installment payments over the life of the lease, which include an implicit interest charge and an implicit amortization amount that represents the expected amortization of the vehicle. At the maturity of the lease, there is typically a large unamortized amount, which is the RV of a lease. RV risk is the risk that, at lease expiration, the lessee will choose to turn in the vehicle and the market value of the vehicle will be less than the securitization's valuation of the unamortized portion of the contract.

If a vehicle is turned in, then, by definition, the lease has not defaulted. Similarly, if a lease defaults, the underlying vehicle cannot be returned. Consequently, credit loss and residual value loss are mutually exclusive and are evaluated separately in our analysis.[3]

In this report, we discuss the main risk drivers for typical auto loan and lease transactions and include a step-by-step description of the rating analysis.

First, we estimate the likely credit loss (expected loss) of the auto loan or lease pool and the variability of loss to derive a distribution of the credit losses on the pool. In cases where the pool consists of a large number of small loans or leases, with no material concentrations (i.e., a granular pool), we assume that the loss distribution is lognormal. In cases where the pool has significant concentrations, we might derive a pool-specific probability distribution from the simulated loss behavior of the individual assets. Those loss behaviors are based on (1) individual asset default probabilities that we adjust for the specific asset's characteristics and (2) correlations among the assets. In some cases, we might approximate the distribution resulting from the simulated loss behavior of the individual assets with probability distributions such as a normal inverse distribution.

Second, we calculate the losses that investors in each tranche would suffer in each pool loss scenario, typically using a model of the transaction's cash flow structure and credit enhancement. This calculation enables us to derive the probability distribution of tranche losses by associating each tranche loss scenario with its corresponding probability.

Third, we use the tranche loss distribution to calculate the amount of credit enhancement that would be consistent with our benchmark for the rating being considered, which is based on the expected tranche loss.

Fourth, for leases, we calculate the level of credit enhancement to offset residual value risk (if any) that would be consistent with the rating being considered. That credit enhancement level is based on an assumption of the future depreciation on the vehicles and various haircuts to account for the uncertainty around those expectations.

Fifth, we determine the total amount of credit enhancement that we would consider consistent with the rating in question by summing the credit enhancement for credit risk and the credit enhancement for residual value risk.

Finally, we determine the actual rating by considering the transaction's actual credit enhancement and the tranche loss distribution, together with other quantitative analyses and qualitative assessments of a variety of factors, including operational risk, counterparty risk, the legal structure of the transaction and sovereign risk. Rating committees will, where appropriate, consider additional qualitative and quantitative factors that they deem relevant.

[3] In the UK, leases typically allow for voluntary termination by the lessee under certain conditions. We treat those voluntary terminations as defaults in our analysis, despite some similarities to the "turn-in" risk that creates residual value risk. See Appendix 5 for more information on voluntary terminations in the UK.

2. Main Risks of Typical Auto Loan and Lease Securitizations

In assigning a rating to an auto loan or lease securitization, we consider the following key drivers of risk:

Portfolio Credit Quality. In assessing the risk of default on the underlying loans or leases, we focus on the following factors:

- the risk profiles of obligors (e.g., credit scores, other borrower characteristics)
- the underlying type of vehicle (e.g., new or used) and specific loan characteristics (e.g., term, amortization profile, interest rate), which influence borrower performance and the level of recovery in the event of borrower default
- current and forecasted macroeconomic environments, which affect consumer behavior, as well as the health of the automobile industry in the relevant country
- historical performance of pools with similar characteristics
- the underwriting and servicing policies of the originator.

Transaction Structure. Specific features, such as cash flow allocations, forms of credit enhancement and cash-trapping mechanisms, have an impact on the expected loss for each tranche of securities. For transactions with a revolving or pre-funding period, the ability to replenish the portfolio with new loans or leases adds some uncertainty to the portfolio composition. When modeling the transaction, we aim to capture the main structural features described in the transaction documentation.

Counterparty and Operational Risk. Our assessment focuses on the risks posed by the main counterparties in a transaction such as servicer, cash manager, swap provider, and any associated structural mitigants, such as counterparty replacement triggers.

Legal Aspects. We assess risks with respect to the assignment of the assets to the special purpose entity (SPE), bankruptcy remoteness of the SPE, and other jurisdiction-specific issues (e.g., commingling risk, set-off risk). For lease-backed transactions, we also analyze the risks posed by potential lease terminations and set-offs against amounts owed by the lessees that may arise in the event of a bankruptcy of the sponsor.

Sovereign Risk. The country in which the transaction's assets, originator or issuer is located could introduce systemic economic, legal or political risks to the transaction that could affect its ability to pay investors as promised. We usually incorporate such risks into the analysis by applying our local currency country ceilings (LCC) in accordance with our sovereign ceiling methodology.[4] In particular, when generating our assumed portfolio loss distribution, we typically define the portfolio credit enhancement as the credit enhancement consistent with the highest rating achievable in the country (i.e., the LCC). We may also consider modifying appropriate assumptions or defining minimum credit enhancement levels required to achieve a particular rating.[5]

Residual Value Risk (for leases). In most retail leases, at the end of the lease the lessee has two options: (1) pay the contract's unamortized amount (i.e., the contract residual value [CRV]) to purchase the vehicle, or (2) return ("turn in") the vehicle without any further financial commitment. If the actual market value of the vehicle at the termination of the lease is less than the CRV, then the lessee is likely to turn in the vehicle and expose the securitization trust to a loss equal to the difference between the market residual value (MRV) and the securitization's valuation of the unamortized contract (i.e., the securitization residual value

[4] For more information, see our cross-sector methodology for assessing local currency country risk ceilings. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

[5] For more information, see section 9 and Appendix 3.

[SRV][6]). In some EMEA transactions, there is a guarantee extended by the originator covering residual value risk. In other transactions, there is a dealer buy-back agreement between the lessor and dealer, which offers an additional level of protection against residual value risk. In this case, however, we need to analyze counterparty risk (i.e., the risk that the originator/dealer will perform its obligation) and the valid transfer of the rights under the buy-back agreement to the SPE.

The residual values of the leases, as valued by the securitization, could exceed the vehicles' market values at the lease contract maturity for a number of reasons, including:

» unexpected weakness in the used car market

» commercially aggressive strategies by lessors in setting contract residual values

» introduction of new vehicle models and new technologies

» a manufacturer's insolvency or a discontinuation of an auto brand

We assess residual value risk by examining historical depreciation rates or forecasted market residual values, either directly or through an independent third-party expert, depending on data availability.

3. Estimating the Pool's Expected Cumulative Credit Loss

A key element of our analysis is to project the pool's expected credit loss,[7] which is the projected amount of cumulative credit net losses on the pool of auto loans and leases resulting from defaults over the life of the pool. To project those losses, we examine historical loss data from the originator or from similar originators and adjust those data for factors that can drive differing behavior in the future. Originators provide data either in the form of net losses or as gross defaults, with recoveries separately. In the latter case, we analyze the two components separately and derive a cumulative default projection and a recovery assumption,[8] together with recovery timing.

3.1 Historical Loss Data

The data that originators provide cover either (1) an evolving, dynamic portfolio of loans or leases over time (i.e., portfolio data), which is sometimes the originator's entire portfolio of managed loans or leases, or (2) particular sets of loans or leases originated during a common period (i.e., vintage or static pool data). In many cases, the static pool data are from the pools of assets (i.e., loans or leases) backing prior securitizations.

Static pool data derived from a fixed pool of assets over their lives is more directly applicable for projecting the potential losses for a new pool of assets over its life than data relating to the performance of an originator's managed portfolio (portfolio data). In cases where we need to rely on portfolio data information instead of static pool data to project losses for the securitized pool, we adjust our assumptions to account for factors such as (1) growth or contraction in the portfolio, (2) a mixture of credit quality in the overall portfolio resulting from changes in underwriting standards over time and (3) mismatches between the timing of defaults and recoveries. Even with those adjustments, portfolio loss numbers are often difficult to interpret, adding performance variability and uncertainty to the analysis, thus increasing the transaction risk.

[6] The securitization residual value (SRV) is the unamortized portion of the lease at the end of the lease, as valued within the securitization. In EMEA, the SVR is equal to the contract residual value (CRV).

[7] For auto lease pools that have a significant exposure to SME lessees, in order to determine the pool's expected loss and variability of the loss distribution, we may also apply the methodology we use to rate securitizations backed by SME pools. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

[8] In certain transactions, the legal structure will also drive the recovery assumption. For example, in most Japanese transactions, recovery cash flows do not benefit senior noteholders; therefore, we assume a recovery rate of zero.

3.2 Extrapolation of Historical Data

In theory, static pool information gives us a set of cumulative losses on historical pools of assets comparable to the pool being securitized, allowing us to derive estimates of the expected loss rate of the pool, and its variability. In practice, it is often the case that only some, if any, of an originator's prior static pools may have gone through their entire life cycle. However, even for incomplete pools, the available data will still contain useful information on likely lifetime losses, based on losses to date. To use such data in our collateral analysis, we extrapolate losses to date on the incomplete pool for the remainder of the pool's life. For the missing periods, the extrapolation typically relies on average changes in the cumulative loss rate, either on an absolute or percentage basis, in similar pools during those periods.[9] When static data on cumulative gross default rates are available, we extrapolate the gross default rate instead of the cumulative net loss rate.

In projecting loss data, we can also account for differences in the speeds at which incomplete historical pools have paid down to date, through the use of the cumulative-loss-to-liquidation ratios.[10] Two pools with identical original loan/lease balances and the same cumulative loss rates to date will not necessarily have the same expected loss if they have different remaining balances. The projected cumulative loss rate of a pool that has liquidated relatively quickly because of amortization, prepayments or losses is likely to be lower than that of a pool with the same cumulative losses but with fewer liquidations to date. Therefore, the loss-to-liquidation analysis, usually applied to static pool data from previous securitizations, can better predict the final cumulative loss rate.

3.3 Using Historical Data from Other Originators

In many cases, rather than focus solely on the performance of the issuer's prior transactions, we supplement our analysis of the originator's data with data from comparable originators. In some cases, the securitization originator's static pool data could be limited, because the originator is either new to the market or has not tracked static pool performance. In other cases, an originator's static pool data are not relevant to the pool of loans (or leases) being securitized, either because of recent changes in the originator's origination, underwriting and servicing policies and strategies, or because of our expectation that the future economic environment will be materially different from the one from which the historical performance data came.

We select comparable originators based on similar pool characteristics and origination, underwriting, collection and charge-off policies. To incorporate data from other originators, we adjust our analysis for any differences in definitions of defaults and loan (or lease) losses. However, originators tend to be idiosyncratic to some extent; thus, the applicability of other originators' data performance is not perfect, which adds uncertainty to the analysis. Furthermore, there could be cases in which we would not be able to assign a rating because of the insufficiency of historical data.

3.4 Obtaining a Base Case Expected Credit Loss

To obtain a base case expected credit loss, we typically average the extrapolated cumulative losses of the analyzed pools, focusing on the pools most comparable to the one we are rating and disregarding any recent vintages that have an insufficient number of non-extrapolated data points. We then adjust the base case expected credit loss for performance trends, differences in pool composition, seasoning of the assets, changes in origination and servicing practices and potential changes in the macroeconomic environment.

[9] See a summary of the extrapolation methods we use in Appendix 1.

[10] The cumulative-loss-to-liquidation rate at a point in time is the cumulative losses to date of the pool, divided by the difference between the original pool balance and the current pool balance (e.g., the cumulative liquidations to date). In contrast, the traditional cumulative loss rate is the cumulative losses to date divided by the original pool balance of the loans.

For US and Canadian auto loan pools, we consider an additional econometric analysis at transaction closing that uses key pool characteristics and macroeconomic factors as described further in section 3.5 below.

3.4.1 Adjusting for Performance Trends

If recent loss performance trends differ from what the long-term performance indicates, we analyze the reasons for the difference to determine whether the recent trends are likely to continue. In our analysis, we typically give more weight to any trends that have persisted for a prolonged period and reflect a large sample of assets. If we determine that a recent trend is likely to continue, we will rely on that period as the most relevant. We also adjust our view of recent loss performance based on delinquency data, which often indicate performance trends that the loss data do not yet reflect.

3.4.2 Adjusting for Differences in Pool Composition

As we have noted, one way that we adjust for differences in pool composition is by focusing on the performance of the historical pools that we deem to be the most comparable to the securitized pool. However, when we have stratified data, which is information on the performance of the historical pools for specific sets of assets with different characteristics, we can adjust historical data to better reflect the pool we are analyzing.

Originators stratify data by a single characteristic, or by a combination of characteristics. Originators often provide stratified data for the following characteristics and measures:

- asset characteristics (loan (or lease)-to-value ratios, original terms)
- vehicle characteristics (vehicle type, new or used, manufacturer)
- loan type (interest rate type, fully amortizing vs. balloon portions)
- the obligors' characteristics (individuals vs. corporate, geographical and obligor concentrations, FICO or internal credit score, down payment, debt-to-income and payment-to-income ratios)

To use the stratified data, we construct a new static pool loss analysis, weighting the disaggregated performance data of each sub-pool by the proportions of assets with each characteristic in the securitized pool. We then project the expected loss for the pool by using the extrapolation method referred to above. Alternatively, for example, when we want to get a loss projection by asset type, we may extrapolate an expected loss for each sub-pool first and then derive the pool expected loss from the weighted average of the extrapolated loss for each sub-pool, using the weights of the sub-pool in the securitized pool or, for revolving or pre-funding transactions, using the concentration limits described in the legal documentation.

3.4.3 Adjusting for the Age of the Assets

Our loss projection for the securitized pool excludes those losses on a new pool that normally would have occurred prior to securitization. Static pool performance includes losses from the date of the assets' origination, while the loss projections for the securitized pool address losses only during the remaining life of the securitization. Often, we can take into account the impact of aging by analyzing the performance of prior securitizations with similar pool characteristics and similar age. However, if there is an insufficient number of such representative securitized pools, we base our loss projection for the securitized pool on the performance of the newer vintages, with adjustments for the effect of aging.

The need for adjustment arises principally from the need to account for (1) the amount of amortization versus the losses that have already occurred, (2) the typical exclusion of delinquent assets from a securitization and (3) the effects of lags in recoveries on defaulted assets. For relatively unseasoned securitization pools, each of the effects typically is relatively small, so that the net effect usually is negligible. For more seasoned securitization pools, the adjustment either increases or decreases our expected loss projection. The degree of effect depends ultimately on the interplay of the various underlying factors such as the timing of default, recoveries, prepayments and delinquencies.

3.4.4 Adjusting for Changes in Servicing Practices

Changes in servicing practices affect the delinquency, loss and recovery performance of the pool of assets. Those changes often affect performance with a lag, with the effects not appearing in the data at the time of analysis. Consequently, we incorporate our assessment of recent trends in the servicer's practices into our analysis, based largely on an operations review meeting with the servicer. We also make qualitative adjustments to our expected loss, default or recovery projections based on that analysis even if the effects have not appeared in the performance data.

3.4.5 Adjusting for Potential Changes in the Macroeconomic Environment

The historical data that we analyze is, in part, a product of their macroeconomic environment. Therefore, if we expect that future macroeconomic conditions will be materially different from historical conditions, we will adjust our projection of the expected loss accordingly. We do so by looking at projections by our macroeconomics board whenever available. For regions in which projections from our macroeconomics board are not available, we look at alternate sources, such as those published by central banks. We focus on macroeconomic variables that we consider important drivers of performance for pools of auto loans and leases: (1) the country's GDP growth rate, (2) unemployment rate and, when available, (3) used car values. Adjustments to historical observation could be significant in regions with more volatile macroeconomic environments.

3.5 Econometric Approach to Expected Credit Loss for US and Canadian Auto Loan Pools

For US and Canadian auto loan pools, we consider an additional econometric analysis at transaction closing that uses key pool characteristics and macroeconomic factors.[11] The analysis incorporates key pool characteristics such as FICO score, original term, the spread between the loan annual percentage rate (APR) and the Treasury rate, seasoning and several macroeconomic factors, such as the change in unemployment rate and the change in used car and car make prices (we assume the pool is concentrated in terms of make). The analysis also uses vintage factors for the calibration; these factors represent underwriting differences and uncertainties realized over time. Typically, the expected loss estimation uses a through-the-cycle vintage factor that may be adjusted to reflect changing economic forecasts and credit conditions.

We derive, under a given macroeconomic forecast as provided by Moody's Analytics Economy.com, additional estimates of expected loss for US and Canadian auto loan ABS at the time of transaction closing based on aggregate pool characteristics noted above. We may also test the sensitivity of the expected loss to the change of macroeconomic variables during a time when these variables are rapidly changing and there is significant uncertainty associated with the macroeconomic forecasts.

In determining the final expected loss, we typically subject the loss to a floor of 0.25% which may be adjusted based on performance and loss levels.

4. Methods for Assessing the Variability of Pool Credit Losses

We typically use one of two comparable methods to assess the variability of pool losses.[12] For US and Canadian auto loan pools, we also use the econometric approach to derive the credit loss variability.

4.1 Inferring Variability from Expected Losses and Credit Enhancement Levels

In the first approach, we determine the variability of the loss estimate indirectly. In situations where there is a sufficiently large set of comparable rated transactions in the country (or in comparable countries), we generally infer an estimation of the variability of pool losses from (1) our expected loss estimate, and (2) the

[11] For more information, see the "Moody's Related Publications" section. We have sufficient data to inform the econometric approach for US and Canadian auto loan pools.

[12] For more information, see the discussion in section 5 on factors that affect the potential variability of a pool's credit losses.

level of credit enhancement that the rating committee would deem to be consistent with the highest rating achievable in a particular country[13] for a security with a simple cash flow structure[14] backed by the given pool (i.e., the "portfolio credit enhancement"). That level of credit enhancement is derived from (1) credit enhancement levels of the existing, comparable transactions in the country (or in comparable countries), and (2) adjustments made to account for differences between the given pool and the comparable transactions in the factors affecting variability. We use that portfolio credit enhancement level to infer the standard deviation of the loss distribution, as described later. For a given pool loss estimate, the higher the portfolio credit enhancement, the higher is the implicit standard deviation of the loss distribution.

4.2 Calculating Variability from Historical Data

An alternative approach is to directly calculate the standard deviation or the coefficient of variation of the observed cumulative loss rates and adjust it (usually upward), where necessary, to better reflect the factors that are likely to cause variability over a long-run horizon.[15] As a further check, rating committees typically benchmark that variability and the resulting portfolio credit enhancement with that of other similar transactions.

Given that the portfolio credit enhancement is typically considered by rating committees in both approaches, the direct and indirect methods are comparable and contribute to the loss distribution assumption.

4.3 Variability for US and Canadian Auto Loan Pools

For US and Canadian auto loan pools, we also estimate the Aaa loss, i.e., Aaa portfolio credit enhancement at transaction closing using an econometric analysis under a stressed economic environment. This approach incorporates a variability analysis of managed portfolio performance data in which we specify a median and minimum Aaa loss (or floor) from a generalized loss distribution referencing the Aaa loss probability as determined by Moody's Idealized Cumulative Expected Loss table.[16]

4.3.1 Econometric Approach for Aaa Loss

When determining Aaa loss estimates for US and Canadian auto loan pools, the macroeconomic factors we use are the same as those used to derive an expected loss under the econometric analysis, i.e., (a) the unemployment rate, (b) national auto sales price index, and (c) the car make sales price index, collectively evaluated under a severe, i.e., Aaa stress scenario, where additionally the vintage factor is stressed to a Aaa loss level (the Aaa vintage factor).

UNEMPLOYMENT RATE ASSUMPTION

We assume the unemployment rate rises from the time of analysis by five percentage points over 30 months and remains unchanged until year five and then linearly declines to the initial unemployment rate in year 15

[13] Transaction ratings are subject to our local currency country ceiling in a particular country. For more information, see Appendix 3.

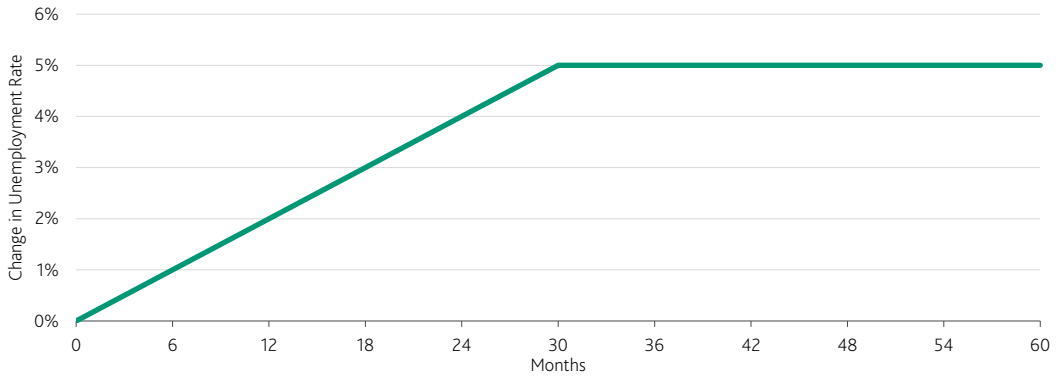
[14] For example, a simple senior/subordinate capital structure with a sequential waterfall, before any adjustment for any transaction-specific structural features.

[15] For more information, see section 5.

[16] For more information, see the discussion of Idealized Probabilities of Default and Expected Losses in *Rating Symbols and Definitions.* A link can be found in the "Moody's Related Publications" section.

EXHIBIT 1

Unemployment Rate – Illustrative Severe Stress Scenario



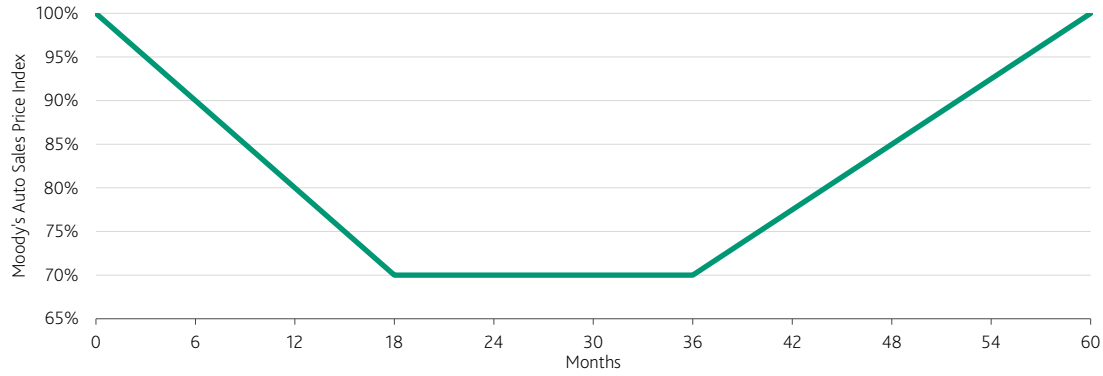
Source: Moody's Investors Service

AUTO SALES PRICE ASSUMPTION

In our analysis, we use Moody's Analytics auto sales price index, a broad market auto price index that reflects the prices of existing and newly contributed used cars. In the Aaa stress scenario, the price index declines by 30% over an 18-month period, remains flat at its respective trough for the next 18 months and then increases back to the origination levels by month 60 and remains flat thereafter.

