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## RATING METHODOLOGY

# Moody's Approach to Rating Credit Card Receivables-Backed Securities

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This rating methodology replaces *Moody's Approach to Rating Credit Card Receivables-Backed Securities* published in August 2019. We added a footnote for further transparency on our approach to monitoring transactions, and we made limited editorial updates. The updates do not change the substantive approach of the methodology.

## Executive Summary

This methodology describes our global approach to rating credit card receivables-backed securities and other securities backed by revolving consumer loans.<sup>1</sup> Our rating approach for credit card receivables-backed asset-backed securities (ABS) consists of four main steps: (1) analyzing the transaction's collateral performance and cash flows to determine its Aaa level of credit enhancement given sponsor default, (Aaa LGSD), i.e., the maximum stress level of credit enhancement for the transaction, consistent with a Aaa (sf) rating, assuming that the transaction's sponsor has revoked charging privileges on its credit card accounts; we use the term "sponsor default" to represent all situations in which the credit card accounts are closed because of the sponsor's financial distress; (2) determining the level of credit enhancement consistent with a Aaa (sf) rating (Aaa CE) by haircutting the Aaa LGSD based on the sponsor's credit quality, which in this methodology is generally the same as its Counterparty Risk Assessment<sup>2</sup> (CR Assessment); (3) adjusting the transaction's senior and subordinate note ratings given the credit enhancement available to protect those notes and the minimum credit enhancement necessary to support those ratings; and (4) deriving the final ratings of the notes considering other risks in the transaction, such as operational, counterparty and legal risks. Exhibit 1 shows this four-step process in more detail.

We base our rating approach on our analysis of the performance of credit card securitizations in which the sponsor became insolvent and closed the accounts that it had securitized. We provide details of that analysis with supporting data in Appendix 1.

<sup>1</sup> Revolving consumer loans are loans on which borrowers can draw cash at any time within the limits agreed upon with the lenders under comprehensive loan agreements. As such, the main characteristics and risk factors of revolving consumer loans are similar to those of credit card products.

<sup>2</sup> For more information, see *Rating Symbols and Definitions*. A link can be found in the "Moody's Related Publications" section.

Our analysis of the credit card securitizations that entered early amortization indicates that a credit card ABS transaction sponsor is unlikely to close its card accounts unless it is in financial distress. As a result, a transaction with a sponsor that has a high CR Assessment is less likely to encounter a stress scenario as severe as the Aaa LGSD stress scenario described in Step 1. Instead, we assume that a transaction sponsor that is not in default will take steps to prevent early amortization of the transaction or that it will continue to fund new card purchases with alternative funding sources (other than securitization).<sup>3</sup> The haircut described in step 2 accounts for the lower likelihood of severe stress, and incorporates our assumptions on what shortfalls the pools would incur if the sponsor kept the accounts open. We adjust our analysis to address any region-specific or other idiosyncratic risks in the securitization that will affect the notes' ratings. Although we use a global ratings approach, we modify it as necessary to accommodate regional differences in key variables. As with all of our rating methodologies, our rating committees will consider other quantitative or qualitative factors that they deem relevant. For example, there are several key and practical differences between Japanese and Korean credit card ABS and those typical to the US, UK and Canada. For differences in how we apply the credit card ABS methodology in Japan and Korea, please refer to Appendix 3.

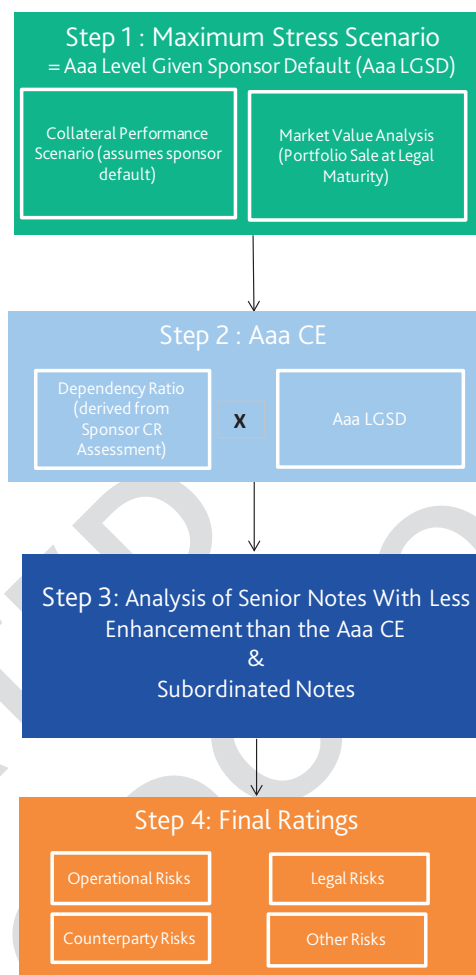
With this rating approach, credit enhancement levels we deem consistent with a particular rating level will vary by transaction, based on the inherent collateral characteristics of the transaction's credit card portfolio, our performance expectations for the transaction's credit card portfolio during the maximum stress scenario, the credit quality of the transaction's sponsor, the transaction's structural features, along with legal, counterparty, operational and sovereign risk considerations. As such, the sponsor's choice not to adjust credit enhancement as its credit quality (as reflected by the sponsor's CR Assessment) changes will likely result in a change in the ratings on the related securitization.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on [www.moodys.com](http://www.moodys.com) for the most updated credit rating action information and rating history.