EXHIBIT 2

Moody's Analytics Auto Sales Price Index – Illustrative Severe Stress Scenario

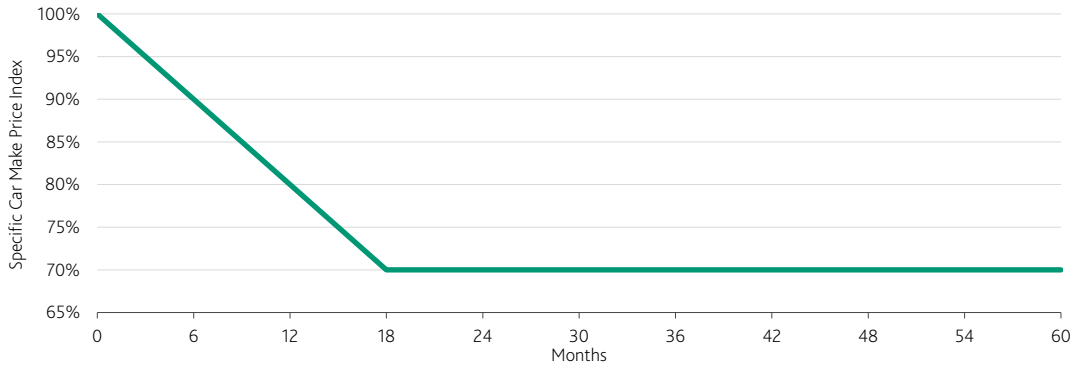


Source: Moody's Investors Service

For the car make price index, in the Aaa stress scenario, we assume a 30% decline in the index over 18 months; it remains flat thereafter. The analysis assumes the pool is concentrated in terms of make. Therefore, under a severe stress scenario, both auto sales price and specific make indices stresses will be applied for all transactions.

EXHIBIT 3

Car Make Price Index – Illustrative Severe Stress Scenario



Source: Moody's Investors Service

4.3.2 Variability Analysis to Estimate Aaa to Median Loss Relationship

In our econometric analysis for Aaa loss, we incorporate a variability analysis to estimate the median and minimum Aaa loss using historical managed portfolio performance data by relating the Aaa loss estimate to median losses. We consider the variability analysis more particularly for pools with moderate to high expected losses (i.e., loss above 5%). The median and minimum Aaa loss are integrated within the econometric analysis.

EXHIBIT 4

Median and Minimum Aaa Loss Estimate

Step 1: We use managed or static pool loss data from originators as the basis of our assessment of a transaction's and originator's historical performance. The analysis generates the historical cumulative credit losses over time for a static pool composition as specified by a transaction or originator-managed pool credit segment.

Step 2: We use the median loss and coefficient of variation of these losses to then fit a lognormal loss distribution. Using this lognormal loss distribution, we derive Aaa loss estimates at different maturities using Moody's Idealized Cumulative Expected Loss table[17] along with the empirical loss estimated at the 99.5th percentile.

Step 3: These Aaa loss estimates are aggregated across all originator-managed pool segments or transactions. We then use these to establish median and quantile estimates of the Aaa loss for given median loss levels. This relationship enables us to establish a median and minimum Aaa loss estimate (as measured by one standard deviation decrease in losses) for a given level of expected loss.

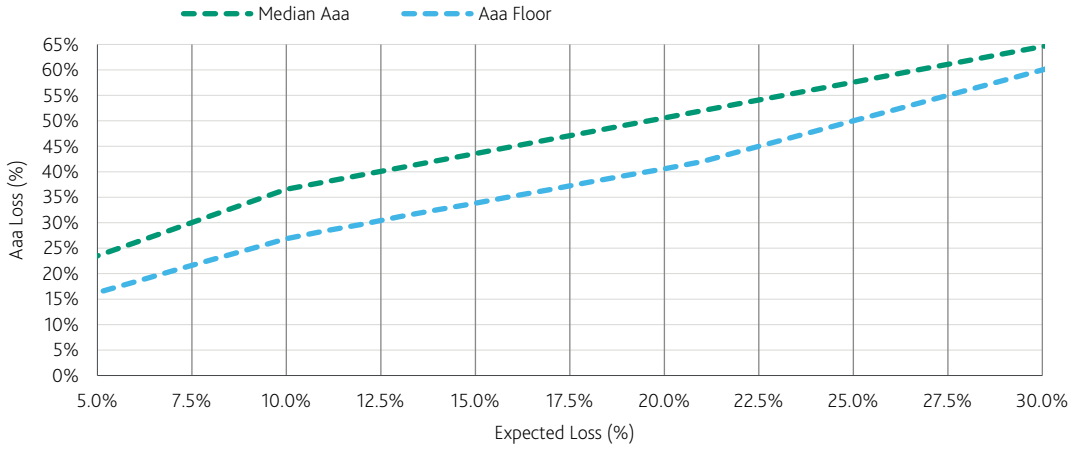
Source: Moody's Investors Service

In addition, this minimum Aaa loss estimate is floored at the expected cumulative credit loss multiplied by two. The Aaa loss estimate is also floored at 2.5% of the outstanding pool balance as illustrated below in Exhibit 5.

[17] For more information, see the discussion of Idealized Probabilities of Default and Expected Losses in *Rating Symbols and Definitions*. A link can be found in the "Moody's Related Publications" section.

EXHIBIT 5

Variability Analysis Estimate – Median and Floor Aaa Loss by Expected Loss



Source: Moody's Investors Service

5. Factors that Affect the Potential Variability of a Pool's Credit Losses

As described below, we account for a variety of factors in assessing the potential pool's loss variability.

5.1 The Expected Level of Losses

Generally, the higher the level of expected losses on the pool, the lower is the relative measure of variability. Relative variability refers to how far pool losses can range from mean loss and is measured by the coefficient of variation. Conversely, the lower the level of expected losses, the higher is our assessment of the relative variability. The main reason is that there is more room for losses to increase significantly above low non-stressed losses than there is for them to increase above already high losses.

5.2 Historical Performance Data: Quantity, Quality, and Relevance

The specific relationship between expected loss and variability is dependent on the quantity, quality and relevance of the data.[18]

Typically, the longer the period covered by the historical performance data, the more applicable is the historical volatility to our assessment. Consequently, our assessment of variability tends to be higher in countries with newer auto loan and lease securitization markets because less historical information is typically available. However, a large quantity of performance data is helpful only if it is also of sufficient quality and relevance.

The quality of the data depends on the type provided. As described earlier, static pool data generally contain more applicable information than data from a dynamically changing portfolio and stratifying the static pool data can provide the means to an even closer match to the securitized pool. Additional data on variables such as gross default, recoveries, delinquencies, and pool factors can provide for a more robust analysis, reducing uncertainty.

The relevance of the data is dependent on whether the factors that drove the historical performance are also likely to drive performance of the asset pool. One consideration is whether the historical performance reflects the impact of an economic environment that is representative of what the securitized asset pool

[18] For more information, see our cross-sector rating methodology on global structured finance data quality evaluation. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

is likely to experience or whether the environment was either unusually benign or stressful. Also, the relevance of the data depends on the extent to which the underwriting, servicing and collection policies and practices that led to the historical performance are consistent with those that would apply to the securitized asset pool.

5.3 Experience, Track Record, and Financial Strength of Originator

We typically view transactions from originators with a long track record of pools that have performed consistently with our expectations as having less variability than those of newer or less experienced originators, or those whose previous transactions experienced unexpectedly volatile performance. In addition, representations and warranties provided by the originator can reduce uncertainty about the characteristics of the assets in the pool if they are provided by originators that have the financial strength to back those representations and warranties.[19]

5.4 Servicing Stability

In assessing the pool loss variability, we examine the stability of the servicer, from both financial strength and operational perspectives, to determine the likelihood that the servicer will apply consistent servicing practices and policies. The ability of the servicer to collect on the assets, mitigate losses, and maximize recoveries has a direct impact on the loss performance of a pool.

Another factor in assessing servicing stability is the servicer's operational structure. The servicer's operational structure affects the degree to which a dislocation would impact the pool's loss performance, including dislocation arising from a servicing transfer following a servicer's financial stress or a natural disaster. For example, historical experience tells us that performance deterioration can be greater when dislocation strikes a decentralized operation.

5.5 Pool Characteristics

If the asset pool is geographically concentrated, then it could be more susceptible to the impact of regional economic shocks. Similarly, if the vehicles securing the assets are concentrated in a single manufacturer or in a few models or vehicle types (e.g., SUVs) then the pool performance could suffer from more volatile recovery values. The concentration of originations from a few dealerships or of the obligors' employers or employment types also increases volatility in performance and contributes to a higher variability assessment.

The availability of critical information relating to the credit characteristics of the pool is another important driver of variability. The critical credit characteristics include:

- those relating to the obligors' creditworthiness (e.g., FICO score or internal credit score), their capacity to repay (e.g., payment-to-income ratio)
- key asset characteristics (e.g., loan- or lease-to-value ratio, original term, whether the underlying vehicle is new or used, whether the loans are fully amortizing or balloon loans). Balloon loans present some specific risks that are further described in Appendix 5.

The availability of such information for the comparable static pools and for the securitized pool helps reduce the potential variability around the loss estimate for the securitized pool.

[19] For more information on how we perform originator assessments in EMEA when we assign the initial ratings to the securities, a link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

5.6 Structural Features: Prefunding and Revolving Periods

In transactions with prefunding and revolving periods,[20] which allow for the addition of receivables during the life of the transaction, the potential for changes in pool composition increases the uncertainty of the loss estimate of a securitized pool. As a result, these features can lead to a higher variability estimate than for a similar transaction that does not have such features. The increase in variability depends on the transaction's limitations and covenants, if any, for adding assets and on the inherent turnover rate of the auto loans or leases.

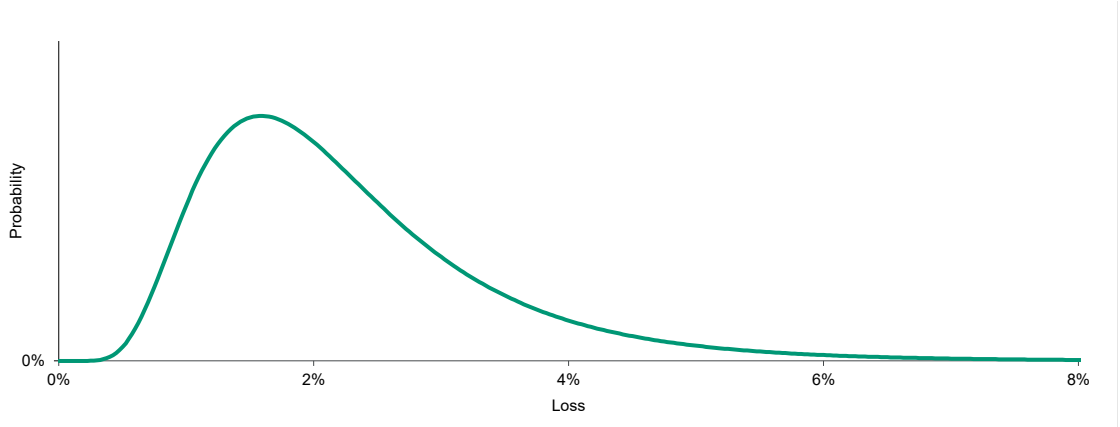
Factors mitigating the increase in variability resulting from such features are (1) a long track record of consistent originations, (2) the originator's documented representation that there will be no adverse selection of additional receivables and (3) stringent eligibility criteria in the transaction documents for the characteristics of the additional receivables.

6. Combining Expected Pool Losses and Their Variability to Derive the Probability Distribution of Pool Credit Losses

We use our assessment of the pool's losses[21] and variability to derive a specific probability distribution of the pool's losses. A loss distribution is a curve that associates each loss scenario with its corresponding probability.

In most auto loan and lease transactions, the pools are well diversified, with few if any assets of materially disproportionate size. In those transactions, we assume that the general shape of the pool's credit loss distribution is lognormal. Exhibit 6 shows the general shape of the lognormal distribution curve.

EXHIBIT 6
Probability Density Function of the Lognormal Distribution



Source: Moody's Investors Service

The specific curve is determined by a measure of its central tendency (either its mean or median), and a measure of dispersion (e.g., the standard deviation or a quartile). We derive the central tendency from the asset pool's expected loss. The standard deviation is either a direct assumption or implied from the indirect approach.[22] The indirect approach uses the portfolio credit enhancement, determined by the rating

[20] Prefunding and revolving periods both allow for additional receivables to be added to the trust after the closing date: In a "prefunded" transaction, some of the proceeds from the closing of the transaction are set aside in a prefunding account to be used to purchase additional receivables during the prefunding period; in a "revolving" deal, principal collections from the assets can be used to purchase additional receivables during the revolving period.

[21] Originators provide data either in the form of net losses or as gross defaults, with recoveries separately. In the latter case, we analyze the two components separately and derive a cumulative default projection and a recovery assumption, together with recovery timing.

[22] For more information, see section 4.

committee for a simple cash flow structure, as the point on the distribution that has an expected loss typically consistent with the highest rating achievable within the country.[23] With those inputs, we derive the standard deviation of the distribution, which is uniquely defined. Conversely, using the direct approach, we can derive the portfolio credit enhancement (at the LCC) from the pool's expected loss rate and standard deviation assumptions.

Alternately, in the limited number of transactions that have pools with significant concentrations, we might derive a pool-specific probability distribution from the simulated loss behavior of the individual assets. The default behaviors are based on (1) individual asset default probabilities that we adjust for the specific asset's characteristics and (2) correlations among the assets. In some cases, we might approximate the distribution resulting from the simulated loss behavior of the individual assets with probability distributions such as a normal inverse (or large homogeneous portfolio approximation), if the approximation gives results that are close to those of the distribution resulting from the simulation.[24]

6.1 Using the Probability Distribution to Derive Expected Losses on Securities

Once the probability distribution of the pool's credit losses is determined, we calculate the securities' losses, if any, for investors in a multitude of asset default scenarios, using a model of the structure that represents the allocation mechanisms of the transaction and the size and availability of credit enhancement. We then determine the expected loss on the securities by weighting the losses by the probabilities that are consistent with the lognormal probability distribution of pool losses. Finally, we determine the rating on the security based on our pre-established benchmark relationships between a security's expected loss and our ratings.[25]

6.2 Modeling the Transaction

As noted above, we use a probabilistic model to evaluate losses on the securities, if any, that would be incurred by investors in a multitude of pool loss scenarios, which we assume will occur with frequencies consistent with the specific probability distribution that we have assumed. The model helps to assess the benefit of the various sources of credit enhancement, including excess spread, and the different structural features of the transaction. The type of modeling depends on the complexity of the transaction's actual cash flow structure.

In certain markets, cash flow structures are often relatively standard, with some sponsors repeatedly using the same basic structure over time. As a result, we often use a generic, relatively simple cash flow model to analyze the potential losses for the different classes of securities, perhaps supplemented by separate modeling of one or more special features. For transactions in these markets with static sequential pay structures which we expect to deleverage very quickly, we may give credit to the expected build-up of credit enhancement in the early months of amortization in our modeling.

In other regions, structures tend to be more varied and complicated. As a result, we use a more comprehensive tool that can accommodate in a single cash flow model many of the specific structural elements and risks that can lead to material differences in the rating analysis. The key input parameters to that type of model typically include:

» yield earned on the assets for each period taking into account any stresses that may cause this yield to decrease

» scheduled amortization profile of the assets

[23] I.e., local currency ceiling or LCC.

[24] For more information on how we evaluate transactions with concentrated pools, see our methodology for rating equipment lease securitizations. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

[25] For more information, see the discussion of Idealized Probabilities of Default and Expected Losses in *Rating Symbols and Definitions* (a link can be found in the "Moody's Related Publications" section) and in section 12, "Loss Benchmarks."

- prepayment rate of the assets
- timing of pool losses or defaults throughout the life of the transaction
- lag to recoveries on defaulted assets
- transaction fees, the interest rates on the securities, including any interest rate swaps
- reserve amount, if any, including provisions governing changes in the amount
- how the transaction allocates cash flows and losses among the various parties in the transaction, including different classes or tranches of notes
- triggers that can change those allocations
- potential losses associated with legal risks, such as commingling or set-off risk, when not adequately mitigated in the structure

The model calculates the security's loss for each portfolio loss scenario of the lognormal curve. The model then weights each security's loss by the frequency implied by the probability distribution. We then sum the weighted losses to calculate the security's expected loss.

6.3 Evaluating the Benefit of Excess Spread

Excess spread is the difference between the interest earnings on the assets and the sum of (1) the interest on the securities and (2) the fees of the transaction. It can provide a significant amount of credit protection to investors. However, the exact amount of protection it will provide is unknown at the start of the transaction and depends on three main factors:

1. The amount by which the average interest rate on the assets may change over the life of the security, which we refer to as weighted average coupon (WAC) deterioration or yield compression.
2. The speed with which assets prepay during the life of the security.
3. The amount of excess spread that "leaks out" of the transaction before it is needed to protect investors.

We typically model the first factor by assuming that the assets with the highest interest, up to a specified portion of the pool, prepay immediately. We determine the size of the specified portion assumed to prepay immediately based on historical experience, which may differ by type of asset. For example, we may assume that for a pool with high-credit quality loans, the loans with the highest 3% of the interest rates in the pool prepay immediately while for low-credit quality loans, we may assume that the loans with the highest 10% of the interest rates prepay immediately. The prepayment of the highest interest-rate assets tends to lower the weighted average rate of the remaining assets; we use that calculated lower interest rate in the cash flow modeling.

We model the effects of the other two factors in two different ways, depending on whether we use a single comprehensive cash flow model or a simpler, generic model. In a comprehensive model, the effects of the last two factors are incorporated within the modeling, through the prepayment rate, the default or loss timing curve and the modeling of the cash flow allocations among the participants.

In contrast, when we use a simpler, generic model, we typically use a separate model to determine the amount of excess spread protection that could be lost in stress scenarios for prepayments and excess spread "leakage." Our stressed prepayment assumptions are typically tied to the credit quality of obligors in the pool. We then subtract the "lost" protection from the amount that would be available in an "expected" scenario, which gives us the net amount of protection that we assume will be available from excess spread. We add that net amount to the other forms of credit protection (e.g., subordination, over-collateralization,

reserve fund) to obtain the total amount of credit protection that we include in our simpler, generic model.[26]

6.4 Analyzing the Risk of Short-term ("Money Market") Tranches

Some transactions include a money market tranche that matures within 13 months of issuance. A key part of our analysis is determining the likelihood that the transaction (including consideration of available liquidity accounts) will provide sufficient cash flow to pay off the tranche before its stated legal final maturity. To analyze this risk, we focus on the timing of cash flows from the underlying assets.

For a money market tranche to be rated Prime-1 (sf), cash flows must be sufficient to pay off the tranche in full under certain stress scenarios, typically at least one month before its legal final maturity date. Such scenarios include low, or no prepayments. In auto ABS transactions that include residual value risk, the value and the timing of the residuals are also stressed. We typically expect the cash flows to be sufficient to completely pay down the tranche at least three months before its legal final maturity. We also assess the adequacy of liquidity in reserve accounts and other structural features against the risks of operational disruption.

6.5 Specific Risks in Synthetic Transactions

When the credit risk is transferred synthetically (e.g., through credit default swaps), we focus our analysis on (1) the specific credit event definition[27] (e.g., failure to pay, bankruptcy and some restricted restructuring or loss definitions); (2) the counterparty risk with regard to the originator as credit protection buyer (typically mitigated by advance payments depending on the originator's creditworthiness); (3) the loss allocation mechanism;[28] (4) the synthetic excess spread mechanism, if any;[29] and (5) potential moral hazard problems resulting from the reliance on the credit protection buyer to (a) provide notification of a credit event (as public information is usually not available) and (b) calculate the loss amounts in its capacity as calculation agent (typically mitigated by a verification process performed by an independent third party).[30]

6.6 Expected Loss Approach and Use of Model Output

We typically use a model to calculate the security's loss for each asset loss scenario for the probability distribution.[31]

For auto loan ABS transactions which are originated in the US or Canada, we use a generic, relatively simple model, Multi-Class. Multi-Class uses portfolio-related assumptions in the form of a portfolio expected loss and a loss equivalent to a Aaa stress to calibrate a lognormal collateral loss distribution. We use Multi-Class to derive the potential losses for the different securities, taking into consideration the relevant capital structure. We sometimes supplement our modeling with additional analysis of special features.[32]

[26] Appendix 2 describes our approach and an illustration of the excess spread calculation for US and Canadian auto loan securitizations.

[27] A definition may be considered tighter or looser depending on the number and type of contingencies that will trigger a protection payment and on the level of subjectivity in their quantification.

[28] The loss amount is generally defined as the credit protection payment (i.e., the payment made by the issuer/seller to the originator/buyer that is triggered by the occurrence of a credit event). Securities to which losses are allocated are partially written down in the amount of such loss amount.

[29] Typically, the excess spread is either available on (1) a use-it or lose-it basis (i.e., at a fixed amount, generally a percentage of the non-written off note balance or of the performing portfolio) for a given period (generally one quarter or one year), making it sensitive to the timing of defaults; or (2) a trapped basis (i.e., at a fixed amount, generally a percentage of the non-written-off securities or of the performing portfolio). In each period, to the extent not used before, excess spread is accumulated in a specific ledger.

[30] For more information, see our cross-sector methodology for assessing counterparty risks in structured finance and our methodology for rating corporate synthetic obligations. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

[31] For more information, see the discussion of Idealized Probabilities of Default and Expected Losses in *Rating Symbols and Definitions* (a link can be found in the "Moody's Related Publications" section) and in section 12, "Loss Benchmarks."