<sup>3</sup> A sponsor typically supports a deal through (1) structural features, such as discounting principal receivables to increase excess spread; (2) the addition of higher than existing quality accounts to improve collateral performance; and (3) the addition of credit enhancement. A sponsor in financial distress is unlikely to have the capacity to provide support.

EXHIBIT 1

## Moody's Approach to Rating Credit Cards ABS



Source: Moody's Investors Service

## Step-by-Step Credit Analysis

## Step 1: Determining the Maximum Stress Scenario

*In the first step of our rating analysis of credit card receivables-backed securities, we determine the level of credit enhancement needed to offset pool shortfalls in a maximum stress scenario. In this scenario, we assume that the transaction is in early amortization and the transaction sponsor is in financial distress. We also assume that the sponsor has closed its cardholder accounts owing to difficulties obtaining the financing to keep the accounts open or finding a buyer for the credit card portfolio. We call the level of credit enhancement in this maximum stress scenario the Aaa level given sponsor default, or Aaa LGSD.*

As part of this first step in our analysis, we determine how quickly and to what extent individual metrics of collateral quality and performance deteriorate when subject to particular stress factors. The Aaa LGSD equals the difference between the transaction's stressed principal and income asset cash flow (which can include proceeds from the sale of any residual receivables balance at the legal final maturity date), and the transaction's stressed payment obligations, all aggregated over the life of the transaction. The Aaa LGSD therefore reflects the total stress that a transaction's asset and liability cash flows can withstand at the Aaa (sf) level when a sponsor defaults.

We analyze the following stress factors to determine the maximum stress scenario:

- » the cessation of new purchases
- » higher-than-expected charge-offs
- » lower-than-expected yield net of the interest paid on the notes
- » a slowdown in principal payments
- » a reduction in the par value of any receivables that are sold at the legal final maturity date for their market value

We assume, based on our analysis of US credit card securitization trusts that entered early amortization,<sup>4</sup> that the cessation of new purchases<sup>5</sup> occurs in all transactions. In each of those cases, transactions have suffered severe performance deterioration within months of the trust sponsor suspending charging privileges on its credit cards. Although there are differences between the sponsors of the six failed card trusts and the sponsors backing today's securitized card portfolios, we nonetheless believe that today's sponsors will have no greater ability to maintain card utility in the event of severe financial distress. Even if the sponsor is a highly diversified financial institution, if its credit quality deteriorates owing to severe financial distress, it will struggle to maintain funding for its card program, and thus struggle to maintain card-charging privileges when the trust<sup>6</sup> enters early amortization.

Although there are notable differences between the collateral backing the six failed credit card trusts and the collateral backing today's securitized credit card portfolios, our analysis of those six securitizations reveals universal consumer payment patterns in situations where the sponsor has revoked credit card-charging privileges. These general collateral performance patterns would likely occur in the maximum stress scenario for today's credit card portfolios. Although our methodology applies consistent stress vectors (type and magnitude) across all transactions, our stress assumptions will reflect the collateral characteristics of each transaction and thus will vary from one transaction to the next. We use the performance data for the six examples of account closures as well as the historical performance data for each of the individual collateral pools backing the credit card transactions we rate to model these factors in the maximum stress scenario.<sup>7</sup>

In "Step 1A: Portfolio Analysis," we discuss two determinants of collateral credit quality in a credit card ABS transaction: the portfolio characteristics and the sponsor or servicer's abilities to perform their duties. We then discuss how stressing three key portfolio metrics, the charge-off rate, the yield and the principal payment rate affects the gap between the transaction's stressed asset cash flow and its stressed payment obligations over the life of the transaction.