[32] For more information, see the discussion of Internal Rate of Return (IRR) Reduction in *Rating Symbols and Definitions* (a link can be found in the "Moody's Related Publications" section) and in section 12, "Loss Benchmarks."

For auto ABS transactions originated in other jurisdictions, we typically use a comprehensive cash flow model, ABSROM™, which enables us to model transaction cash flows derived from portfolios of auto loans and leases and the associated liability structure. The model produces a series of loss scenarios, with outputs for each security that include the expected loss, weighted average life and default probability.

7. Residual Value Risk in Auto Leases

7.1 How Residual Value Risk Arises

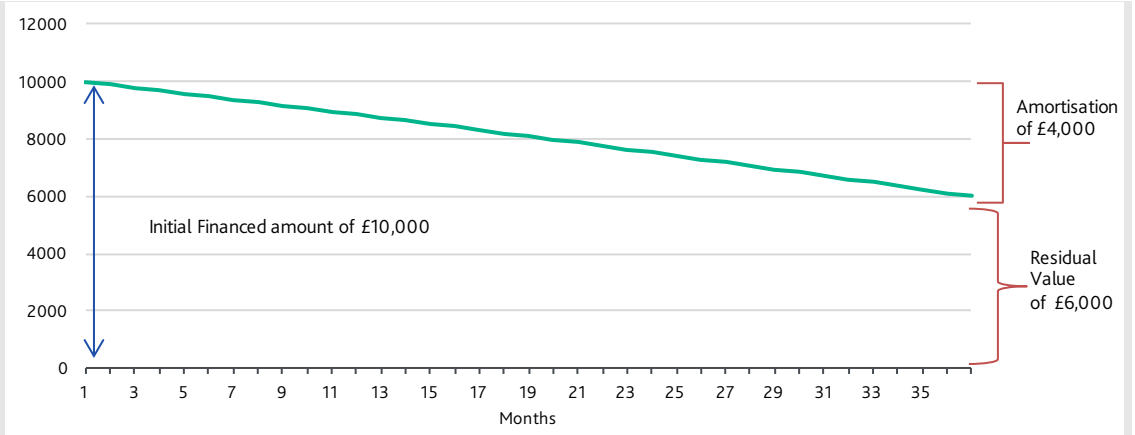
In standard auto leases, the lessor purchases a vehicle and, in turn, leases it to the lessee for a fixed term. During the life of the contract, the lessee pays fixed installments that cover the expected depreciation of the vehicle, the cost of financing, and, in some cases, a servicing/maintenance component.

In many leases, a sizable unamortized amount remains at the maturity of the lease and the lessee has the option to turn in the vehicle to the lessor – or, in the case of a securitization, to the securitization sponsor – instead of making the final payment to purchase the vehicle. In those cases, the securitization faces residual value risk because there is no assurance that the market value of the vehicle will be at least equal to the unamortized amount.[33]

More formally, the CRV of a lease is defined as the initial financed amount less any scheduled capital repayments over the term of the lease. It is the amount the lessee must pay to complete the purchase of the vehicle (see Exhibit 7). When the lessee has the option to turn in the vehicle instead of purchasing it, the difference between the CRV and the MRV of the vehicle will influence the lessee's decision; lessees are more likely to turn in their cars if the CRV exceeds the MRV of the vehicle. In those cases, the securitization trust and potentially the investors are likely to suffer a loss.[34]

EXHIBIT 7

Illustrative Example of a 36-Month Lease with a Residual Value of £6,000



Source: Moody's Investors Service

[33] In the US, most auto leases do have a relatively large unamortized value at the maturity of the lease and do provide the lessee with the option of turning in the vehicle instead of purchasing it. In EMEA, only some types of leases have similar characteristics, with the resultant residual value risk. See Appendix 5 for a description of the different types of auto leases in EMEA and the implications for residual value risk.

[34] Generally, the loss for a vehicle that is turned in is the amount by which the CRV exceeds the MRV. In some US securitization structures, however, the securitized value of the unamortized portion of the contract at the maturity of the lease is different from the CRV. In such cases, the loss would be equal to the amount by which the SRV exceeds the MRV.

7.2 Evaluating Residual Value Risk

Residual value risk is realized only on contracts for which the vehicles have been turned in - that is, those lease contracts that have not defaulted or prepaid[35] (i.e., leases in which the car has been purchased prior to the lease maturity). Therefore, one of the factors driving residual value risk is the turn-in rate on the leases. The turn-in rate is determined largely by the difference between the CRV of the lease and the MRV. Meanwhile, the residual value loss, if any, on a turned-in vehicle, is determined by the difference between the SRV[36] (which may or may not be equal to CRV) and the MRV. Consequently, the two principal factors behind residual value risk are the strategy in setting the CRV and SRV and the potential changes in used car market values (which will determine the MRV). Since the CRV and SRV for each lease are known at the start of the securitization, our analysis focuses on the main unknown, the future MRV of each lease.

7.3 The Turn-In Rate

The turn-in rate is the rate at which lessees return vehicles to the lessor as a percentage of all contracts that reach lease-end. The decision about turning in a vehicle is influenced by the difference between the CRV and the MRV. If the CRV exceeds the MRV, the car is likely to be returned by the lessee, since even a lessee who wants to retain the car is less likely to buy it from the lessor if it can be purchased at a lower price in the used car market.[37] On the other hand, if the CRV is less than the MRV, the turn-in rate is likely to be low, since even lessees who do not want to retain the car could make a profit by purchasing it from the lessor (at the CRV) and then selling it at a higher price in the used car market.[38]

7.4 Residual Value-Setting Strategy

Lessors typically use various tools such as depreciation curves or forecasted MRVs as a guide in setting their CRVs. Those lessors who want to court lessees more forcefully can establish more attractive lease terms by lowering the regular contractual payments, which would raise the CRV and create more residual value risk for the lessor. Those who want to take on less residual value risk can create contracts with higher payments and lower CRVs, establishing a larger buffer between the expected MRV and the CRV in case of unexpected deterioration in the MRV. The higher installment payments, however, could be unattractive to some potential lessees. An originator's RV-setting strategy can vary depending on make, vehicle type or model.

Similarly, in securitization structures in which the SRV can be different than the CRV, securitization sponsors can create more risk within the structure by establishing SRVs that are higher than the CRVs, which would allocate a larger portion of a contract's regular cash flows to excess spread, and less to the amortization of the securitization. As a result, if the vehicle is turned in, it is less likely that the MRV will cover the unamortized portion of the securitization's valuation of the contract.

7.5 Stress on Market Residual Values at Lease Maturity

We analyze the potential levels of the MRVs of the vehicles at lease maturity to determine both the likelihood that the vehicles will be turned in at lease maturity and the amount of loss, if any, on vehicles that are turned in. We assess the potential levels of MRVs on a lease-by-lease basis when provided by the originator.

[35] Prepaid in this context refers to leases settled substantially before scheduled maturity. Leases settled shortly before scheduled maturity (e.g., in order for the lessee to roll into a new lease) are assumed to have effectively been turned-in. In most regions, prepayment rates on auto leases are low.

[36] The SRV is the unamortized portion of the lease at the end of the lease, as valued within the securitization. In EMEA, the SVR is equal to the CRV. In the US, the SRV, commonly referred to as base residual value, could differ from CRV and is often determined with reference to third party (such as Automotive Lease Guide, or ALG) projections.

[37] However, even in such circumstances, some lessees may decide to keep the car because of factors such as preference for the car's particular color and options, which may not be available in the used car market, or a desire to avoid the burden of shopping for a replacement vehicle.

[38] However, even in such circumstances, some lessees may decide to turn in the car if the expected profit from that strategy is small or the perceived burden of selling in the used-car market is high.

In our analysis, we start with a base case estimate of the vehicle's MRV at lease maturity, which is generally based on historical depreciation rates or forecasted MRVs. The estimate may be done internally or may be provided by independent third parties.[39]

We then apply a haircut to the base case MRVs to account for potential unexpected changes in used car values. The haircut is typically higher for higher-rated securities. The unexpected changes may result from many factors, including changes in macroeconomic activity and in consumer preferences for particular car manufacturers, makes or models. Furthermore, we may adjust the haircuts for a variety of concentrations that may exist in the pool of leases, which could result in more variable MRVs for the pool as a whole. Such types of concentrations include lessees' geographic location, lease expiration dates, make and model type, and vehicle manufacturer, especially low-rated manufacturers. Our haircuts are region-specific.[40]

7.6 Determining the Credit Enhancement Consistent with a Security's Residual Value Risk

For a European auto ABS, we typically use the stressed MRV for each vehicle to determine whether the vehicle will be turned in. If the stressed MRV is less than the CRV for the vehicle, we expect that the vehicle is turned in; otherwise, we assume that it is not. For a US auto ABS, we typically assume vehicles backing all of the non-defaulted leases are turned in. For all markets more generally, we assess the loss for those vehicles that are turned in as the difference between the securitization's valuation of the residual value and the stressed MRV.[41] We deem the sum of the assumed losses to be the credit enhancement that would be consistent with residual value risk for the securitization, and add it to the credit enhancement for the other risks (e.g., lessee default risk), as described above, to determine the total credit enhancement that would be needed to be consistent with the security's rating.

8. Using the Model Output in the Rating Committee Process

The outputs of our quantitative modeling are important inputs to our rating committee process. However, the actual securities' ratings assigned by the rating committee incorporate both model output and numerous other factors, including the result of sensitivity analyses of the model output to certain timing assumptions, and qualitative analysis relating to factors such as:

- underwriting and servicing practices.
- the risk of disruption in the transaction's cash flows that could result from the non-performance of a third party (operational risk).
- other counterparty related risks.
- legal considerations.
- sovereign risk.

As a result, the model output may differ from the assigned rating.

8.1 Operational Risk

The strength of an auto loan or lease transaction depends not only on the creditworthiness of the underlying pool of assets but also on the effective performance of transaction parties such as the sponsor, servicer, cash manager, and trustee. A disruption of servicing may result in a weakening of collection

[39] For example, in the US, we typically have sufficient historical depreciation data to arrive at the base case MRV internally. In EMEA and Asia-Pacific, however, we use third-party forecasts as base case MRV. See Appendices 5 and 8 for more information.

[40] For example, see Appendices 5 and 8 for the discussions of the haircuts that we apply in the US and EMEA and Asia-Pacific, respectively.

[41] As noted earlier, in some structures the securitization's valuation of the residual value is equal to the CRV, while in others it can be set lower than the CRV. See Appendix 4 for an example of the credit enhancement calculation in which the CRV is higher than the SRV and Appendix 7 for an example in which they are equal.

activities, leading to increased delinquencies, lower recoveries, and ultimately higher losses on the securitized assets. Alternatively, disruption of the operations of a cash manager or trustee could result in a payment default despite adequate collections.[42]

8.2 Bank Accounts

Auto loan or lease transactions in which an account bank holds or has invested a substantial amount of the transaction's cash relative to the securities are potentially subject to rating volatility, if the bank or eligible investment defaults. The cash or the investments would not be recoverable quickly, with ultimate recoveries uncertain, and could lead to additional losses for investors.[43]

8.3 Swap Risk

Our approach to assess the rating impact of linkage to swap counterparties depends on various factors including (1) the rating of the counterparty, (2) the trigger provisions in the swap documents, (3) the type and tenor of the swap, (4) the amount of enhancement supporting the securities, (5) the size of the relevant tranche and (6) the rating of the securities before accounting for the effect of linkage.[44]

8.4 Bankruptcy of the Originator

Our legal analysis of the potential bankruptcy of the originator is an assessment of the following key factors:

- whether the originator has actually sold the receivables (often referred to as a "true sale")
- whether a court would consolidate the owner of the assets (e.g., the securitization trust) with the sponsor, in the event of the sponsor's bankruptcy (often referred to as "substantive consolidation")
- whether the securitization trustee can enforce its ownership or security interest in the collateral once the originator has filed for bankruptcy protection (referred to as perfection of the security or ownership interest)

Our legal analysis of all these risks will depend on jurisdiction and applicable securitization laws. For example, in the US, titling trusts are important vehicles for achieving bankruptcy remoteness in auto lease asset-backed securities transactions.[45]

The bankruptcy of the originator can also pose other risks that could reduce the cash flow available to repay the securities, such as set-off risk and cash commingling risk, as described below.

8.5 Set-off Risk

In some cases of a bankruptcy of the originator, loan and lease obligors to whom the originator owes money might be able to "set off" those amounts against the loan or lease balance (i.e., reduce the balance by the amount owed by the originator). The typical situation in which this risk arises is when the originator is a bank and the obligors have deposits at that bank. The amount of the set-off represents a reduction in the principal amount of the loan or lease pool and is, effectively, a loss.[46]

[42] For more information, see our cross-sector methodology for assessing counterparty risks in structured finance, including operational risks. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

[43] For more information, see our cross-sector methodology for assessing counterparty risks in structured finance, including account banks and investments. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

[44] For more information, see our cross-sector methodology for assessing counterparty risks in structured finance, including swap counterparties. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

[45] For more information, see Appendix 6.

[46] For more information, see our cross-sector methodology for assessing counterparty risks in structured finance, including set-off risks. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

To analyze this risk, we assess jurisdiction-specific laws and regulations governing the right to set off in the event of bankruptcy. In jurisdictions that allow set-off, and for transactions without structural protections to fully mitigate set-off risk, we typically estimate the potential set-off exposure by modeling the probability of a default of the originator and the extent to which the originator is likely to owe money to loan obligors.

For auto leases, another way that set-off risk may occur is if lessees have a right to set-off in the event of termination or non-performance of the lessor's service obligations. In such a circumstance, if the termination or non-performance of the service component of a lease leads to the lessee incurring servicing costs in excess of the contractual servicing fees,[47] the lessee may set off the additional costs against its lease installments payable to the issuer. The presence of specific clauses in the lease contracts may reduce set-off risk but does not exclude it.

Where applicable, we may estimate set-off exposure by assessing the costs likely to be incurred by the lessees to receive similar services for a fixed monthly fee from other third parties. We assess the likelihood of set-off risk in accordance with Exhibit 45 in Appendix 8. In some cases, we may view the risk as immaterial relative to the target rating of the notes. If we were to determine that there is a material set-off risk for a particular transaction, we would consider the effect of set-off, taking account of all relevant factors.[48]

8.6 Cash Commingling Risk

Commingling risk is the risk that, if a bankrupt servicer is holding cash collections of the transaction at the time of its bankruptcy, the bankruptcy court could determine that the cash was part of the servicer's bankruptcy estate because the cash could not be traced to individual creditors. The bankruptcy court has the ability to freeze that cash until it sorts out conflicting claims (i.e., resulting in liquidity risk) and may ultimately decide that the securitization trust has only an unsecured claim on the cash (i.e., resulting in credit risk).

We analyze the following factors in determining the extent of the risk:

- the likelihood of a servicer default, measured by the servicer's credit strength
- any transaction document provisions that require the trustee to transfer servicing to a backup servicer if the existing servicer's rating falls below a specified rating
- the potential amount of the transaction's cash that the servicer holds at the time of bankruptcy, which reflects:
  - the cash payment patterns of the assets
  - the frequency with which the transaction documents require the trustee to sweep cash from the servicer's collection account to the trust's account
- the potential for cash to continue to flow to the servicer after bankruptcy and become part of the servicer's bankruptcy estate, which can be mitigated by requirements in the documentation to redirect collections to another account in the event of servicer bankruptcy or pre-bankruptcy event

In certain instances, we consider in our cash flow analysis the potential additional shortfalls that could arise from commingling, net of the transaction's credit enhancement, liquidity, and other structural protections.[49]

[47] A clearly identifiable servicing fee in the lease installment payable by the lessee can be retained by the lessee if the services are not provided. If the service component is an integral part of the lease installment payable by the lessee (the total amount of which may not be easily broken into the constituent components), further analysis is needed.

[48] Those factors would typically include the rating of the originator, the likely amount of set-off exposure and the amount of credit enhancement.

[49] For more information, see our cross-sector methodology for assessing counterparty risks in structured finance, including commingling risk. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

8.7 Termination Risk in Auto Lease Contracts

In some jurisdictions, in the event of an insolvency of the lessor, the lessor, the lessee, or both can terminate the lease under certain circumstances.[50] If the lease is terminated, then lease payments will stop and the issuer will be entitled to exercise any security it holds over the leased assets and may have an unsecured compensation claim against the insolvency estate. However, there may be a delay in being able to exercise security. Furthermore, even if the issuer is able to obtain possession of the vehicles, their market value is uncertain.[51] Therefore, there is a risk that the issuer may not recover the full amount of the "lost" lease payments.[52]

8.8 Consumer Protection Laws

We review the originator's representations and warranties relating to compliance with any of the jurisdiction's consumer protection laws and regulations regarding the loan and lease contracts, the obligors and the originator.[53]

8.9 Japanese Cancellation Risk

Car sales contracts are often canceled in Japan when, among other things, the car delivery is delayed, or the delivered car has defects. In those cases, the related auto loan contracts are also canceled, and the originator needs to repurchase the loans at par from the SPE under the representation and warranty clause. However, if the originator has gone bankrupt, it may not be able to repurchase the loans, resulting in a loss for the securitized pool held by the SPE.

In assessing the cancellation risk, seasoning of the loans is an important factor, since cancellations typically occur within the first few months of origination. If the securitized pool includes only seasoned loans due to the loan eligibility criteria of the securitized pool or any other reasons, the cancellation risk is considered as mitigated. In addition, as long as the originator doesn't default within the first few months after transaction closing, the securitized pool will not incur losses because of the originator's repurchase obligation. When the cancellation risk is not mitigated (e.g., loans are securitized shortly after the origination), then we incorporate the loan cancellation risk, considering available historical data from the originator loan book and previous securitizations.

9. Sovereign Risk

The country in which the transaction's assets, originator or issuer is located could introduce systemic economic, legal or political risks to the transaction that could affect its ability to pay investors as promised. We usually incorporate such risks into the analysis by applying our local currency country ceilings (LCC) in accordance with our sovereign ceiling methodology.[54] In particular, when generating our assumed portfolio loss distribution, we typically define the portfolio credit enhancement consistent with the highest rating achievable in a country (i.e., the LCC). A rating committee may also consider modifying appropriate assumptions or defining minimum credit enhancement levels required to achieve a particular rating.[55]

[50] Typically, if the lessee can terminate the lease under the jurisdiction's laws and regulations, it is in the event of non-performance or termination of the servicing component of the lease by the lessor. For voluntary termination risk in UK auto leases, see Appendix 5.

[51] In Germany, under certain circumstances, even if the insolvency administrator elects to continue with the terms of the contracts, the original leases will be terminated, and "new" leases will be deemed to replace them. See "Insolvency-Related Lease Termination Risks in German Lease ABS Transactions," 4 February 2013, for more information

[52] For more information, see Appendix 8.

[53] For example, see Appendix 6, "Legal Issues in Auto Lease Securitizations in the US," for a discussion of some of the consumer protection issues in the US.

[54] For more information, see our cross-sector methodology for assessing local currency country ceilings. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

[55] For more information, see Appendix 3.

10. Environmental, Social and Governance Considerations

Environmental, social and governance (ESG) considerations may affect the ratings of securities backed by a portfolio of auto loans and leases. We evaluate the risk following our cross-sector methodology that describes our general principles for assessing these ESG issues[56] and may incorporate it in our analysis.

11. Monitoring

11.1 Transaction Performance

We generally apply the key components of the approach described in this report when monitoring transactions, except for those elements of the methodology that could be less relevant over time, such as originator assessments of underwriting standards for static pools or review of the legal structure. We also typically receive periodically extensive data on transaction-specific performance that we use to monitor transactions.

When monitoring the performance of outstanding auto ABS, we track the performance of the underlying collateral; material developments regarding the originator, servicer and other participants in the transaction; the amount and form of credit enhancement; and factors that affect the integrity of the legal structure. The starting point is typically the monitoring of the collateral performance relative to our initial expectations.

The performance metrics that we typically track are the current cumulative net loss rate[57] (or cumulative default) and recoveries for the transaction, which we use, in combination with the issuer's historical loss experience, to update, when deemed appropriate, our estimate of the ultimate lifetime default rate and recoveries on the pool of loans. For lease transactions that incorporate residual value risk, we also consider, if available, the turn-in rate and any residual value loss at the contract maturity. We take into account any material changes in the macroeconomic environment that could affect future performance. We then use that updated estimate to assess whether the current ratings assigned to the transaction are still appropriate based on the credit protection available to investors. Our evaluation of the credit protection takes into account both the current levels of credit enhancement as well as how the transaction's structural features, such as the cash allocation mechanics among the various classes of securities, are likely to affect the credit enhancement and the extent to which the transaction allows the release of credit enhancement. When appropriate, we run a cash flow model (or a simplified model) to evaluate the expected losses on the securities similar to the approach we use to assign the initial ratings.[58, 59]

For the surveillance of US and Canadian auto loan transactions, we rely primarily on collateral performance information relative to the initial expectations at transaction closing and typically relate the expected decline in Aaa loss over time to the remaining time to maturity to reflect the expected reduced volatility, subject to the Aaa loss floor. In our surveillance analysis, depending on the availability of data and when appropriate, we may use a simplified analysis to assess the current ratings on the transaction.

Our monitoring analysis generally considers changes, if any, to other factors such as operational risk or counterparty risk that will affect the ratings on the securities. Should any counterparty become unable to fulfill their obligations to the transaction, the risk is greater that cash flows to investors will decline. Thus,

[56] For more information, see our methodology that describes our general principles for assessing ESG issues. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

[57] We sometimes receive dynamic data instead.

[58] For more information on revising performance metrics over the life of an EMEA auto loan- or lease-backed transaction, see Appendix 9.

[59] For example, in methodologies where models are used, modeling is not relevant when it is determined that (1) a transaction is still revolving and performance has not changed from expectations, or (2) all tranches are at the highest achievable ratings and performance is at or better than expected performance, or (3) key model inputs are viewed as not having materially changed to the extent it would change outputs since the previous time a model was run, or (4) no new relevant information is available such that a model cannot be run in order to inform the rating, or (5) our analysis is limited to asset coverage ratios for transactions with undercollateralized tranches, or (6) a transaction has few remaining performing assets.

changes in the financial stability of an entity that has a weight in the rating of the securities can result in a rating action on the securities.

11.2 Pool Size

In assessing pool diversity for auto loan- and lease-backed ABS transactions, we look beyond the nominal number of obligors in a pool to take into account the actual size of their exposure. We express this pool diversity measurement, referred to as the effective number, in terms of equal-sized exposures, using the formula in Exhibit 8.