<sup>4</sup> These cases include two amortizing, as opposed to revolving, transactions sponsored by CompuCredit.

<sup>5</sup> In other words, we assume a purchase rate of 0% for all credit card ABS transactions that we rate.

<sup>6</sup> In this methodology we use the word "trust" as a proxy for non-trust entities structures where necessary. In jurisdictions where the legal system differs from the English common law system, trusts as such do not exist. For instance, in Japan, credit card ABS transactions are separate issuances with segregated collateral pools in which only receivables are transferred, not accounts, and in Korea, each transaction is backed by a separate pool of credit card accounts, with a seller share for each transaction. For such jurisdictions, the reference to "trust" in this report should be understood to mean the "securitization transaction." In addition, references to "seller share" should be understood to apply generically also in non-trust structures to liabilities that may serve to represent the seller's economic interest in the securitization transaction, similar to a seller's beneficial interest in the trust portfolio in trust structures.

<sup>7</sup> Appendix 1 shows our analysis of the performance of credit card securitizations in cases in which the sponsor became insolvent and closed its securitized accounts.

## Step 1A: Portfolio Analysis

### Collateral Credit Quality

#### PORTFOLIO CHARACTERISTICS AND SPONSOR/SERVICER ASSESSMENT

We base our collateral performance assumptions for metrics such as the charge-off rate, the yield and principal payment rate, on the characteristics of the credit card receivables backing the transaction. Generally, credit card securitizations include receivables that are: (1) payable in the local currency, (2) created in compliance with applicable law; and (3) free and clear of liens, and thus assignable to the trust. As such, we assume the account and related receivables are bone fide financial obligations of the credit card borrowers.

We assess the relative strengths and weaknesses of each portfolio of receivables by analyzing, among other things, borrower credit scores, the seasoning of the accounts, the percentage of convenience users in the collateral pool, the card product types in the collateral pool, card partnership composition and concentrations, and the geographic concentrations of the borrowers. We also adjust our analysis for region-specific or other idiosyncratic risks in the securitization that could affect the notes' ratings.

In the vast majority of credit card securitizations, the sponsor of the credit card accounts is also the servicer of those accounts, which is typically a bank entity. As such, we assess the entity's abilities as both sponsor and servicer.

As part of our analysis of the sponsor, we evaluate the quality and consistency of its originating and underwriting practices to determine the relevance of historical data in evaluating the future credit quality of the asset pool. In our assessment, we analyze policy and strategy changes that could cause deviations from historical performance. In addition, we examine the sponsor's incentives to continue to originate and underwrite card accounts of consistent credit quality.

In our analysis of the servicer, we assess its ability to collect payments, mitigate losses and maximize recoveries. We typically base our assessment on (1) a quantitative analysis of past servicing results; (2) a subjective assessment of the servicer's management capabilities, including incentives and motivation to maintain performance; (3) the servicer's experience with securitization; and (4) an evaluation of changes in resources that could affect performance.

There are fewer uncertainties in transactions with experienced sponsors and servicers that have performed consistently within our expectations. Performance can be more volatile in transactions with newer or less-experienced sponsors and servicers. In cases of servicer disruption, the trustee in US transactions generally acts as the servicer of last resort or is responsible for finding an appropriate successor. As a result, in our maximum stress scenario, we assume a servicing transfer could occur and that in some cases the replacement servicer might require a higher servicing fee.

### Collateral Performance

After assessing the relative strengths and weaknesses of the transaction's collateral pool, as well as the abilities of the transaction's servicer and sponsor to perform their duties, we then analyze the collateral performance in a maximum stress scenario (i.e., the Aaa LGSD scenario), looking specifically at the charge-off rate, yield and principal payment rate in such a scenario.