We typically use loan- or lease-level information to calculate an effective number of obligors or exposures.

EXHIBIT 8

$$Effective\ Number\ of\ n\ Obligors\ = {}^{1}/_{\sum_{i=1}^{n}(W_i)^2}$$

Where:

» W_i is the weight of an obligor i in the total pool.

Source: Moody's Investors Service

We do not assign nor maintain ratings on securities backed by auto loans or leases with the following characteristics:

» Transactions without support mechanisms, such as a credit enhancement floor or reserve fund floor, when the underlying pool has decreased to an effective number of obligors or exposures of 75 or below. If we cannot obtain the effective number, we will use a threshold of 130 instead.

» Transactions with a reserve fund or a credit enhancement floor, which partially compensates for the increased exposure to single obligors, when the underlying pool has decreased to an effective number of obligors or exposures of 50 or below. If we cannot obtain the effective number, we will use a threshold of 90 instead.

However, we make exceptions for securities with ratings that do not rely on our assessment of individual obligor creditworthiness, such as those that benefit from a full and unconditional third-party guarantee, whether at pool or security level,[60] or for securities that benefit from full cash collateralization.

12. Loss Benchmarks

In evaluating the model output for auto ABS transactions, we use several methods for determining loss benchmarks.

In evaluating the model output for transactions which are originated in the US or Canada, we use an Internal Rate of Return (IRR) benchmark. Modeled IRR reductions are associated with benchmark ratings in Moody's IRR Reduction Rates table,[61] which indicates the internal rate of return reduction interval associated with each given rating level.

Except as noted below, in evaluating the model output for auto ABS transactions originated in other jurisdictions, we select loss benchmarks referencing the Idealized Expected Loss table[62] using the Standard Asymmetric Range, in which the lower-bound of loss consistent with a given rating category is computed as

[60] For more information, see our rating methodology for assessing transactions based on a credit substitution approach. A link to a list of our sector and cross-sector methodologies can be found in "Moody's Related Publication" section.

[61] For more information, see the discussion of Internal Rate of Return (IRR) Reduction in *Rating Symbols and Definitions.* A link can be found in the "Moody's Related Publications" section.

[62] For more information, see the discussion of Idealized Probabilities of Default and Expected Losses in *Rating Symbols and Definitions.* A link can be found in the "Moody's Related Publications" section.

an 80/20 weighted average on a logarithmic scale of the Idealized Expected Loss of the next higher rating category and the Idealized Expected Loss of the given rating category, respectively. For initial ratings and upgrade rating actions, the upper-bound of loss consistent with a given rating category is computed as an 80/20 weighted average on a logarithmic scale of the Idealized Expected Loss of the given rating category and the Idealized Expected Loss of the next lower rating category, respectively. When monitoring a rating for downgrade, the upper-bound of loss is computed as a 50/50 weighted average on a logarithmic scale. That is, the benchmark boundaries of loss appropriate for evaluating rating category R are given by:

FORMULA 1

$$[1]\ Rating\ Lower\ Bound_R = exp\{0.8 \cdot \log(Idealized\ Expected\ Loss_{R-1}) + 0.2 \cdot log(Idealized\ Expected\ Loss_R)\}$$

$$[2]\ Initial\ Rating\ Upper\ Bound_R = exp\{0.8 \cdot \log(Idealized\ Expected\ Loss_R) + 0.2 \cdot log(Idealized\ Expected\ Loss_{R+1})\}$$

$$[3]\ Current\ Rating\ Upper\ Bound_R = exp\{0.5 \cdot \log(Idealized\ Expected\ Loss_R) + 0.5 \cdot log(Idealized\ Expected\ Loss_{R+1})\}$$

Where:

- *Rating Lower Bound*$_R$ means the lowest Idealized Expected Loss associated with rating *R* and the expected loss range of rating *R* is inclusive of the *Rating Lower Bound*$_R$.
- *Initial Rating Upper Bound*$_R$ means the highest Idealized Expected Loss associated with rating *R* that is either initially assigned or upgraded and the expected loss range of rating *R* is exclusive of the *Rating Upper Bound*$_R$.
- *Current Rating Upper Bound*$_R$ means the highest Idealized Expected Loss associated with rating *R* that is currently outstanding and the expected loss range of rating *R* is exclusive of the *Rating Upper Bound*$_R$.
- *R-1* means the rating just above *R*.
- *R+1* means the rating just below *R*.
- The Rating Lower Bound for Aaa is 0% and the Rating Upper Bound for C is 100%. These are not derived using the formula.

Source: Moody's Investors Service

In some auto ABS transactions backed by auto loans originated in Japan, we use a model assessing failures of scenarios with no mapping to the Idealized Expected Loss nor IRR benchmarks.

Appendix 1: Extrapolation of Historical Data

We generally use one of two methods to extrapolate vintage data series (when available), both of which yield similar results in most circumstances. We generally have a consistent use of the extrapolation method across a given market to allow for a better comparison between transactions.

The Growth Rate Extrapolation Method

The method is commonly used to extrapolate the cumulative default rate on static series of pools (vintages) that include loans originated during the same period of time (usually individual quarters). For a given vintage, we can draw the historical cumulative default curve representing the cumulative amount of defaulted loans over time divided by the aggregate original outstanding amount of the loans included in the vintage. For those vintages that have been recently originated and, therefore, do not offer extensive historical data, we extrapolate default rates following the historical pattern observed on older vintages.

The approach is based on the calculation of the growth rate of the average cumulative defaults observed during previous periods. If we consider the percentage increase in average cumulative defaults from period to period after origination (using a comparable amount of data points), we get an estimate of the possible future growth rates of cumulative defaults for each period.

We obtain extrapolated default data for the future by multiplying the last historical data point of a specific vintage by one plus the growth rate of the average cumulative defaults of the specific period (and so on with the subsequent growth rates and the resulting extrapolated data).

When the observation period covered by historical data is shorter than the average maturity of loans, we may extend the observed default curves in order to capture the impact of potential defaults after the observation period and build a full default timing curve. In order to "simulate" these unobserved defaults, one approach is to extrapolate the default rate of the longest observed period to the weighted average maturity of the pool for each vintage curve, at a rate equal to the last actually observed growth rate.

EXHIBIT 9

Extrapolated cumulative default rate table

	Year	Originated Volumes	Quarters after Origination															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Q1	Year 1	6,734,496	0.01%	0.07%	0.14%	0.20%	0.24%	0.31%	0.56%	0.71%	0.76%	0.88%	1.10%	1.13%	1.17%	1.22%	1.27%	1.28%
Q2		17,798,000	0.00%	0.02%	0.10%	0.29%	0.53%	0.70%	0.85%	0.95%	1.01%	1.17%	1.27%	1.46%	1.49%	1.51%	1.58%	1.59%
Q3		13,456,298	0.00%	0.03%	0.04%	0.23%	0.34%	0.42%	0.50%	0.66%	0.79%	0.88%	1.12%	1.18%	1.24%	1.31%	1.37%	1.38%
Q4		12,884,480	0.03%	0.07%	0.07%	0.12%	0.24%	0.44%	0.64%	0.80%	0.91%	1.11%	1.27%	1.33%	1.36%	1.41%	1.47%	1.48%
Q1	Year 2	19,509,488	0.02%	0.06%	0.11%	0.18%	0.30%	0.44%	0.52%	0.61%	0.89%	1.05%	1.19%	1.25%	1.29%	1.34%	1.39%	1.41%
Q2		21,876,657	0.00%	0.03%	0.14%	0.31%	0.41%	0.51%	0.70%	0.80%	0.90%	0.97%	1.32%	1.41%	1.45%	1.51%	1.57%	1.58%
Q3		28,659,946	0.00%	0.04%	0.21%	0.33%	0.50%	0.68%	0.94%	1.04%	1.23%	1.40%	1.68%	1.79%	1.85%	1.92%	2.00%	2.01%
Q4		22,374,331	0.01%	0.05%	0.17%	0.43%	0.56%	0.75%	0.99%	1.10%	1.12%	1.29%	1.54%	1.65%	1.70%	1.76%	1.84%	1.85%
Q1	Year 3	28,772,302	0.00%	0.04%	0.16%	0.46%	0.60%	0.71%	0.90%	1.08%	1.23%	1.42%	1.70%	1.81%	1.87%	1.94%	2.02%	2.04%
Q2		28,093,680	0.00%	0.10%	0.23%	0.41%	0.61%	0.73%	0.88%	1.03%	1.18%	1.36%	1.63%	1.74%	1.79%	1.85%	1.94%	1.95%
Q3		30,675,247	0.01%	0.04%	0.18%	0.37%	0.49%	0.62%	0.82%	0.96%	1.09%	1.26%	1.51%	1.61%	1.66%	1.72%	1.79%	1.81%
Q4		32,602,184	0.02%	0.06%	0.21%	0.39%	0.58%	0.76%	1.00%	1.17%	1.34%	1.54%	1.84%	1.97%	2.03%	2.10%	2.20%	2.21%
Q1	Year 4	4,187,826	0.03%	0.08%	0.15%	0.41%	0.60%	0.78%	1.02%	1.20%	1.37%	1.58%	1.89%	2.02%	2.08%	2.16%	2.25%	2.27%
Q2		57,008,449	0.00%	0.02%	0.20%	0.43%	0.63%	0.82%	1.08%	1.27%	1.45%	1.66%	2.00%	2.13%	2.20%	2.28%	2.38%	2.39%
Q3		62,510,583	0.03%	0.06%	0.18%	0.39%	0.56%	0.73%	0.96%	1.13%	1.29%	1.48%	1.78%	1.90%	1.96%	2.03%	2.12%	2.13%
Q4		69,544,482	0.01%	0.05%	0.14%	0.31%	0.45%	0.59%	0.77%	0.91%	1.04%	1.19%	1.43%	1.52%	1.57%	1.63%	1.70%	1.71%
Mean default rate			0.01%	0.05%	0.15%	0.33%	0.48%	0.63%	0.82%	0.97%	1.10%	1.27%	1.52%	1.62%	1.68%	1.74%	1.81%	1.83%
Growth rate of averages				381%	197%	116%	45%	31%	31%	17%	14%	15%	20%	7%	3%	4%	4%	1%

Source: Moody's Investors Service

The Delta Net Loss Timing Curve Method

The method is commonly used to extrapolate cumulative loss rate on static series of pools (vintages) that include loans originated during the same period of time (usually quarters).

The starting point in projecting losses based on the static pool cumulative loss data is creating a loss timing curve for the originator. The loss timing curve provides the percentage of the overall lifetime losses likely to be incurred by the receivables at various intervals of the pool's life. The loss timing curve can then be used to extrapolate the cumulative losses on a static pool of receivables from its current level to the expected level at maturity.

We frequently employ the "delta" loss curve method to construct the loss curve. This method uses the incremental (delta) losses experienced by the vintages during each period. The first step is to calculate average incremental losses across vintages for each period (average delta loss). Next, the cumulative average delta loss is calculated for each period by adding the incremental delta losses up through that period (cumulative delta loss). If the static pool performance history does not include pools that are fully paid down, there are more losses to be incurred in these static pools over their remaining lives. Therefore, the next task is to determine the "anchor" or terminal value of the cumulative delta loss curve. There are various methods for forecasting the anchor value. One such method is to analyze the trend line of six-month deltas to determine the projected six-month deltas over the remaining life. Those projections are added to the life-to-date losses to determine the anchor or terminal loss.

The loss curve is created by calculating the percentage of the total cumulative delta loss incurred through each period after origination. The loss timing curve can then be used to project the cumulative loss for each of the vintages with incomplete history by dividing the life-to-date loss for any vintage by the corresponding value of the loss timing curve.

EXHIBIT 10

"Delta" Loss Curve Method

Column	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
Originations (in $000')	25,216	26,878	27,815	27,327	26,943	28,433				
Pool Factor	0.01%	0.31%	1.92%	10.56%	25.38%	48.76%				

Year	1	2	3	4	5	6	Loss Curve
1	0.68%	0.86%	0.94%	0.76%	0.74%	0.72%	24.28%
2	1.73%	1.84%	2.32%	1.96%	1.74%	1.71%	58.38%
3	2.26%	2.57%	2.64%	2.39%	2.18%		73.57%
4	2.49%	3.28%	2.91%	2.75%			85.74%
5	2.59%	3.50%	3.46%				94.73%
6	2.66%	3.75%					99.69%
7	2.67%						100.00%
Projected Lifetime Loss	2.67%	3.76%	3.65%	3.21%	2.96%	2.93%	

(5) Projected lifetime loss calculation: 2.18/73.57=2.96%

(1) Delta calculation: 2.26-1.73=0.53

Incremental static pool losses

(3) Cumulative calculation: 0.78+1.1=1.88

(2) Average delta loss calculation: Year 1 average=0.78

							Average Delta Loss	Cumulative Delta Loss	Loss Curve
1	0.68%	0.86%	0.94%	0.76%	0.74%	0.72%	0.78%	0.78%	24.28%
2	1.05%	0.98%	1.38%	1.20%	1.00%	0.99%	1.10%	1.88%	58.38%
3	0.53%	0.73%	0.32%	0.43%	0.44%		0.49%	2.37%	73.57%
4	0.23%	0.71%	0.27%	0.36%			0.39%	2.77%	85.74%
5	0.10%	0.22%	0.55%				0.29%	3.06%	94.73%
6	0.07%	0.25%					0.16%	3.22%	99.69%
7	0.01%						0.01%	3.23%	100.00%

(4) Loss curve calculation: 3.06/3.23=94.73%

Source: Moody's Investors Service

Appendix 2: Assessment of Excess Spread Benefit in US and Canadian Auto Loan Securitizations

The following sections describe how we determine the amount of benefit for excess spread as credit enhancement for US and Canadian auto loan spread can provide a significant amount of credit protection to investors. The exact amount of the benefit will depend on factors such as:

» the amount by which the average interest rate on the loans may decline over the life of the transaction, which we refer to as weighted average coupon (WAC) deterioration.

» the speed of loan prepayments, defaults and recoveries during the life of the transaction.

» the amount of excess spread that "leaks out" of the transaction before it is available to protect investors.

We first calculate a stressed excess spread by applying the WAC deterioration and a short weighted average life (WAL) for the pool. In a second calculation, we directly link the excess spread benefit to the cumulative credit losses that the underlying auto loan pool may experience and the amount of hard credit enhancement, such as subordination, over-collateralization (including yield supplement over-collateralization), and reserve available to a given security, as covered in more detail in the "Tranche-specific Excess Spread" section below. We use the minimum of the stressed excess spread and the excess spread linked to cumulative credit losses of the pool and hard credit enhancement for a given security as the final excess spread. When monitoring a transaction, we may use certain simplified assumptions to estimate the impact of the stresses as described below.

WAC Deterioration Stress

Higher interest rate loans are typically associated with weaker credit obligors who are more likely to default on and less likely to prepay their loans. Conversely, lower interest rate loans are often associated with better credit obligors who are more likely to prepay and less likely to default on their loans. In our analysis, we assume a lower WAC than the actual WAC of the pool by applying a relative haircut of 2.5%-10% to the actual WAC of the pool. The haircut will be higher for higher loss pools than for lower loss pools.

Prepayment Rate Stress

Our analysis of prepayment rates in auto loan pools has shown that the monthly absolute prepayment speed (or ABS),[63] including both voluntary prepayment and default for US and Canadian auto loans, is typically around 1% to 1.6% of the original pool balance, depending on the credit quality of the pool.

We stress the prepayment speeds from this expected prepayment level, which results in a shorter WAL of the transaction and, thus, less excess spread over the life of the transaction to cover losses. Our stressed prepayment rate depends upon the borrower credit quality and the types of incentives offered to the borrower.

Stressed Excess Spread (ES_s)

The excess spread generated by the collateral pool, ES, expressed as a percent of the original balance may be estimated by:

[63] The absolute prepayment speed is also referred to as ABS or APS; the monthly rate or prepayment quoted as a percentage of original number of loans.

FORMULA 2

$$ES = (WAC - COF - Servicing\ Fees) \times WAL$$

Where:

» *WAC* = the weighted average coupon of the collateral pool after considering WAC deterioration, as a percent of original pool balance.
» *COF* = the weighted average cost of funds of the securitization tranches, as a percent of the original pool balance.
» *WAL* = the weighted average life of the collateral pool (in years).

Source: Moody's Investors Service

The stressed excess spread (ES_s) is the ES estimated using Formula 2 under a high prepayment assumption, which results in shorter WAL and therefore a lower excess spread value.

Tranche-Specific / Breakeven Excess Spread (ES_{BE})

In addition to the excess spread calculation under a high prepayment rate stress, we determine on a tranche-by-tranche basis the benefit we give to excess spread by first assuming a linear relationship between excess spread and cumulative credit losses realized on the collateral pool for a given level of prepayments. We express the excess spread ES as depicted in Formula 3 below: the higher the cumulative credit losses experienced by the pool, the lower the excess spread generated by the pool.

FORMULA 3

$$ES = a - b \times L$$

Where:

» *a* = intercept
» *b* = slope
» *L* = cumulative credit loss realized on the collateral pool.
» *ES* and *L* are both expressed as a percent of original pool balance.

Source: Moody's Investors Service

To calculate the slope "b" and intercept "a", we derive the ES using Formula 3 above by using two different WALs under two points of cumulative credit losses given the expected voluntary prepayment rate[64] of the pool. The two loss points include one with 0% loss, and the other with our expected cumulative credit loss as a percent of the outstanding pool.

We then estimate the breakeven loss for each tranche by setting the level of pool losses equal to excess spread available for each tranche (ES_{BE}) plus the available hard credit enhancement, including subordination, over-collateralization and reserve account. The breakeven loss of a tranche is the level of losses incurred by the pool before the first dollar loss attributed to the tranche.

FORMULA 4

$$Breakeven\ Loss = Hard\ CE + ES_{BE}$$

Source: Moody's Investors Service

Due to the assumed linear relationship between Breakeven Loss and ES_{BE} when plugging Formula 3 into Formula 4, the result is the following.

FORMULA 5

$$Breakeven\ Loss = Hard\ CE + a - b \times (Breakeven\ Loss) = \frac{Hard\ CE + a}{1 + b}$$

Source: Moody's Investors Service

Once we have the breakeven tranche loss, we can then determine the breakeven excess spread ES_{BE} for the tranche by subtracting the hard credit enhancement available for each tranche from the breakeven tranche loss level.

[64] Voluntary prepayment rate excludes defaults.

FORMULA 6

$$ES_{BE} = Breakeven\ Loss - Hard\ CE$$

Source: Moody's Investors Service

We then determine the amount of excess spread to the tranche as the minimum of the stressed excess spread (ES_S) and the breakeven excess spread (ES_{BE}).

Credit Enhancement (CE) Leakage Stress

We incorporate another stress into the tranche-level excess spread calculated from the steps above to account for the possibility that excess spread may not be available to support the rated securities; instead, it may have been released or "leaked" to the unrated securities or residual interest because of the timings of pool losses. For example, excess spread and other cash (e.g., pro-rata principal allocations and reserve account releases) may be released to junior interests in the early months of a transaction before losses have reached a sufficiently high level to utilize that credit enhancement.

We incorporate this risk in the analysis of US and Canadian auto loan transactions generally by applying a cash flow analysis, which assumes excess spread that is not used to build over-collateralization leaks out of a transaction in the first 12 months. From the 13th month forward, the analysis assumes that any remaining credit enhancement will be fully utilized to cover losses in the breakeven loss scenarios, scenarios where losses are equal to the total amount of credit enhancement including hard enhancement and excess spread. The amount of credit enhancement leakage in the first year also depends on the weighted average remaining maturity (WARM) of the asset pool. We assume pools with longer WARMs have greater CE leakage in the first 12 months than pools with shorter WARMs, reflecting the potential for more back-ended losses in longer WARM pools.

Amortization Benefit

In certain cases, for sequential pay structures with no revolving feature which we expect to deleverage very quickly, we may give benefit to amortization over the early months of the transaction life by using a higher credit enhancement in our modeling and adjust other parameters accordingly. The amount of credit we will give could depend on the economic forecast that affects the amortization of the transactions in the coming months. We align the prepayment and default timing assumptions used to calculate amortization with those used to calculate excess spread.

Excess Spread Benefit: An Illustrative Example

The implementation of the WAC deterioration, prepayment speed and CE leakage stresses within our bond breakeven analysis is shown below for a sample auto loan ABS transaction. It includes the following characteristics.

The asset pool in the example has a WARM of 60 months and a WAC of 10.4%. In our assumption, the weighted average security coupon is 4% and the servicing fee is 1% on the pool balance.

EXHIBIT 11

Transaction Characteristics

Pool Overview	Parameters
Balance	1,000,000,000
WA Remaining Term	60 months
WAC	10.4%
Class (as percentage of pool balance)	**Size**
A	80%
B	10%
C	5%
Over-collateralization	5%
Reserve Account	1%
Security Coupon and Fees	**Parameters**
Security Coupon	4.00%
Servicing Fees	1.00%

Source: Moody's Investors Service

The breakeven level of credit enhancement is calculated for the subordinate Class B security, which is supported by (i) a non-declining 1.0% reserve account and (ii) over-collateralization, which is built from 5% initially to a target of 8.5% of the outstanding pool, subject to a floor of 0.5% of the original pool.

We assume that the expected life cumulative credit loss for the pool backing the securities to be rated is 5% and the Aaa loss is 20%.

EXHIBIT 12

Credit Enhancement Structure Inputs

	Reserve Account	Over-collateralization	Total
Initial (% of original pool balance)	1.00%	5.00%	6.00%
Target (% of outstanding pool balance)		8.50%	
Floor (% of original pool balance)	1.00%	0.50%	

Source: Moody's Investors Service

WAC Deterioration Stress

We apply a 3.75% haircut to the pool WAC causing a decline in the WAC of 40 basis points to 10.0%.

High Prepayment Stress

High prepayment will reduce the WAL and therefore reduce excess spread generated by the transaction. Our expected total prepayment speed for the pool is 1.5% ABS, which produces an average life of 1.9 years for the collateral pool. Keeping the same voluntary prepayment speed and assuming no pool defaults and losses, the average life of the pool is 2.0 years. Given the type of borrower, we use a stressed total prepayment speed of 2.25% ABS to calculate the stressed life of 1.5 years.

Lifetime Excess Spread

The amount of excess spread allocated to a given tranche is the minimum of (a) a stressed excess spread, (ES_S), as defined below, and (b) the excess spread defined by the linear relationship to losses, (ES_{BE}).

» ES_S is calculated as the annual excess spread multiplied by the stressed weighted average life.

EXHIBIT 13

Calculation of Stressed Excess Spread (ES_S)

	Values	Description
Annual Excess Spread (ES_{Annual})	5.0%	Stressed WAC of 10% minus coupon of 4% and fees of 1%
Stressed WAL	1.5	x Stressed weighted average life
Stressed Excess Spread (ES_S)	7.5%	= 1.5 x 5.0%

Source: Moody's Investors Service

» ES_{BE}, which is defined by the linear relationship to losses, is determined by calculating excess spread generated under two scenarios:

1. ES(L=0): Lifetime excess spread when losses are zero.
2. ES($L_{Expected}$): Lifetime excess spread under an expected loss scenario.

We assume an expected prepayment rate for the loss scenarios above to derive two WALs. Once we have the two WALs, we use Formula 2 above to calculate the ES(L=0) and ES($L_{Expected}$), which will be used in the linear function in Formula 3 above where excess spread is related to the cumulative credit losses on the collateral to derive the intercept "a" and slope "b".

EXHIBIT 14

Linear Function of Excess Spread and Loss

Point	x-value	y-value		a and b Parameters	
ES(L=0)	0% Loss	ES = 10.1%	➡	a = 10.1%	ES from 0% loss
ES($L_{Expected}$)	5% Expected Loss	ES = 9.5%		b = 0.1	(ES from 0% loss minus ES from 5% loss) over 5%

Source: Moody's Investors Service

We derived the two different excess spread numbers by using two different WALs under the 0% and 5% loss scenarios. We assume an expected ABS of 1.5% to derive the expected voluntary ABS under the 5% expected loss. With the 0% loss and the expected voluntary ABS, we derive the WAL (L=0) and multiply it by the excess spread per annum, ES_{Annual} x WAL (L=0) to get 10.1%, (10.1% = 2.0 WAL (L=0%) x 5% ES). For the expected case, ES(L=5%) = ES_{Annual} x 1.9 WAL(L=5%) =9.5%.
We then calculate the "Breakeven Loss" for each tranche, L_{BE} by solving for the loss for which credit enhancement and loss are equal. Credit enhancement in our example is inclusive of excess spread and Hard CE, which is the sum of the reserve account, subordination and over-collateralization.

Once we have the value for the intercept "a" and slope "b", using Formula 5 above and the Hard CE for each tranche, we can derive the breakeven loss for each tranche.

FORMULA 7

$$Breakeven\ Loss = \left(\frac{HardCE + a}{1 + b}\right)$$

Source: Moody's Investors Service

EXHIBIT 15

Linear Function of Breakeven Losses and Hard CE

Equation	Value	Description
$\left(\frac{a}{1+b}\right)$	9.1%	Breakeven loss with no Hard CE.
$\left(\frac{1}{1+b}\right)$	0.9%	Breakeven loss increases by 0.9% over every percentage point increase in Hard CE.

Source: Moody's Investors Service

Below in Exhibit 16, the tranche could withstand a collateral loss of 9.1% with no Hard CE under aforementioned assumptions, where protection is provided by a 9.1% excess spread benefit. Additionally, the tranche can withstand 0.9% of additional collateral loss without incurring a loss on the tranche for every percentage point increase in Hard CE.

EXHIBIT 16

Hard CE, Estimated Breakeven Losses and Implied Excess Spread

(all % of Original Pool Balance)

Class	Subordination	Over-collateralization	Reserve Account	Hard CE	Breakeven Loss	Implied Excess Spread$_{BE}$
A	15%	5%	1%	21%	27.9%	6.9%
B	5%	5%	1%	11%	18.9%	7.9%
C	0%	5%	1%	6%	14.4%	8.4%

Source: Moody's Investors Service

The final excess spread benefit is the minimum of ES_S and ES_{BE}.

EXHIBIT 17

Final Excess Spread

(before leakage, all % of original pool balance)

Class	ES Benefit	Minimum
A	6.9%	Minimum of 7.5% ES_S and 6.9% ES_{BE}.
B	7.5%	Minimum of 7.5% ES_S and 7.9% ES_{BE}.
C	7.5%	Minimum of 7.5% ES_S and 8.4% ES_{BE}.

Source: Moody's Investors Service

Excess Spread Leakage Stress

We run an excess spread leakage analysis with the 5% cumulative credit loss assumption and the transaction structure inputs (see Exhibit 17 above). In this context, we use our expected asset assumptions, which include: a 45% recovery rate (no recovery lag), a default timing curve that assumes 25% of the losses will occur in the first year of the transaction life and a pool amortization that assumes a 1.5% absolute prepayment speed.

We assume the likelihood that any remaining cash is released to residual holders instead of covering losses declines over the first 12 months. After 12 months, we assume losses to be high and excess spread is fully utilized to cover losses. In our example, over the first few months, excess spread is trapped to build up the target OC level of 8.5%, resulting in no excess spread leakage. In the following months, excess spread is first used to cover losses, which we assume are likely to be low in the first year of the transaction, then is released out of the transaction with a declining probability.

Based on our expected case asset assumptions, such as prepayment, default and default timing, structural features that trap a certain amount of excess spread early in the transaction life, and the declining probability of a breakeven loss occurring as the first 12 months pass in an expected scenario, the estimated excess spread leakage of the transaction in the first 12 months is 0.7%.

We then divide the estimated excess spread leakage by the stressed lifetime excess spread value to generate the transactions leakage haircut of 9.33%. From this, we assume that each class will leak 9.33% of its excess spread value.

EXHIBIT 18

Excess Spread Benefit

(% of original pool balance)

	Class A	Class B	Class C
Lifetime Excess Spread	6.9%	7.5%	7.5%
- Expected Leakage	0.6%	0.7%	0.7%
Excess Spread Benefit	6.3%	6.8%	6.8%

Source: Moody's Investors Service

We then add the amount of excess spread to the hard credit enhancement to determine the ratings on the tranche.

EXHIBIT 19
Total Credit Enhancement
(% of original pool balance)

	Class A	Class B	Class C
Reserve Fund	1.0%	1.0%	1.0%
Excess Spread Benefit	6.3%	6.8%	6.8%
Over-collateralization	5.0%	5.0%	5.0%
Subordination	15.0%	5.0%	0.0%
Total	27.3%	17.8%	12.8%

Source: Moody's Investors Service

Benefit of Expected Amortization

In cases where we give benefit for expected amortization over the early months of a transaction, we use the same asset assumptions used to derive expected leakage of excess spread to estimate the pro forma Hard CE after such amortization. In this example, the total ABS speed of 1.5%, along with a cumulative credit loss assumption of 5% of the original pool balance, reduces the pool balance to 84% of its original balance by month six.

Hard CE grows for all classes of securities as a result of non-declining balances of subordination (except for Class C, which does not benefit from subordination in this example) and the reserve account growing as a percentage of the declining pool balance. In addition, excess spread has been used in the early months to build over-collateralization to the target balance, which is higher than the over-collateralization at closing.

The excess spread benefit declines on a forward-looking basis as a result of a shorter weighted average life of the remaining pool and fewer future months of over-collateralization build, which results in more leakage and a shorter WAL of the remaining pool.

EXHIBIT 20
Change in Enhancement in Early Months of Amortization
(% of pool balance)

Class	Class Size		Hard CE		Excess Spread Benefit		Total Credit Enhancement	
	Closing	Month 6	Closing	Month 6	Closing	Month 6	Closing	Month 6
A	80%	74%	21%	27.2%	6.3%	2.9%	27.3%	30.1%
B	10%	11.9%	11%	15.3%	6.8%	3.5%	18.7%	18.7%
C	5%	5.9%	6%	9.3%	6.8%	3.5%	12.8%	12.8%
Over-collateralization	5%	8.1%						
Reserve Account	1%	1.2%						

Source: Moody's Investors Service

Appendix 3: Incorporating Sovereign Risk to Auto Loan and Lease ABS Transactions

Loss Distribution Curve Accounts for Changes in the Probability of High Loss Scenarios

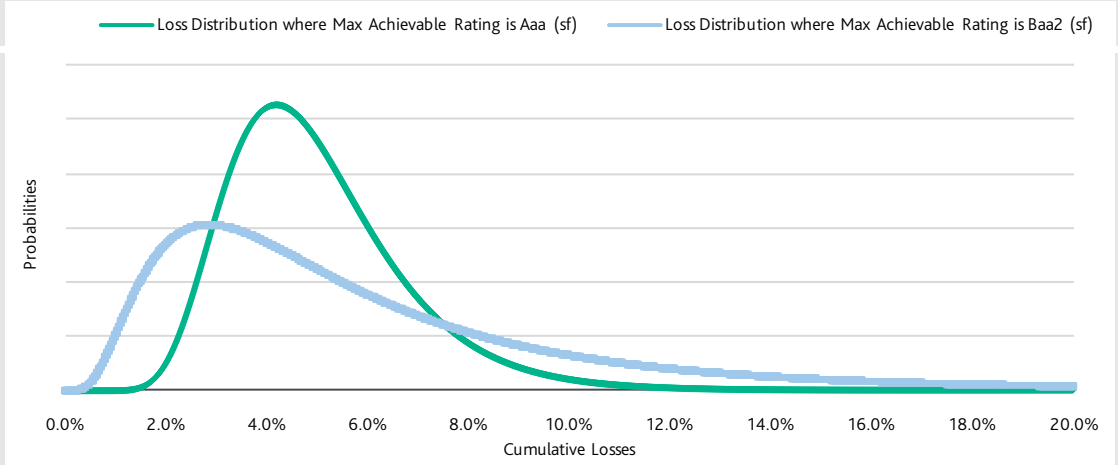
The modeling approach for auto ABS transactions generally takes into account the country's local currency country ceiling (LCC) when calibrating the portfolio loss distribution, which we use to generate portfolio losses. In particular, we typically define the portfolio credit enhancement as the credit enhancement consistent with the highest rating achievable in the country (i.e., the LCC).[65]

As Exhibit 21 shows, two loss distributions reflecting the same amount of portfolio credit enhancement (CE) but different maximum achievable ratings will have markedly different shapes, meaning the losses and their associated probabilities differ markedly. The loss distribution for a maximum achievable rating of Aaa (sf) has a lower probability of very high loss scenarios than the loss distribution for a maximum achievable rating of Baa2 (sf).

EXHIBIT 21

Calibration of Credit Enhancement to Aaa (sf) vs. Baa2 (sf)

Same Portfolio Credit Enhancement for Different Country Ceiling Levels



Source: Moody's Investors Service

Under this approach, if we lower the maximum achievable rating for structured finance transactions in a country, we will not necessarily lower the amount of CE necessary. For example, if a maximum achievable rating of Aaa (sf) previously corresponded to 10% CE, a new maximum achievable rating of Baa2 (sf) may also correspond to 10% CE, to account for the risk of a higher probability of high loss.

Calculating the loss distribution using the same enhancement amount but a lower rating results in a fatter tail on this curve, which takes into account the higher probability of high losses on the rated tranche in a country with a lower ceiling.

This approach provides for a consistent stress across the capital structure, from the senior to the junior classes. The revised loss distribution will capture a change in the level of country ceiling and resulting changes in the maximum achievable rating or the relevant CE (for junior notes).

[65] In certain circumstances, in particular for low LCC levels, we may consider alternative loss distribution assumptions or may not adjust our loss distribution assumption taking into consideration the LCC.

Minimum Portfolio Credit Enhancement

Furthermore, for transactions issued from countries where the availability of information limits the predictability of severe stress, our analysis will also consider additional features. Specifically, we may subject the CE consistent with the highest rating achievable in a given market to two floors, namely the (1) minimum portfolio CE, and (2) minimum expected loss multiple. The minimum portfolio CE mitigates general market factors such as system-wide event risk and asset correlation, which could lead to high losses in the pool in the event of extreme stress despite overall good asset quality. We set the minimum portfolio CE level at different levels for each affected country and asset class, to reflect the underlying economic uncertainty in the specific market.

We generally determine the minimum portfolio CE levels for each country as a function of the potential deterioration arising from macroeconomic, social or political events that would affect all portfolios originated in a particular jurisdiction, regardless of (1) the strength of the origination and underwriting processes of an originator, (2) the type of borrowers in a portfolio, or (3) the characteristics of the underlying security that the borrowers provide. We apply such minimum portfolio CE levels as long as we assume that those conditions will prevail.

We may also apply a minimum expected loss multiple to ensure that extreme loss scenarios have an adequate probability of occurrence in our analysis. We apply this multiple when we assign or update the expected loss. We determine it as a multiple of the transaction's expected loss to ensure that we maintain a minimum level of difference between the expected loss and the portfolio CE. The method for calculating the multiple allows the loss distribution used to simulate losses incurred by the securitized portfolio to maintain a minimum coefficient of variation. Moreover, this method is particularly important for transactions with high expected loss assumptions or where there is an expectation of adverse performance, which the arrears performance of the collateral portfolio is not yet reflecting but is already qualitatively incorporated into the expected loss assumption.

The multiples differ based on the level of the expected loss assumed for the portfolio, but typically will range from 3x (for high expected loss assumptions) to 5x (for low expected loss assumptions).

Appendix 4: Special Characteristics of Auto Lease Securitization Analysis in the US and Canada

Use of Historical Data to Determine Base Case Market Value

In stressing residual value loss, we start with the base market depreciation of the underlying asset, the vehicle (i.e., its base valuation in the used car market at lease-end for the various lease terms in a pool). The base market values are often based on historical average vehicle auction data expressed as a percentage of manufacturer's suggested retail price. We often arrive at base case market values based on data provided by the sponsor on historical average vehicle auction data, broken down by lease term, vehicle make and model. Alternatively, we may use depreciation curves established from data from a third-party data provider for each vehicle make and model.

Determining Stressed Residual Value Loss

Based on targeted rating levels, we apply different residual value stresses specific to vehicle make, model and term. The rating-based residual value stresses are intended to incorporate various qualitative, forward-looking factors, including the impact on turn-ins and depreciation of a recessionary environment, projected trends in used car prices, prospective manufacturing model changes, subvention of residuals, and the projected popularity of various vehicle makes. We typically apply a market value stress of 30% to 50% to the base market value depreciation rates to derive a level of enhancement that would be consistent with a Aaa rating. The basis for the Aaa-level market value stress includes the following:

Residual Value Performance During the 2008-09 Used-Car Market Downturn

Between Q4 2008 and Q1 2009, almost every auto ABS issuer experienced residual value loss of 15% to 20% amid the steep used-car market downturn. We view this experience as an event consistent with a lower investment-grade rating – as stressful as it was, the decline in the used-car market could have been even steeper and more prolonged without the swift US government intervention. We consider a residual value stress of at least two times the decline in the 2008-09 period to be consistent with a Aaa rating.

Long-Term Historical Residual Value Realization

We adjust the stress so that the residual value losses would be at least four times the sponsor's long-term residual value loss experience, which typically averages between 5% and 10%. The adjustment for a specific transaction reflects the varying historical performance by lease terms and vehicle types and the degree of volatility of the underlying performance data.

Impact of Manufacturer Bankruptcy on Vehicle Values

A bankruptcy of a manufacturer or a discontinuation of an auto brand is likely to have a negative impact on the used car values of those vehicles. In the past, we have seen impacts ranging from 15% to 30% depending on make, model and age of vehicle.[66] A manufacturer's bankruptcy can undercut servicing, create a shortage of spare parts, and weaken the manufacturer's reputation and its ability to position its products in the marketplace. Consequently, for transactions in which the pool has a significant concentration of vehicles from lowly rated manufacturers, we typically consider a stress to base market values of 50% to be consistent with a Aaa transaction rating.

Pool Diversity

The diversity of the pool, based on factors such as lessees' geographic location, vehicle model type and manufacturer, and lease maturity dates, influences the variability of performance and hence the risk of the transaction. Pools that are less diversified tend to have more variable performance and hence are riskier, all else being equal. Pools consisting of leases from captive finance companies are, by definition, highly

[66] For more information, see "The Impact of Manufacturer Bankruptcy on Vehicle Values," Moody's Auto Navigator, 19 May 2009.

concentrated by manufacturer and make. We may adjust the market value stress to account for the lack of pool diversification if deemed appropriate.

Servicing Capabilities

A servicer with a historically demonstrated ability to manage vehicle disposition can help to soften the impact of adverse changes in the used car market.

The rating-based residual value stresses are intended to incorporate various qualitative such as servicing capabilities, forward-looking factors, including the impact on turn-ins and depreciation of a recessionary environment, projected trends in used car prices, prospective manufacturing model changes, subvention of residuals, and the projected popularity of various vehicle makes.

Example of Residual Value Loss Calculation for Aaa-Rated Security in the US

In Exhibit 22 and 23, we explain how we would calculate the credit enhancement that we would deem consistent with residual value loss for a theoretical Aaa-rated security. Since residual value loss and credit loss are mutually exclusive, we first calculate the percentage of the pool that is assumed to default; the percentage of the pool that is subject to residual value loss is the percentage of the pool that is assumed to not default (see Exhibit 22).

EXHIBIT 22

Credit Loss Stress Example - Aaa Stress Case

			Comments/Calculation
1	Vehicle Type/Model Year/Term	Luxury Sedan/2020/36 Month Lease	
2	Number of Contracts	10	
3	Expected Credit Loss as % of the Pool	1.00%	Estimated based on factors such as pool quality, historical performance track record, and macroeconomic trends
4	Aaa Level for Credit Loss	5.00%	Maximum credit loss for the pool at Aaa level established through rating committee process
5	Recovery Assumption	50%	Based on historical average recovery rates for defaulted leases
6	Aaa-Level Gross Default Assumption	10%	4/5. Maximum gross default for the pool based on Aaa level for credit loss and recovery assumption
7	Percentage of the Pool Subject to Residual Value Loss	90%	Defaulted leases are excluded from the pool for estimating residual value loss

Source: Moody's Investors Service

In Exhibit 23, we show the calculations leading to the calculation of the Aaa-level of credit enhancement, using the result from Exhibit 22 for the percentage of the pool that is subject to residual value loss (90%). In the calculations, we assume that the base market value for the vehicle at lease-end is 50% of the manufacturer's suggested retail price, and we apply a 50% market value stress in the Aaa stress case. Furthermore, we assume that all of the vehicles backing the non-defaulted leases are turned in in this example.[67] In this theoretical example, the Aaa-level of credit enhancement for residual value loss is 23%.

[67] For the few US auto lease issuers who have demonstrated consistent low turn-in rates, we have assumed lower than 100% turn-in rates.

EXHIBIT 23

Residual Value Stress Example - Aaa Stress Case

			Comments/Calculation
1.	Vehicle Type/Model Year/Term	Luxury Sedan/2020/36 Month Lease	
2.	Number of Contracts	10	
3.	Avg. Securitization Residual	$21,000	Residual value for securitization
4.	Avg. Contract Residual	$22,000	
5.	Avg. manufacturer's suggested retail price	$40,000	
6.	Avg. Securitization Value	$35,378	
7.	Total Securitization Value	$353,780	6 x 2
8.	Historical Average Auction Realization as % of manufacturer's suggested retail price	50%	Per auction data by make/term/model provided by sponsor
9.	Market Value Stress	50%	Sample Aaa residual value stress assumption
10.	Stressed Residual Value	$10,000	5 x 8 x (100%-9)
11.	Avg. Aaa Stressed Residual value Loss	$11,000	3 – 10, difference between securitization residual value and stressed residual value
12.	Percentage of the Pool Subject to Residual Value Loss	90%	Defaulted leases are excluded from the pool for estimating residual value loss. All non-defaulting lease contracts are subject to residual value loss
13.	Stressed Turn-in rate for non-defaulting lease	100%	Because Aaa stressed residual value of $11,000 is far below contract residual of $22,000, every non-defaulting vehicle will be turned in.
14.	Total Stress Residual Value Loss at Lease-End	$99,000	2 x 11 x 12 x 13
15.	Present Value of Residual value Loss	$81,952	Since residual value loss will be realized at lease-end, or 36 month later, it needs to be discounted backed to present value
16.	Aaa Level for Residual Loss	23%	15 /7

Source: Moody's Investors Service

Appendix 5: Characteristics of Securitized Auto Finance Products and Specific Jurisdictional Risks

Contract Types

EMEA and APAC Finance Products

There are several types of retail auto finance contracts which may be grouped into two contract categories – loans and leases. Loan products typically require the borrower to transfer the vehicle's title or grant a security interest over the vehicle to the financing entity. In a lease contract, the lessor owns the vehicle, and at the end of the lease period, the lessee may have an option to purchase and own the vehicle. Otherwise, the vehicle is returned to the lessor.

Loan products are differentiated into fully amortizing loans and balloon loans. Under an amortizing loan, the borrower typically repays the loan amount in equal installments by loan maturity. In contrast, balloon loans feature lower installments than an amortizing loan, but have a significantly larger payment at loan maturity.

In a typical auto lease, the lessor purchases the vehicle and leases it to the lessee for a fixed term. During this period, the lessee pays in regular installments sized to cover the vehicle's depreciation and the cost of financing. In some cases, lease installments may also cover a servicing or maintenance component. The lessor typically does not provide any services to the lessee other than financing the acquisition of the vehicle.

UK Auto Lease Products

In the UK, auto lease products include hire purchase (HP), conditional sale (CS), personal contract purchase (PCP) and lease purchase (LP) agreements. Similar product types exist in other EMEA markets. We broadly refer to such contracts as leases. In most EMEA markets, such contracts generally have maturities of three to five years.

HP or CS contracts are usually fully amortizing, and therefore require the lessee to pay down the entire financed amount over the contract term in equal installments. By contrast, LP and PCP contracts have a large final installment which constitutes the residual value of the lease (see Exhibit 25).

In LP contracts, the balloon payment is typically mandatory, obliging the lessee to pay down the full financed amount of the lease. Thus, HP and LP contracts are not exposed to RV risk.

In PCP contracts, the balloon payment is optional. Therefore, the lessee can decide to return the vehicle to the lessor instead of making the final payment. The lessor will then need to sell the vehicle in the open market to recover the residual value of the contract. As a result, the lessor is exposed to RV risk – the risk that the vehicle's actual sale value (the MRV) is less than the contract residual value (CRV) of the lease.

Voluntary Termination in UK Leases

In the UK, leases allow the lessee to return the vehicle prior to lease maturity, with no further financial commitment, once the obligor has made payments equal to at least one half of the total amount that is payable for the good (including any deposit).[68] These returns are referred to as "voluntary terminations." Once the lease has been terminated and the vehicle is returned, the lessor - or, if the lease has been securitized, the securitization servicer - can sell the vehicle for its current market value. Thus, voluntary terminations create vehicle market risk for a securitization, similar to the unknown recovery value of a vehicle on a defaulted lease and the unknown future residual value on a vehicle turned in at maturity.

[68] Voluntary terminations are written into law under the Consumer Credit Act.

Voluntary termination provides lessees with a more attractive alternative than defaulting on their contract, since it is a contractual option and does not affect their credit rating. Consequently, for auto lease transactions in the UK, we include our assessment of the risk posed by voluntary terminations in our analysis of credit risk, rather than in our analysis of residual value risk.

EXHIBIT 24
Contract Types

Country	Securitized auto finance product / cash flows	Residual value risk	Final balloon payment by client [1]	Voluntary termination risk	Initial owner of the vehicle [2]
Several countries	Loan - amortizing	No	No	No	Borrower
	Loan - balloon	No	Yes	No	Borrower
	Lease – balloon [3]	No	Yes	No	Originator
	Lease - installment cash flows	No	No	No	Originator
	Lease - installment cash flows + residual value cash flows	Yes	No	No	Originator
UK	Unsecured loan	No	No	No	Borrower
	Conditional sale (CS)	No	Rarely	Yes	Originator
	Hire purchase (HP)	No	Rarely	Yes	Originator
	Lease purchase (LP)	No	Yes	No	Originator
	Personal contract purchase (PCP)	Yes	No	Yes	Originator

(1) The final scheduled borrower/lessee payment to the transactions is significantly higher than the previous installments.

(2) Owner of the vehicle before the finance contract is signed.

(3) Leases with balloon exposures are a hybrid financing product with similar borrower payment obligations as balloon loans, however, the vehicles are owned by the originator.

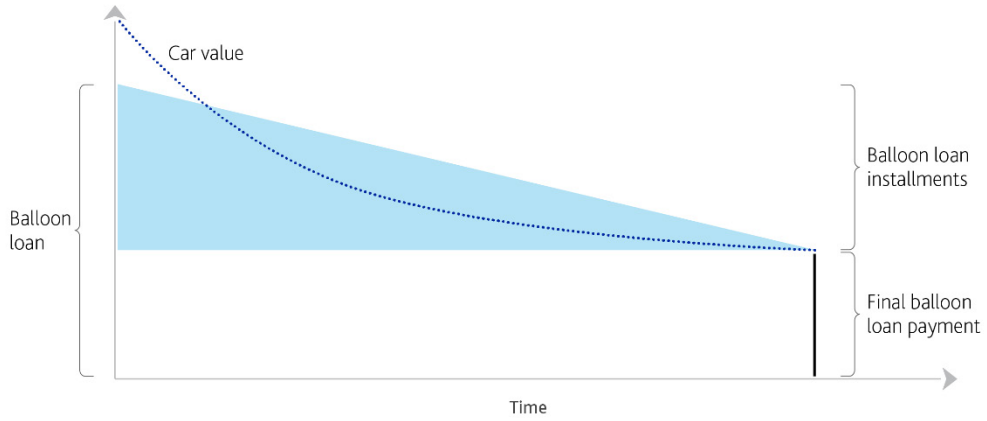
Source: Moody's Investors Service

Balloon Loans

Originators frequently offer specific auto loan products with a larger final loan payment generally referred to as balloon loans. Balloon loan products are primarily securitized in EMEA and Asia-Pacific auto ABS transactions. In some countries, such as China, lease contracts may also include an obligation for the customer to make a larger final payment.

Balloon loans typically have an amortizing phase with equal payments during the loan term and a final larger balloon payment at loan maturity, as shown in Exhibit 25. The final balloon payment is often based on a future vehicle value estimate at loan maturity, which also considers a contractual fixed mileage on the vehicle and the assumption of regular wear and tear. Furthermore, the typical contract maturity for balloon loans varies from three to five years. This type of product allows the obligor to make smaller payments during the loan term compared to typical amortizing loan products.

EXHIBIT 25
Balloon Loan Illustration



Source: Moody's Investors Service

The borrower usually has the obligation to repay the entire loan, including the balloon payment. Certain balloon products also offer the borrower further options. For example, the borrower could have the right to refinance the balloon payment with the originator. They may have the option to return the vehicle to the dealership or originator who will repurchase it, typically at a preset price, allowing the borrower to make the balloon payment at contract maturity. Coverage for the final balloon payment by the dealer or originator is referred to as the dealer or originator buy-back, respectively. Some originators may offer a buy-back option only at the market price and the borrower has to make up for a possible shortfall to the final balloon payment at contract maturity.

Asset-level Analysis

When analyzing a portfolio of auto loans that includes balloon loan products, we consider the historical performance data,[69] the originator type, the balloon loan exposure, and the credit quality of the largest car manufacturer in the portfolio. We apply a balloon stress multiple when certain threshold conditions are met. We determine our loss assumptions,[70] the loss variability,[71] the lognormal distribution and assess the thresholds at transaction closing.

ORIGINATOR TYPES AND PORTFOLIO THRESHOLDS

Captive and non-captive finance companies typically originate auto ABS transactions. We define a captive originator as an entity in which a car manufacturer owns at least 50% of the entity. Because of this stronger linkage, a manufacturer's default could negatively affect the captive finance company.

In a manufacturer default scenario, dealerships or captive originators could experience financial stress and, therefore, could struggle to meet buy-back or finance arrangements under balloon loan contracts. Consequently, borrowers could also struggle to pay final balloon payments if they had expected to either refinance or rely on the buy-back agreement.

We typically assess the balloon loan-related risks when the originator is a captive finance company and the balloon loan exposure to the related manufacturer exceeds 5% of the portfolio balance at transaction

[69] For more information, see section 3.1 "Historical Loss Data."

[70] For more information, see section 3.4 "Obtaining a Base Case Expected Credit Loss."

[71] For more information, see section 4 "Methods for Assessing the Variability of Pool Credit Losses" and section 5 "Factors that Affect the Potential Variability of a Pool's Credit Losses."

closing. For this determination and for the determination of the non-captive threshold below, we consider the entire exposure to balloon loans and not just the exposure to the final balloon payment.

A non-captive originator is usually independent of a car manufacturer and therefore less affected by a manufacturer's default. We typically analyze the balloon loan-related risks when the originator is a non-captive, and the balloon loan exposure to the largest manufacturer exceeds 30% of the portfolio balance at transaction closing (see Exhibit 26).

EXHIBIT 26
Illustration of Portfolio Threshold

Details	Values
Originator type	Non-captive
Balloon loans of the largest manufacturer as percentage of total pool balance	35%
Portfolio threshold for non-captive originator	30%
Balloon loan exposure to the largest manufacturer above 30%?	Yes

Source: Moody's Investors Service

MANUFACTURER CREDIT QUALITY THRESHOLD

In our analysis, we consider a manufacturer's default scenario because a default could negatively impact residual values, dealerships, and the originator. The better the credit quality of a car manufacturer, the lower the risk of a manufacturer's default and, consequently, the lower the risks related with balloon loans. We assess the credit quality of the manufacturer in a pool using the long-term issuer or corporate family rating (or equivalent) of the manufacturer's parent company, or a credit estimate (CE) in case the entity is not rated. We define the manufacturer credit quality threshold as equal to Ba3.[72] We determine the largest manufacturer by calculating the percentage of the pool balance that is backed by vehicles of each manufacturer (or its parent, if there are multiple brands) and financed with a balloon loan.

When the largest manufacturer has a credit quality equal to a Ba rating category, we typically perform sensitivity analysis at transaction closing using the stressed credit loss assumption. The sensitivity analysis may show a potential rating volatility on the securities in case of a manufacturer's downgrade to below Ba3. We generally assess whether a potential rating movement is limited to no more than two notches for highly rated securities. In cases where the potential rating movement is larger, we may use lower ratings on those securities.

LOSS ASSUMPTIONS AND BALLOON STRESS MULTIPLE

In a first step, we determine the relative weights of the portfolio cash flows: (i) percentage of amortizing loans, (ii) percentage of balloon loan installments, and (iii) percentage of the final balloon loan payments. In a second step, we derive an expected credit loss for amortizing loans and for balloon loans using historical performance data[73] and other factors. In a third step, we calculate a stressed credit loss for the final balloon loan payments by applying a 3x multiple ("balloon stress multiple") to the expected credit loss of the balloon loans. This multiple reflects our view of an increased probability of default on the final balloon loan payment in a manufacturer default scenario. In a fourth step, we calculate the expected and stressed credit loss assumptions for the portfolio using the various weights as described above. Subject to the portfolio thresholds, we derive the PCE[74] either from the stressed or the expected credit loss as shown in Exhibit 27.

[72] In instances when neither a rating nor credit estimate is available, we may assume the manufacturer's credit quality is below Ba3.

[73] For more information, see section 3 "Estimating the Pool's Expected Cumulative Credit Loss."

[74] For more information, see section 4 "Methods for Assessing the Variability of Pool Credit Losses" and section 5 "Factors that Affect the Potential Variability of a Pool's Credit Losses."

EXHIBIT 27

Thresholds and Assumptions

Depending on the originator type: Is a portfolio threshold breached?	Is the largest manufacturer rated Ba3 or higher?	Credit Loss Assumptions	PCE Assumptions
No	Yes/No	Expected credit loss	PCE derived from expected credit loss
Yes	Yes	Expected credit loss	PCE derived from stressed credit loss
Yes	No	Stressed credit loss	PCE derived from stressed credit loss

Source: Moody's Investors Service

BALLOON EXPOSURE OVER TIME AND OTHER CONSIDERATIONS

As a portfolio with balloon loans amortizes, the relative exposure to the final balloon payment increases. There are offsetting effects, such as the reduction of a portfolio's weighted average life, leading to a lower manufacturer default probability compared to transaction closing. Deriving our stressed credit loss assumption at transaction closing typically addresses the increasing exposure. In specific scenarios, for example, when the balloon exposure increases and the manufacturer is lowly rated, we may apply a further stress to the portfolio assumptions or consider additional sensitivities in our analysis.[75]

Balloon Risk: Illustrative Examples

Exhibit 28 describes the portfolio details and assumptions for a sample auto loan securitization at transaction closing. The sample transaction is backed by a portfolio including balloon loans originated by a captive finance company. The exposure of balloon loans to the largest manufacturer is 80% and exceeds the portfolio threshold of 5%. At transaction closing, in example 1 the largest manufacturer is rated B1, which is below the manufacturer threshold of Ba3. In example 2 the largest manufacturer is rated Baa1, which is better than the manufacturer threshold of Ba3.

EXHIBIT 28

Originator Type and Thresholds

Details	Thresholds	Illustrative Example 1	Illustrative Example 2
Originator type		Captive	Captive
Balloon loan as a percentage of total pool balance	5%	80%	80%
Manufacturer credit quality	Ba3	B1	Baa1

Source: Moody's Investors Service

We calculate the assumptions as shown in the exhibits below. In these examples, we assume an expected loss multiple of 4x to derive the PCE. In instances where we receive historical default data instead of loss data, we use default data and recovery rate assumptions to derive our expected and stressed credit loss assumptions at transaction closing.

[75] For more information, see section 11 "Monitoring."

EXHIBIT 29

Portfolio Details and Assumptions

Inputs	Illustrative Example 1	Illustrative Example 2
A: Balloon loans as a percentage of total pool balance	80%	80%
B: Final balloon payment as a percentage of total balloon loan balance	60%	60%
C: Expected credit loss for amortizing loans	1.5%	1.5%
D: Expected credit loss for balloon loans	1.0%	1.0%
E: Balloon stress multiple*	3x	3x
F: Expected loss multiple**	4x	4x

* The balloon stress multiple is an analytical assumption.

** The expected loss multiple is a transaction-specific assumption.

Source: Moody's Investors Service

EXHIBIT 30

Illustrative Examples: Calculations and Results

Portfolio cash flows	Weight	Expected credit loss	Stressed credit loss
Amortizing loans	20% (1-A*)	1.5%	N/A
Balloon loan installments	32% (A x (1-B))*	1.0%	N/A
Final balloon loan payment	48% (A x B)*	1.0%	3.0% (1.0% x E*)
Example 1: Results			
Weighted average expected credit loss		1.1%	
Weighted average stressed credit loss			**2.1%**
PCE			**8.4%** (2.1% x F*)
Example 2: Results			
Weighted average expected credit loss		**1.1%**	
Weighted average stressed credit loss			2.1%
PCE			**8.4%** (2.1% x F*)

* For details see Exhibit 29.

Source: Moody's Investors Service

In example 1, the credit quality of the largest manufacturer is B1 (see Exhibit 28), we use a calculated stressed credit loss of 2.1% and the PCE of 8.4% to derive the lognormal distribution. In example 2, the credit quality of the largest manufacturer is Baa1 (see Exhibit 28). We therefore use the calculated expected credit loss of 1.1% and a PCE of 8.4% to derive the distribution.

Appendix 6: Legal Issues in Auto Lease Securitizations in the US

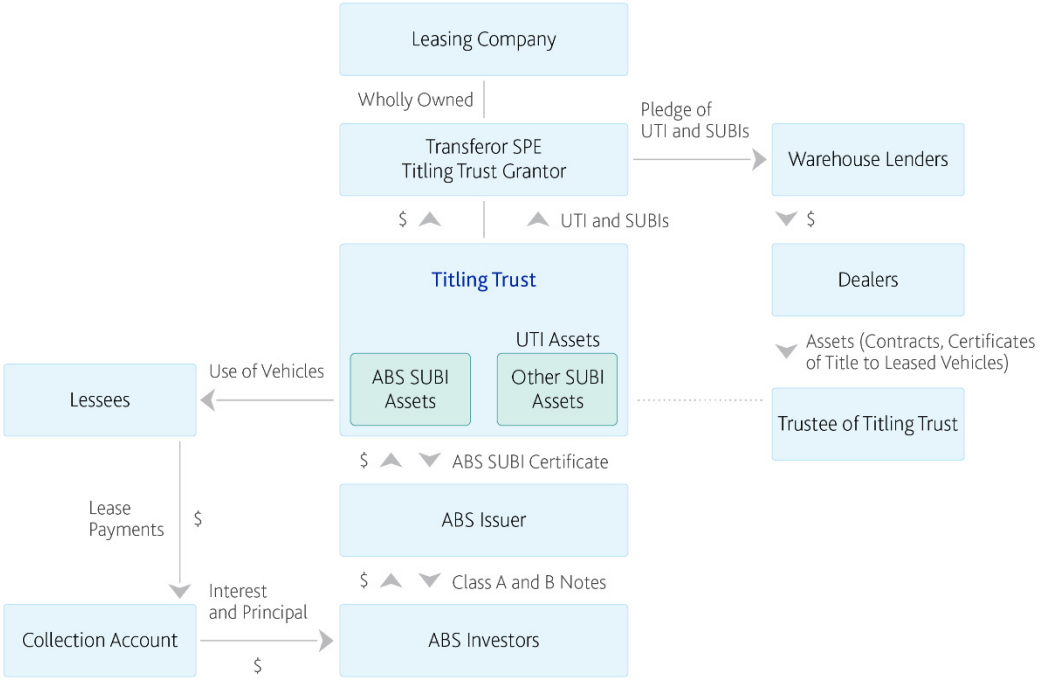
US Titling Trusts

In the US, the sponsor of an auto lease securitization – the bank, auto leasing company, or captive finance company – typically establishes a "titling trust" before undertaking its first securitization. The titling trust is intended to be bankruptcy remote from the sponsor of the transaction and is the focal point of analysis of bankruptcy remoteness.[76] As leases are underwritten, the vehicles are titled from the very beginning in the name of the titling trust. The titling trust, rather than the securitization trust, owns and continues to own the contracts and leased vehicles, while the titling trust grantor has a beneficial interest in the assets except for any interest that is transferred to investors. The collateral is never owned by an entity other than the titling trust and therefore avoids the time and expense of re-titling vehicles that would otherwise be necessary to establish bankruptcy remoteness for the securitization.[77]

The securitization trust has a beneficial interest in a designated portfolio of leases and vehicles in the titling trust, also known as a "special unit of beneficial interest" (SUBI). It is only the SUBI and the rights associated with it that are securitized. Neither ownership of the leased vehicles nor lease receivables are part of the securitization trust estate but remain in the titling trust. The SUBI, represented by a SUBI certificate, is an equitable claim on the designated portfolio of contracts and leased vehicles and gives the securitization trustee a right to cash payments received with respect to these assets. Exhibit 31 illustrates a typical transaction structure.

EXHIBIT 31

Typical Structure of a US Auto Lease Transaction



Source: Moody's Investors Service

[76] A titling trust generally acts in its own name. Certain states require the trustee of the titling trust to qualify as a fiduciary.

[77] Registering certificates of title to and liens on vehicles is costly because (1) registration of vehicles is governed by state law; (2) state law varies on titling and perfection requirements; and (3) costs increase where each new transfer of the vehicle requires re-registration to establish indisputable rights in the vehicle. The multiple transfers often called for in securitization structures magnify this cost and burden.

All contracts and leased vehicles owned or acquired by the titling trust that are not designated SUBI assets (or do not relate to other securitized SUBIs) are part of the undivided trust interest (UTI), which is held by the titling trust's grantor. Neither the securitization trustee, securitization trust, nor the ABS investor has any rights in any other designated portfolios or in the unallocated assets of the titling trust, the UTI.

Elements of Bankruptcy Remoteness

As in any securitization, auto lease transactions should be structured to ensure that the securitized assets – in this case, the SUBI – are transferred to the securitization trust or SPE in a "true sale" and that the SPE holding the assets will not be substantively consolidated into the bankruptcy estate of the sponsor.

The chief bankruptcy issue in auto lease securitizations is the potential substantive consolidation of the titling trust or securitization trust with the sponsor in the event of the latter's bankruptcy.[78] Although intended to be bankruptcy remote, unlike other, more conventional SPEs, the titling trust is unavoidably a part of the sponsor's leasing program. The sponsor or outside lenders continuously finance the purchase of vehicles as dealers enter into lease agreements with their customers on the sponsor's behalf. This active role by the sponsor in the securitization can increase the risk of substantive consolidation of the SPEs with the sponsor's bankruptcy estate as the sponsor's creditors have stronger reason to argue that the titling trust assets belong to it.

The titling trust acquires the leased vehicles and associated leases from the dealers in consideration for an amount that should equal the leased vehicles' acquisition cost. In addition, the assets designated for each SUBI are segregated on the titling trust's books and records, and all other appropriate corporate formalities associated with a bankruptcy remote SPE are observed.

A secondary consideration is the potential involuntary bankruptcy filing by outside creditors against the titling trust. In this case, too, the ongoing financing of leased vehicles that are owned by the titling trust may undermine the financial integrity of the titling trust.

To effectively isolate a titling trust from the sponsor and reduce the potential for substantive consolidation and its involuntary bankruptcy, financing generally should be done through a separate entity from the titling trust and the sponsor, as shown in Exhibit 31. Not only does this formally separate the related entities, but it also ensures that no direct liens are placed on the assets of the titling trust. The intervening entity lends money to pay the dealers for each contract. In no case should the titling trust be the direct borrower and grant liens to the lender as part of the vehicle financing process. See "Fact Patterns That Can Strengthen Non-Consolidation," below, for more details.

Security Interest

A first priority perfected security interest in the SUBI certificate and the accompanying rights, the securitized assets, is an essential protection of ABS investors' interests. Although the SUBI certificate is transferred in a true sale to the securitization trust, a first priority perfected security interest should be obtained in favor of the securitization trustee in the event of the bankruptcy of the titling trust and re-characterization of the sale as a financing.[79] The titling trust's bankruptcy is a remote possibility since it is structured as a bankruptcy remote vehicle.

[78] Substantive consolidation of affiliated entities of the debtor is an equitable remedy, rarely ordered by a bankruptcy court, in cases where creditors of the debtor have been misled to look to the credit of the subsidiaries for satisfaction of the debtor's contractual obligations. Courts may also order substantive consolidation where the corporate business of the affiliates is so intertwined with that of the debtor that the affiliates should be deemed to be part of the debtor.

[79] It is uncertain under the various state codes how SUBI certificates should be classified for purposes of perfecting security interests. Theoretically, a SUBI certificate could fall within any of the four collateral classifications under the UCC: chattel paper, instrument, security, and general intangible. It is thus highly advisable to perform the steps necessary to obtain a first priority security interest that would attach to the SUBI certificate under all four classifications.

Under certain circumstances, such as to protect against intervening creditors, a backup security interest in the lease agreements that remain in the titling trust in favor of the securitization trustee also may be advisable. However, no lien is granted to the securitization trustee in the underlying vehicle. To do otherwise would defeat the purpose of the titling trust, which was set up as a bankruptcy remote entity to avoid the expense and burden of retitling vehicles for each securitization.

ERISA Liability

The titling trust assets could potentially become subject to liens in favor of the Pension Benefit Guaranty Corporation (PBGC) to satisfy unpaid ERISA obligations of any member of an "affiliated group" of the operating leasing company. In a debt-for-tax transaction, the titling trust may be deemed affiliated with the leasing company for ERISA purposes.

To address this potential liability, the leasing company should provide evidence to the securitization trustee, on an ongoing basis, that neither it nor any of its ERISA affiliates, have unfunded PBGC liabilities. An effective means of monitoring this risk is through the officers' certificates of the sponsor on a periodic basis that confirm the absence of unfunded pension liabilities in any affiliated company.

Ongoing ERISA compliance is particularly important because ABS investors do not have a perfected security interest in the vehicles that are included in their SUBI portfolio. Because any ERISA lien may have priority over the securitization trust's interest in the SUBI vehicle units, a transaction's rating is correlated to a certain extent with the creditworthiness of the leasing company to the extent that the leasing company or its affiliates have unfunded pension liabilities.

Fact Patterns That Can Strengthen Non-Consolidation

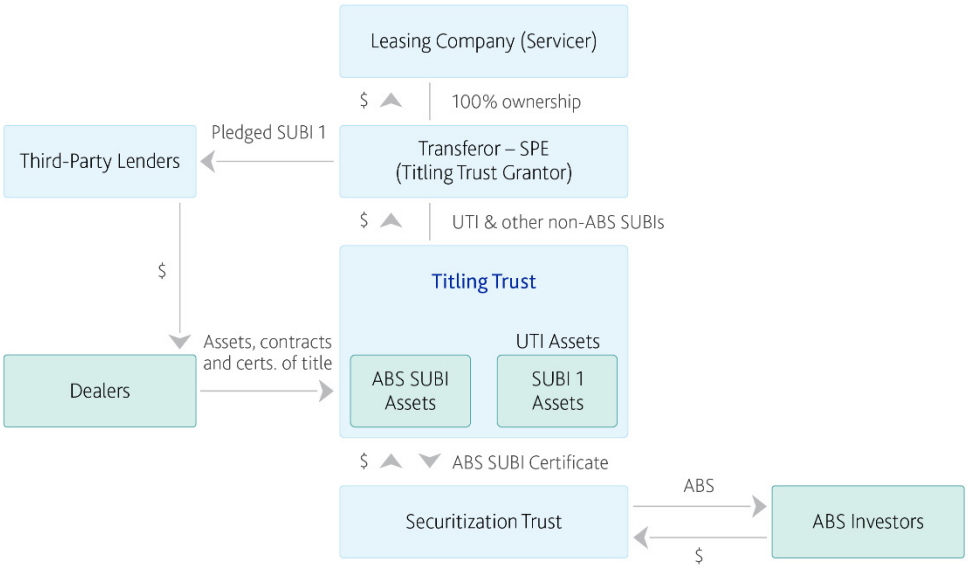
Exhibits 32 to 34 illustrate three generic structures that are prevalent in securitized transactions. Although the diagrams do not describe the entire universe of possible structures, they demonstrate how a transaction sponsored by companies with both high and low (or no) ratings can be isolated from the credit risk of a transaction's sponsor.

These three structures are for illustration only. We evaluate each transaction on its own terms and identify those credit linkages to the sponsor that present a risk to ABS investors. No two lease originators and financing arrangements are the same: By itself, the absence of an intervening SPE does not mean that a transaction cannot be assigned the highest rating category. Nevertheless, other things being equal, a transaction in which the beneficial ownership of a titling trust is held directly by a low-rated sponsor will be a weaker structure than when the sponsor is highly rated.

Exhibit 32 depicts a structure established by a highly rated sponsor. The underwriter both originates and funds the lease contracts with dealers itself, either through direct financing or by capital contributions to the titling trust, or contracts with third-party lenders to finance vehicle purchases. The originator also is typically the grantor of the titling trust and holds the UTI directly. This structure links the transaction to a certain degree to the sponsor.

EXHIBIT 32

Highly Rated Leasing Company

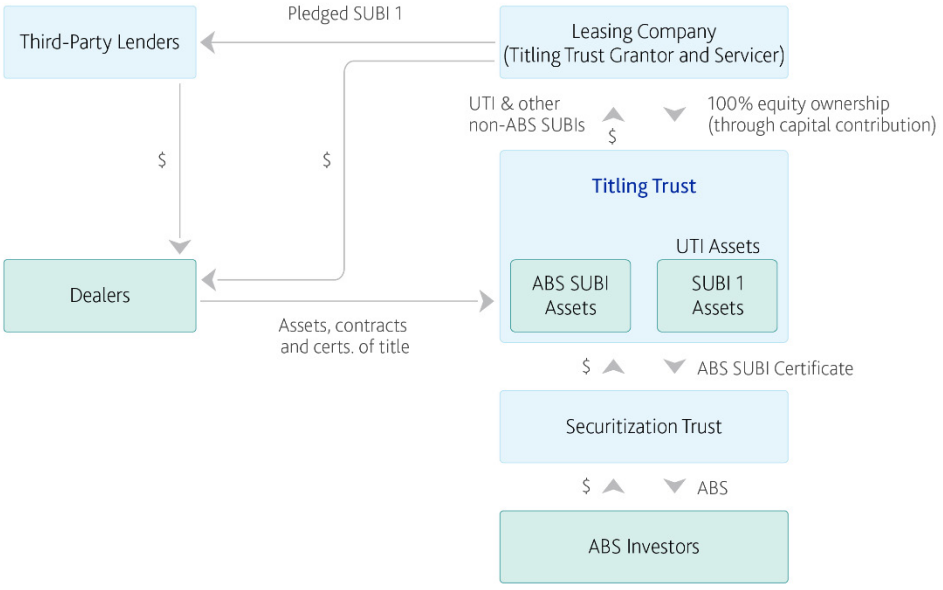


Source: Moody's Investors Service

Exhibit 33 shows an originator with a low rating or no rating, with a single third-party funding source, such as a commercial paper conduit. In this case, it is important to isolate the titling trust from the corporate financing activities of the operating company. In general, the operating company is not the titling trust grantor but is at least one-step removed by wholly owning an SPE that is the grantor and holder of the UTI.

EXHIBIT 33

Low or Unrated Leasing Company with Intervening SPE



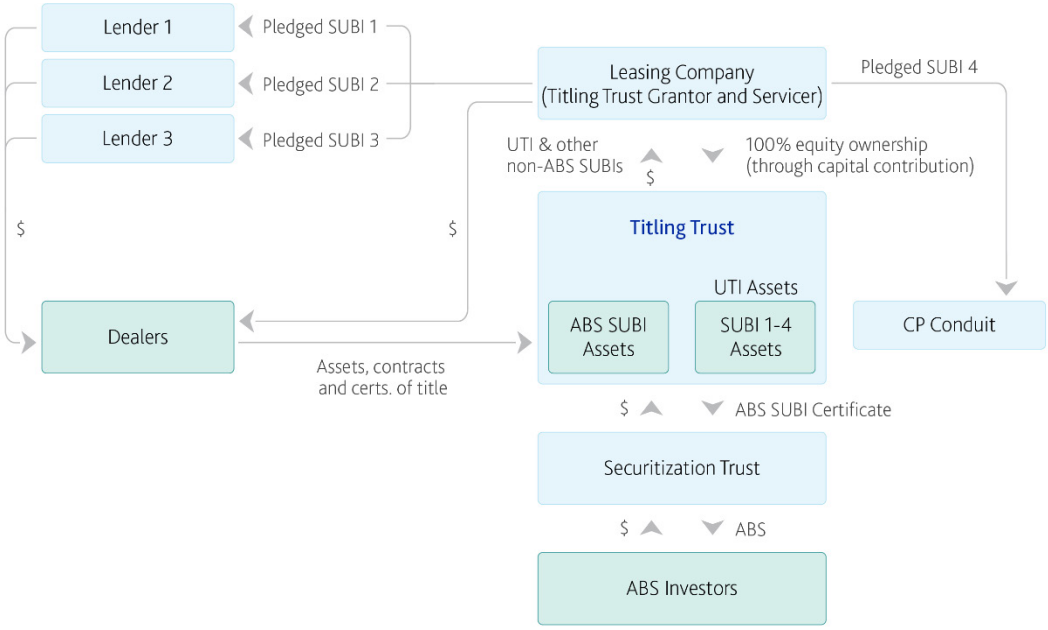
Source: Moody's Investors Service

Finally, Exhibit 34 also shows a low- or unrated operating company, but without an intervening funding SPE holding the UTI. The presence of several other lenders with pledged SUBIs can strengthen the transaction against the risk of substantive consolidation by distinctly segregating the trust's assets into separately designated portfolios to which independent creditors, the SUBI pledgees, agree to look. Although the threat of intervening liens must be protected against, a court would be hard pressed to order consolidation, which

would prejudice a diverse group of holders of beneficial interests that are independent of the debtor. In essence, the titling trust looks less like the extension of the sponsor's corporate financing program than would otherwise be the case.

EXHIBIT 34

Low or Unrated Leasing Company without an Intervening SPE



Source: Moody's Investors Service

Backup Security Interest in Lease Agreements

Although title remains with the titling trust in the leases and leased vehicles, under certain circumstances a first priority security interest in the leases will protect SUBI holders' interests. In principle, however, since the titling trust is a bankruptcy remote entity, and should have no creditors, a security interest in the lease agreement would not significantly strengthen a transaction.[80]

By filing "protective" UCC financing statements, a perfected security interest in the lease contracts is created, subordinate only to any third party's subsequent possession without knowledge of the trustee's continued security interest. Such a lack of knowledge could be extremely difficult to prove. It also may be advisable to have third-party lenders to the operating company and any intermediary entity in the transaction structure enter into intercreditor agreements, which would define the potentially conflicting interests of the (1) ABS investors; (2) holders of other SUBIs; (3) creditors with a claim on the titling trust's UTI; and (4) general creditors of the operating company. Under the intercreditor agreement, the parties would only claim a first priority perfected security interest in those titling trust assets specifically designated to them.[81]

[80] Some counsel have argued that a backup security interest in the lease contracts is never necessary in view of the sale of the SUBI certificate to the securitization trust, the legal recognition of the SUBI holder's interest in the designated collateral, and the bankruptcy remoteness of the titling trust from the originator. Although we agree in principle with this reasoning, we do not expect it to necessarily apply in all transactions.

[81] Intercreditor agreements are used in titling trusts even in the absence of a backup security interest in the lease agreements. Intercreditor agreements can be highly effective in mitigating bankruptcy risk because they are specifically sanctioned by the US Bankruptcy Code. An intercreditor agreement is a "subordination agreement," enforceable in bankruptcy pursuant to Section 510(a) and may not be disaffirmed by a trustee in bankruptcy. The various liabilities of the titling trust are allocated to the SUBIs and UTI if chargeable to those specific assets, or pro rata to the extent the liabilities are incurred generally with respect to the titling trust assets.

Absence of Security Interest in Vehicles

A security interest in the vehicles in the titling trust is not granted in favor of the securitization trustee because the trust was established as a bankruptcy-remote vehicle to avoid that requirement. However, the titling trust generally has an "administrative lien" to ensure that certificates of title are in the possession of a custodial agent on behalf of the titling trust. A general lien that names the titling trust as lienholder is important in fleet leasing whose open-end leases may be considered secured loans to the lessee in the event of its bankruptcy.[82]

In the event of a substantive consolidation of the titling trust with the sponsor, the sponsor's bankruptcy trustee could challenge investors' rights to the vehicles. The certificates of title of the leased vehicles are not marked to reflect any interest of the securitization trustee, securitization trust, or SUBI certificate holders. As a result, perfected liens of any third-party creditors of the titling trust, or any entity into which it is consolidated, would have priority over the securitization trust's beneficial interest in the leased vehicles.[83] The absence of a direct security interest in the vehicles that are part of the designated SUBI assets is counterbalanced by the fact that these assets are owned by a bankruptcy remote entity, the titling trust.

Because of the risk of intervening creditor liens, we evaluate a transaction to determine the existence of, or the possibility of, third-party creditors' liens against the titling trust. Any holders or pledgees of a SUBI or the UTI of the trust should fully acknowledge that they will look only to their beneficial interest, disclaim any interest in the other SUBI assets designated for such SUBIs, and fully subordinate any claims to the SUBI assets of the securitization trust in the event such disclaimer is not effective.

Consumer Protection Laws

We review the originator's representations and warranties relating to compliance with various state laws, including "lemon" laws for substandard vehicles, as well as federal regulation, such as Regulation M and the Consumer Leasing Act of 1976. These statutes impose substantive disclosure requirements in retail lease agreements.

Failure to comply with this consumer protection regulation could result in a set-off at lease termination against amounts owing on the contract, additional fines, and, most seriously, to lease termination and refund of the entire amount of previously paid payments. As lessor of the leased vehicles, the titling trust would be liable for such fines and refunds, and the securitization trust would incur a loss to the extent that any of the affected vehicles are part of the trust's SUBI portfolio. Securitization sponsors should represent and warrant compliance with all applicable law and regulations, with any violation requiring a repurchase of the lease and leased vehicle.[84]

In addition, in evaluating prospective securitization sponsors, we review the company's vehicle return policy. Several leasing companies have suffered negative publicity for imposing excessive wear-and-tear and excess mileage charges.

"Doing Business" Qualification of Titling Trust

A titling trustee generally must be qualified to do business in each of the state jurisdictions in which it is engaged in leasing operations. The leasing company should represent in the transaction documentation that it is qualified on the basis of due diligence review by its legal counsel.

[82] A lien would ensure that the titling trust is not an unsecured creditor of the lessee.

[83] The administrative lien on each leased vehicle is generally recorded in the name of a trust bank serving as "collateral agent" to ensure that the certificate of title is delivered to the operating leasing company (as servicer). However, neither the bank nor the sponsor has any true interest in the leased vehicles.

[84] A representation or warranty with subsequent sponsor repurchase by itself would not be sufficient in many transactions as all sponsors do not have credit ratings consistent with the ratings assigned to the securities. However, risk of non-compliance can be mitigated if sponsors have both designed and implemented procedures that ensure a high level of compliance with applicable laws.

Appendix 7: Moody's Approach to Assessing Residual Value Risk in EMEA and Asia-Pacific

Introduction

Our approach to assessing RV risk in EMEA and Asia-Pacific uses as its starting point a base case forecast of the market residual values of the vehicles at lease maturity, known as the Forecast Market Residual Value (FMRV). We stress this forecast by assuming a Baseline Aaa Haircut to apply to the FMRV, reflecting the level of risk we would expect to be present in an average pool from that market. We then adjust the Baseline Aaa Haircut up or down to reflect specific pool characteristics such as forecaster and servicer quality as well as pool diversification. Applying these adjustments gives the Transaction Aaa Haircut, which is the stress we apply to the FMRV for a Aaa tranche target rating.

Non-Aaa or Mezzanine Haircuts are derived from the Transaction Aaa Haircut. Having determined the rating specific haircut, we calculate the Residual Value Credit Enhancement (RV CE) prior to assessing the level of benefit to give to either RV guarantees from third parties or dealer buy-back agreements. We then consider the benefit to any guarantees or buy-back agreements to obtain the final RV Credit Enhancement (Final RV CE).

Source of Forecast Value

In EMEA and the Asia-Pacific region, there are limited data sources that allow us to consistently base our expectation of future vehicle value on historical depreciation rates, as is done in the US. Consequently, we expect that for most transactions we will receive forecast information provided by the lessor, preferably in the form of lease-level data or, if not available, at least at a portfolio level.

In some cases this may take the form of the aggregate amount of RV on the contracts, along with detailed information regarding how the originator sets the Contract RV (CRV) in relation to the FMRV.

For example, if the RV portion of the pool is €90 million and the originator consistently sets the CRV at 10% below the FMRV of the vehicle, then we can conclude the aggregate FMRV of the vehicles is €100 million. These forecast values will have to be benchmarked against more generic data, such as by manufacturer, vehicle segment or contract duration from an independent third party or historical deprecation data, to ensure that estimations are broadly in line. If there are large discrepancies, these will need to be explained. Any remaining uncertainty can be incorporated into our assumption for the Transaction Aaa Haircut. In other cases, we will obtain forecasts from an independent third party.[85]

Determining Stressed RV Loss

Having obtained the FMRV of vehicles in the pool, we apply different RV stresses for each transaction based on target rating levels in order to obtain the RV credit enhancement (RV CE) prior to giving credit to third-party guarantees and dealer buy-back agreements.

Non-Aaa or Mezzanine Haircuts are derived from the Transaction Aaa Haircut that was initially determined. After determining the tranche haircuts, we consider the benefit of third-party guarantees and dealer buy-back agreements to obtain the Final RV CE required for each tranche target rating.

[85] For example, we will obtain third-party forecasts when the originator forecasts suggest used vehicle values are significantly higher than those in comparable markets, and the originator has poor or limited historical forecasting data.

The approach can be summarized by the five steps outlined in Exhibit 35 below.

EXHIBIT 35

Moody's Approach to RV Risk in EMEA and Asia-Pacific

Step 1: Baseline Aaa Haircut = 40% - 45%	- Our starting Baseline Aaa Haircut is 40%
	- We may apply a liquidity penalty for small markets with weak secondary market infrastructure or inability to export surplus vehicles
Step 2: Determine Transaction Aaa Haircut	- We increase or decrease the haircut based on the qualities of the forecaster and servicer and characteristics of the pool
	- Adjustments are made using a scorecard to ensure consistency of approach
Step 3: Derive Non-Aaa or Mezzanine Haircuts	- We derive non-Aaa or mezzanine haircuts based on the target rating and the Transaction Aaa Haircut
Step 4: Calculate Tranche Specific RV CE	- FMRV is stressed by the tranche haircuts and compared to the CRV to determine the RV loss
	- RV exposure is reduced by expected defaults[86]
Step 5: Adjust RV CE for Guarantees and Dealer Buy-Back Agreements to Obtain Final RVCE	- The reduction in Final RV CE from RV CE reflects the target rating and guarantor strength
	- The benefit for dealer guarantees is higher for investment-grade manufacturers
	- We give more credit to dealer buy-back agreements when the contract is assigned to the Issuer

Source: Moody's Investors Service

Step 1: Apply the Baseline Aaa Haircut for the Pool's Market

We have analyzed data received on the volatility of used vehicle values in markets in EMEA and the Asia-Pacific region. Based on this analysis, we apply, in most jurisdictions, a Baseline Aaa Haircut of 40% for a reasonably diversified pool. We may increase the haircut qualitatively for countries where we expect that the small size of the market could lead to increased volatility, or where we expect liquidity in a stressed situation to be lower. Smaller economies may be less diversified, increasing the possibility of market wide falls, and may experience lower granularity in the auction process due to the small scale of the vehicle market. Markets where weaker resale infrastructure reduces liquidity, or where vehicles have less export opportunities due to geographic isolation, right-hand drive, regulatory or other obstacles may also be subject to this penalty.

A table of our Baseline Aaa Haircuts in different sample jurisdictions is shown in Exhibit 36.

EXHIBIT 36

Baseline Aaa Haircuts by Market[87]

Country	Baseline Aaa Haircut
France	40%
Germany	40%
Italy	40%
Spain	40%
Switzerland	40%
Netherlands	40%
United Kingdom	40%
Australia	40%
New Zealand	45%[88]

Source: Moody's Investors Service

[86] We may also reduce RV exposure if we expect prepayment levels to be high.

[87] We would apply a blended baseline Aaa haircut for pools containing leases originated in multiple countries.

[88] We apply a higher baseline Aaa haircut for New Zealand to reflect its smaller size and the lower diversity of the country's economy. Export costs could also be higher than for a market of similar size in Europe due to its location.

The baseline haircuts shown in Exhibit 36 reflect the results of further historical data analysis of the market values of used vehicles in a number of European countries as well as Australia and New Zealand. The analysis focused on the movement of vehicle prices during the credit crisis and its aftermath, during which time the peak-to-trough decline of market values ranged from approximately 15% to 25% depending on the country.

When we extend the approach to additional markets in the EMEA and Asia-Pacific regions, we would obtain sufficient data allowing us to perform a comparable analysis of used vehicle market volatility as that performed for the seven EMEA markets and Australia and New Zealand. Where such an analysis is not possible, we would typically use a starting baseline Aaa haircut assumption of 40%, but may be more conservative in applying any liquidity penalty we consider necessary to account for weaknesses in the market.

Step 2: Determine the Transaction Aaa Haircut by Adjusting the Baseline Aaa Haircut

The ability of the forecaster to accurately estimate RV is a key component for RV transactions. Similarly, the ability of the servicer to maximize the value of the vehicle can have a material impact on the losses borne by a transaction. Pool characteristics such as the concentration of RV maturity, brand and the financial strength of the manufacturers in the pool can also imply materially different RV risk for a transaction.

Consequently, after considering the market risk associated with the country of the pool, we use a scorecard to take into account transaction-specific pool features such as forecaster and servicer quality as well as vehicle manufacturer strength and concentrations in terms of manufacturer or brand and maturity of the lease contract. These features could serve to increase or decrease the risk profile of the pool, relative to the market. After adjusting for pool features, we expect that the Aaa haircut applied to transactions in EMEA and Asia-Pacific will typically be in the range of 35% to 45%.[89]

The scorecard has two main factors. The "**forecaster and servicer assessments**" are qualitative scores that reflect the quality of historical data in forecasting RV and mitigating market downturns, combined with considerations of the rigor of the RV setting process and interests of the participants involved in that process.

The "**pool and vehicle quality**" scores are generally scored high or low based on how the pool compares with the underlying market for each sub-factor. The exception is manufacturer strength, which is scored on the basis of a manufacturer's rating and the importance of the manufacturer in the relevant market.

[89] For pools from markets subject to a country ceiling, the haircut applied to a tranche targeting the Maximum Achievable Rating would be equal to that applied for a Aaa tranche if the country were not subject to the LCC.

A summary of the main drivers for each sub-factor can be found in Exhibit 37 below.

EXHIBIT 37

Indicative Criteria for Scoring Pool Risks

Factor	Sub-Factor		Score Range	Likely Range of Impact on Transaction Haircut	Guidance
(A) Forecaster and Servicer Strength	(i) RV Forecaster Assessment Score	Qualitatively Assessed / Benchmarked	1 to 5	-3% to +3%	• Capability to predict RVs accurately based on historical data • Quality and granularity of data made available (e.g. line-by-line forecast data) • Sophistication and diligence of RV setting process, assessed by benchmarking • Insight into supply and demand trends for models and brands • Level of independence of RV committee • Aggressiveness of growth strategy • Stability of management
	(ii) RV Servicer Assessment Score		1 to 5	-3% to +3%	• Experience & ability to mitigate RV risk based on data and track record • Rating of servicer • Use of third-parties to dispose of vehicles and depth of remarketing channels • Average time to resell vehicles based on historical data

Factor	Sub-Factor		Score Range	Likely Range of Impact on Transaction Haircut	Guidance
(B) Pool & Vehicle Quality	(i) Manufacturer Concentration Penalty	Directly Mapped Based on Guidelines	3 to 5	0% to +3%	• Captives will typically be scored 5; non-captives scored 3. • Concentrated non-captive pools, or large manufacturers with many brands and target buyer segments may be scored 4
	(ii) RV Maturity Distribution Score		1 to 5	-3% to +3%	• Scores will generally be based on maturity concentrations over a one year period • Concentrations over 3 to 6 months may lead to further penalties
	(iii) Manufacturer Strength Score		1 to 5	-3% to +3%	• Aa rated manufacturers will typically be scored 1 • Single B rated manufacturers will typically be scored 5 • The weighted average rating of manufacturers will be applied to diversified pools. • Scores may be improved 1-2 notches for manufacturers in home/core countries in which there is perceived to be a very limited probability of disorderly default
	(iv) Niche Brand / High Value / SUV / LCV Penalty		3 to 5	0% to +3%	• Pools with exposure above the market standard will be penalised. • Pools with significant LCV exposure due to SME exposure will likely be scored 5

Source: Moody's Investors Service

In some circumstances we may make further adjustments to the transaction Aaa haircut for factors not captured by the scorecard but considered relevant to RV risk (e.g., non-standard lease terms). Furthermore, we may apply an adjustment greater than that determined by the scorecard in exceptional cases where we feel the calculated adjustment does not fully capture the RV risk of the transaction.

Step 3: Derive Non-Aaa or Mezzanine Tranche Haircuts

Haircuts applied to non-Aaa (sf) senior tranches[90] or mezzanine/junior tranches are determined relative to the transaction Aaa haircut.[91] The non-Aaa (sf) and mezzanine haircut ranges are displayed in the below table, by finding the column corresponding to the Aaa haircut and identifying the target rating band.

For example, if the transaction Aaa haircut applied for a senior Aaa (sf) tranche is 40%, we would generally apply a haircut of between 28% and 33% for a Aa (sf)-rated mezzanine tranche.

[90] Transactions with a senior class rated below Aaa (sf).

[91] The table was derived by assuming that forecast errors follow a normal distribution with a mean of zero error, with a volatility consistent with the assumed Aaa haircut.

EXHIBIT 38

Indicative Non-Aaa or Mezzanine Tranche Haircuts

Target Tranche Rating	Haircuts				
Aaa (sf)	**30%**	**35%**	**40%**	**45%**	**50%**
Aa (sf)	23% - 28%	25% - 30%	28% - 33%	33% - 38%	38% - 43%
A (sf)	18% - 23%	20% - 25%	23% - 28%	28% - 33%	31% - 36%
Baa (sf)	15% - 20%	18% - 23%	21% - 26%	23% - 28%	26% - 31%
Ba (sf)	10% - 15%	10% - 15%	13% - 18%	16% - 21%	18% - 23%
B (sf)	5% - 10%	5% - 10%	8% - 13%	8% - 13%	11% - 16%

Source: Moody's Investors Service

Step 4: Incorporating Forecast Values and Haircuts in the RV Analysis

After obtaining the haircuts, we calculate the RV CE required for each tranche, taking into account the following:

1. We adjust for differences between FMRV and CRV by calculating the advance rate, which gives the percentage of RV exposure we assume, will be repaid after applying the relevant haircut to the FMRV. It is calculated as below:

FORMULA 8

$$Advance\ Rate = Min(100\%, (1 - Haircut) \times FMRV / CRV)$$

Source: Moody's Investors Service

2. We adjust the proportion of leases with RV after accounting for defaults on the lease portion of the installments. RV leases we expect to mature without default, thereby exposing the pool to RV risk, are quantified by the Survivor Index calculated as follows:

FORMULA 9

$$Survivor\ Index = 1 - level\ of\ gross\ defaults - level\ of\ prepayments$$ [92]

Source: Moody's Investors Service

3. We update the percentage of the total pool exposed to RV risk (the "RV Exposure") by removing defaulted leases. This is calculated as follows:

FORMULA 10

$$RV\ Exposure = Survivor\ Index \times RV\ as\ a\ \%\ of\ the\ total\ portfolio$$

Source: Moody's Investors Service

The total enhancement is given by the sum of:

1. The credit enhancement available to cover defaults; and,
2. Max(0, (1 - the Advance Rate) x the RV Exposure).

[92] The level of prepayment is an input and is used in the calculation of Survivor Index.

Step 5: Third-Party Guarantees and Dealer Buy-Back Agreements

In a number of EMEA RV transactions, the securitized pool may benefit from third-party support of the RV risk, which can serve to mitigate potential loss to the transaction. This generally takes one of two forms: (1) the RV is guaranteed by a single entity, typically the originator or related entity of the manufacturer group; or (2) the support by way of buy-back agreements provided by the dealers that initiated the contracts with the lessees.

The extent to which we give credit to this support depends on the details for each pool. When the RV is guaranteed by the originator/captive, the percentage of RV CE required reflects the rating of the guarantor relative to the tranche target rating.

Single-Party Guarantee

Exhibit 39 expresses the benefit of a single guarantor as a percentage representing the ratio of the required RV CE for each rating level after incorporating the third-party support (or Final RV CE), against the RV CE without any such benefit.

For example, if the RV CE without considering any third-party RV support for a senior Aaa (sf) tranche was 10%, and the risk was guaranteed by a Aa2 entity, then the Final RV CE would be equal to 10% * 60% = 6% based on the table.

EXHIBIT 39

Indicative Benefit Given to Single-Party Guarantee

Single Guarantor Rating Versus Target Rating		
For Senior Tranches	For Junior Tranches	% of Required RV CE
0 or above	+1 or above	0%
-1	0	35%
-2	-1	60%
-3	-2	75%
-4	-3	90%
-5 or below	-4 or below	100%

Source: Moody's Investors Service

Dealer Buy-Back Agreements

Some originators will enter into forward buy-back agreements with their dealers under which the dealer agrees to purchase the vehicle at a predetermined price at contract maturity if the lessee chooses to hand back the vehicle to the lessor (originator). If such an agreement exists, it may serve to reduce RV risk as the dealer must purchase the vehicle at a price usually designed to cover the securitized RV component, regardless of the prevailing market value of the vehicle at that time.

When the RV risk is supported by a portfolio of dealer buy-backs, the level of benefit we give will reflect the strength of the manufacturer(s) of the vehicles in the pool because dealer default rates are correlated with manufacturer default. Further, we give more benefit to pools where the rights and benefits of the buy-back agreements have been assigned to the issuer, compared to transactions where only the proceeds of vehicle sales to the dealers have been assigned to the issuer. This is because securitization of only the proceeds of the vehicle sale allow for the possibility that the originator or administrator of the originator would be able to renegotiate the contracts or choose not to exercise the option to sell the vehicles. As the issuer would only fully benefit from the guarantee if the vehicle is sold and the contract remained as it was at closing, this could lead to RV loss in spite of buy-back agreements with the dealers.

Exhibit 40 expresses the benefit of the buy-back agreements with dealers as a percentage representing the ratio of the required RV CE for each rating level after incorporating the benefit of the put option to dealers (or Final RV CE) against the RV CE without any such benefit. The benefit given depends on the rating of the manufacturer and the target rating. In cases where the buy-back agreement has not been assigned to the issuer, we give less benefit to buy-back agreements than the levels displayed in Exhibit 40.

EXHIBIT 40

Indicative Benefit[93] Given to Dealer Buy-Back Agreements Assigned to the Issuer

Tranche Target Rating	Investment-Grade Manufacturer/ Any Non-Captive Guarantee	Sub-Investment-Grade Manufacturer
Aaa	85%	100%
Aa	70% - 80%	85% - 95%
A	55% - 65%	70% - 80%
Baa	40% - 50%	55% - 65%
Ba	25% - 35%	40% - 50%

Source: Moody's Investors Service

Monitoring

We generally expect to see limited changes throughout the life of a transaction with respect to the scorecard assessment. Changes to the scorecard from the initial analysis will usually be limited to: (1) servicer assessment and (2) manufacturer strength in relation to captive transactions. We may also adjust the scorecard if we receive information indicating a material change to the pool characteristics or to the residual value market during the life of the transaction.

We will monitor the credit quality or rating of the pool's servicer and, if relevant, the manufacturer linked to the captive and expect to revise the relevant scores in the event of a significant deterioration of either entity. Unless a downgrade takes place or deterioration happens, the assessment under the scorecard will generally remain consistent throughout the life of the transaction and no changes to the transaction Aaa haircut are likely to be made. We will also monitor any realized gains or losses, if available, and in the event of sustained and material losses we may adjust the FMRV and a rating committee may determine a change in rating of the outstanding notes.

[93] Benefit is given as the ratio of the RV CE consistent with a target rating level after incorporating the benefit of the buy-back agreement over the RV CE consistent with a target rating level without any such benefit.

Appendix 7A: Illustrative Example of Transaction Haircuts Determination and RV CE Calculation

To illustrate the approach, we will follow the derivation of the Final RV CE based on a theoretical example. We assume a portfolio originated in Germany by a captive lender, related to a German investment-grade-rated manufacturer with a large market share. Two rated tranches are to be issued with target ratings of Aaa (sf) and A2 (sf).

Step 1: Baseline Aaa Haircut

Our transaction is based in Germany, which leads us to assume a baseline Aaa haircut of 40%.

Step 2: Determine Transaction Aaa Haircut

As shown in Exhibit 41, the transaction Aaa haircut is reduced to 35.5%. This is driven by robust historical RV setting data, the depth of its dealer network and insight into supply and demand trends resulting in above average scores for both the forecasting and servicing sub-factors. In addition, the captive receives a good manufacturer strength score due to its investment-grade rating and because it is originating in its home market.[94]

EXHIBIT 41

Scorecard Example

Baseline Aaa Haircut	40.0%
Market Dynamics Penalty	0.0%
Starting Haircut	40.0%

Factor	Sub-Factor	Transaction Score	Haircut Adjustment
(A) Forecaster and Servicer Strength	(i) RV Forecaster Assessment Score	2	-1.5%
	(ii) RV Servicer Assessment Score	2	-1.5%
(B) Pool & Vehicle Quality	(i) Manufacturer Concentration Penalty	4	1.5%
	(ii) RV Maturity Distribution Score	2	-1.5%
	(iii) Manufacturer Strength Score	2	-1.5%
	(iv) Niche Brand / High Value / SUV / LCV Penalty	3	0.0%

Cumulative Adjustment	-4.5%
Transaction Haircut	**35.5%**

Total Pool Level Score	Haircut Adjustment
1.0	-3.0%
2.0	-1.5%
3.0	0.0%
4.0	1.5%
5.0	3.0%

Source: Moody's Investors Service

Step 3: Derive Non-Aaa or Mezzanine Haircuts

Having determined the Aaa haircut applicable to the transaction, the haircut applied to the target A2 (sf) tranche is taken from Exhibit 42. By looking up the column corresponding to a Aaa haircut of 35.5%, we obtain a haircut range for an A2 (sf) tranche of 20% to 25% as highlighted in the grid below.

[94] We expect vehicles of large manufacturers operating in their home market are less likely to experience large price declines due to a lower perceived risk of liquidation of the brand.

EXHIBIT 42

Indicative Non-Aaa or Mezzanine Tranche Haircuts

Target Tranche Rating	Haircuts				
Aaa (sf)	**30%**	**35%**	**40%**	**45%**	**50%**
Aa (sf)	23% - 28%	25% - 30%	28% - 33%	33% - 38%	38% - 43%
A (sf)	18% - 23%	20% - 25%	23% - 28%	28% - 33%	31% - 36%
Baa (sf)	15% - 20%	18% - 23%	21% - 26%	23% - 28%	26% - 31%
Ba (sf)	10% - 15%	10% - 15%	13% - 18%	16% - 21%	18% - 23%
B (sf)	5% - 10%	5% - 10%	8% - 13%	8% - 13%	11% - 16%

Source: Moody's Investors Service

Step 4: Calculate Tranche Specific RV CE

Applying the transaction's Aaa RV haircut of 35.5% and based on the portfolio FMRV and the CRV, we determine a Aaa advance rate of 67.7% of the aggregate RV exposure, and calculate the RV CE which is floored at 0% as shown in Exhibit 43.

EXHIBIT 43

Aaa RV CE Example Calculations

		Notes / Calculation
FMRV	£105 million	
CRV	£100 million	
RV % of Portfolio	50%	
Transaction Aaa Haircut	35.5%	Determined in credit committee based on scorecard
For Aaa (sf) tranche:		
Advance Rate	67.7%	= (1 – Aaa Haircut) x FMRV / CRV = (1 – 35.5%) x £105 million / £100 million
Aaa Level for Credit Loss	20%	Determined in credit committee
Recovery Rate	35%	Determined in credit committee
Aaa Level of Prepayments	5%	Determined in credit committee
Aaa Level of Defaults	30.8%	= Aaa Level for Credit Loss / (1 - Recovery Rate)
Survivor Index	64.2%	= 1 – Aaa Level of Defaults – Aaa Level of Prepayments = 1 – 30.8% - 5%
RV Exposure	32.1%	= Survivor Index * RV % = 64.2% * 50%
RV CE consistent with Aaa	10.4%	= (1 – Advance Rate) * RV Exposure = (1 – 67.7%) * 32.1%
Aaa CE for Credit Loss[95]	20%	Determined in credit committee
Total CE	30.4%	= Aaa CE for Credit Loss + RV CE = 20% + 10.4%

Source: Moody's Investors Service

Application of the same analysis for the target A2 (sf) tranche results in RV CE of 7.0%.

[95] This figure reflects the level of CE which is consistent with Aaa as a result of the credit losses on the portfolio, i.e., without considering residual value losses. Taking into account the structural features of the transaction, typically using a cash flow model, this figure may be different to the Aaa Level for Credit Loss which is a parameter used to calibrate its lognormal portfolio default distribution.

Step 5: Adjust RV CE for Guarantees and Dealer Buy-Back Agreements to Obtain Final RV CE

In step 4 we calculated RV CE of 10.4% and 7.0% available to mitigate against RV risk at the Aaa and A2 levels respectively, before considering any third-party guarantees or dealer buy-back agreements.

This pool also benefits from dealer buy-back agreements, implying a lower Final RV CE. The dealer buy-back agreements have been assigned to the issuer. As the manufacturer is an investment-grade entity, we give higher credit to the guarantees as we expect that dealers linked to a strong manufacturer are less likely to experience high default rates. As a result, based on the ranges indicated in Exhibit 40, we require 85% and 60% respectively of the RV CEs required for the Aaa and A2 tranches determined in step 4. Final RV CEs for each tranche are calculated as follows:

Aaa Final RV CE = 85% x 10.4% = 8.8%

A2 Final RV CE = 60% x 7.0% = 4.2%

As shown in Exhibit 44, after taking into account the benefit of the dealer buy-back agreements, the total Aaa enhancement would be lowered to 28.8% from 30.4%, and the total enhancement for the target A2 (sf) tranche would be reduced to 13.2% from 16.0%.

EXHIBIT 44

RV CE Calculation with Third-Party Support Example

Target Rating	CE Level for Credit Loss	RV CE Prior to Third-Party Support	Pre-Guarantee Total CE	% RV CE with Third-Party Support	RV CE with Third-Party Support	Total CE
Aaa	20.0%	10.4%	30.4%	85.0%	8.8%	28.8%
A2	9.0%	7.0%	16.0%	60.0%	4.2%	13.2%

Source: Moody's Investors Service

Appendix 8: Termination Risk in Auto Lease Securitizations

In some jurisdictions, in the event of an insolvency of the lessor, the administrator of the insolvent lessor can terminate the leases under certain circumstances. In addition, in some jurisdictions, the lessee, in some cases, may be able to terminate the lease.[96] For example, lease contracts may include various lessor service obligations, such as maintenance and support components. As compensation for the provision of these services, the lessee makes periodic service fee payments. In the event that a lessor becomes insolvent and ceases to service the leased assets, the lessees may have the option to terminate the leases.

If the lease is terminated by either the lessor or the lessee, then lease payments will stop and the securitization issuer will be entitled to exercise any security it holds over the leased assets and may have an unsecured compensation claim against the insolvency estate. However, there may be a delay in being able to exercise security and even if the issuer is able to obtain possession of the vehicles, their market value is uncertain. Therefore, there is a risk that the issuer may not recover the full amount of the "lost" lease payments.

We analyze this risk by answering the questions described below, which Exhibit 45 summarizes schematically.

(1) Can the lessor's insolvency administrator legally terminate the entire lease contract?

In certain jurisdictions, under certain provisions of the relevant insolvency regime, if the servicing component is the "core focus" of the lease contract, the lessor's insolvency administrator has the right to terminate the entire lease and the issuer will not be entitled to receive lease payments following the lessor's insolvency.

(2) Can the lessor's insolvency administrator legally terminate solely the service component of the lease contract or the service contract itself?

If the right of the lessor's insolvency administrator only applies to the service contract or the service component of the lease contract, the exercise of this termination right will terminate the lessees' corresponding obligation to pay servicing fees, but will not, in and of itself, affect the issuer's right to receive securitized lease payments.

(3) Will the administrator have an incentive to terminate the service component?

An administrator will likely have no incentive to terminate the lessor's servicing obligations if the continued provision of such services will benefit the insolvency estate. If this is not the case, the administrator may have an incentive to terminate the services, regardless of whether the insolvent entity is capable of performing the service obligations.

(4) Will the insolvent originator be able to perform the servicing functions?

Even if the insolvency administrator has no termination right in relation to the servicing component (or no incentive to exercise such right), it may not have the financial or operational ability to continue providing the contracted services to the lessee.

Factors relevant to this analysis include:

[96] Typically, if the lessee can terminate the lease under the jurisdiction's laws and regulations, it is in the event of non-performance or termination of the servicing component of the lease by the lessor.

- our belief that a lessor who has systemic importance in the jurisdiction in which it operates may receive government support that will enable it to continue performing its services. The size and importance of originators are indicators of the likelihood of governmental support.
- whether or not a transaction benefits from structural features that would allow the services to continue to be provided to the lessees by a third party (on behalf of the lessor) following the insolvency of the lessor. Examples include the appointment (prior to the lessor's insolvency) of back-up service providers or other third parties that could facilitate the transition of relevant operations to other service providers.

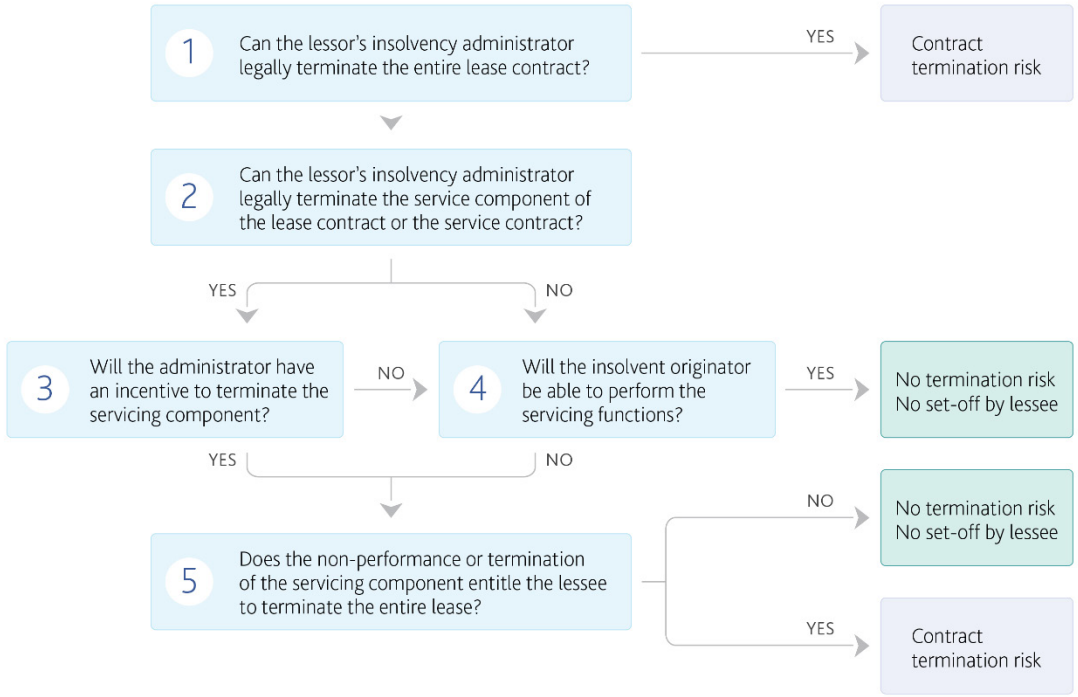
(5) Does the non-performance or termination of the servicing component entitle the *lessee to terminate the entire lease?*

We review legal opinions covering the securitized lease contracts to assess under which conditions a lessee is entitled to terminate the lease contract. In particular, we assess whether termination or non-performance by a lessor of its servicing obligations would constitute a "good cause" for the lessee to terminate its lease. For this purpose, the relevant questions include the following:

- Could the termination or non-performance of the servicing component have a significant adverse effect on lessees?
- Are the services capable of being performed by third parties?
- Will the servicing fees under the lease contract (which will be retained by the lessee following the termination of the servicing component) be sufficient to pay for a third party to provide the services?
- Will the lessee be able to continue operating the lease object without the provision of the servicing component?
- Do the services have a value to the lessee that is independent of the leased asset?
- What is the size of the servicing fees relative to lease payments?

EXHIBIT 45

Analysis of Lease Contracts with Servicing Components



Source: Moody's Investors Service

Appendix 9: Revising Assumptions over the Life of an EMEA Auto Loan- and Lease-Backed ABS Transaction

As part of our ongoing surveillance of EMEA auto loan- and lease-backed ABS transactions, we use transaction-specific performance data to help revise our expected default or loss assumptions during the life of the transaction. The transaction specific data we consider generally includes:

» delinquency rates and trends

» observed periodic and cumulative default or loss[97] rates

» historical portfolio redemption rates, which can often be separated into scheduled redemption and prepayments

In the early months of a transaction's life, we typically maintain our initial expected default or loss assumption unless we observe signs of material deviation in performance. More weight may be given to the transaction performance data the more the transaction is seasoned. When significant transaction specific performance information is available, the payment patterns exhibited by the portfolio can be better performance predictors than loan level or portfolio characteristics, in particular when forecasting future defaults considering our baseline projected economic outlook.

We also incorporate benchmarking analysis and other qualitative considerations when reassessing our expected default or loss estimates. For example, we may complement our analysis by reviewing performance indicators such as the evolution of the securitized portfolio delinquency trend or the distance between the observed defaults or losses and our expected default or loss assumption for the life of the transaction. In case of significant deviation of observed defaults or losses to our assumed level, we would adjust our expected loss or default assumption and may adjust further to acknowledge the observed deviation.

[97] Sometimes loss rates are reported instead of default rates. The entire approach to revise the expected default assumption that is described in this report also applies to revise the expected loss assumption.

Moody's Related Publications

Credit ratings are primarily determined through the application of sector credit rating methodologies. Certain broad methodological considerations (described in one or more cross-sector rating methodologies) may also be relevant to the determination of credit ratings of issuers and instruments. A list of sector and cross-sector credit rating methodologies can be found here.

A comprehensive technical description of our portfolio loss derivation for US auto loans can be found here.

For data summarizing the historical robustness and predictive power of credit ratings, please click here.

For further information, please refer to *Rating Symbols and Definitions*, which includes a discussion of Moody's Idealized Probabilities of Default and Expected Losses, and Internal Rate of Return Reduction, and which is available here.

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