### STRESSING CHARGE-OFFS

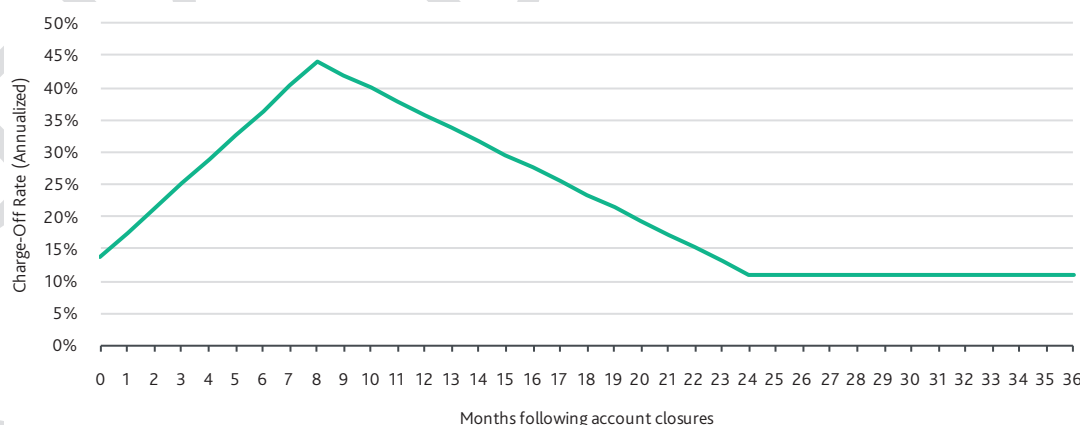
In most countries, negative excess spread or the sponsor's insolvency would trigger early amortization of the notes. In the US, however, the Federal Deposit Insurance Corp. (FDIC) is likely to disallow a sponsor receivership as a cause for the trust to enter early amortization, even if the trust documents have explicit language stating that the receivership of the sponsor is an early amortization event. Therefore, for transactions in the US we assume that negative excess spread triggers early amortization. In such a scenario, the charge-off rate at the beginning of the early amortization period would cause the transaction's excess spread to drop to zero, as per our assumptions for yield at the start of early amortization (see "Stressing Yield"). Outside of the US, if we believe that sponsor insolvency will trigger early amortization before excess spread becomes negative (which could occur in portfolios with strong performance and low charge-off rates) we set our starting charge-off rate assumption as a multiple of the base case charge-off rate rather than at the breakeven charge-off rate. The losses in the two scenarios are very similar, as the early amortization caused by excess spread falling below zero generally occurs around the same time as the sponsor's insolvency.

We then assume that, following account closures, the charge-off rate will rise sharply to reach a peak level within a short period of time, and then fall gradually over several months before reaching its long-run steady state. We assume that the peak charge-off level during early amortization will be a multiple of the long-run expected charge-off rate, typically four times for most card trusts.

We base our long-run steady-state charge-off assumption on the trust's historical performance and credit characteristics. This rate is usually close to the portfolio's highest peak charge-off rate.<sup>8</sup> Exhibit 2 provides an example of our assumptions for charge-offs in a typical card trust portfolio over the course of an early amortization event following account closures.

EXHIBIT 2

#### Example of Typical Charge-off Rate (Annualized) Assumptions During Early Amortization



Source: Moody's Investors Service

Note: Data are for illustrative purposes only. Actual data vary by trust.

<sup>8</sup> We base our long-run charge-off rate on a pool that contains only non-convenience users (i.e. revolving credit users) because we assume that convenience users (i.e. cardholders who pay their balances in full each month) will leave the pool soon after the early amortization event. As a result, the long-run charge-off rate will be higher than the historical peak charge-off rate of the trust portfolio for those portfolios that include a material proportion of convenience user accounts.

Our assumptions for elevated charge-offs over the course of the early amortization event incorporates:

- » cardholders' loss of card utility following account closure, which lowers the incentives for financially stressed cardholders to make required payments on their card accounts
- » a shift toward lower credit-quality obligors in the pool, as higher credit-quality "convenience users" (cardholders who pay down their cards in full each month) typically pay off their balances immediately after the start of the early amortization event
- » macroeconomic weakness (a recession or depression), which could cause financial distress for a larger share of cardholders.<sup>9</sup>

The charge-off profile over the course of early amortization also reflects our assumption that the weakest obligors gradually drop out during the maximum stress scenario, causing charge-off behavior to return to levels that exert less stress on the pools.

### STRESSING YIELD

A transaction's yield consists of interest charged on outstanding credit card balances (finance charges),<sup>10</sup> various fees (late payment fees, over-limit fees and annual membership fees) and interchange (a fee based on the volume of charges that the credit card banks receive from merchants for accepting credit risk, absorbing fraud losses and funding credit card receivables for a limited period before initial billing).

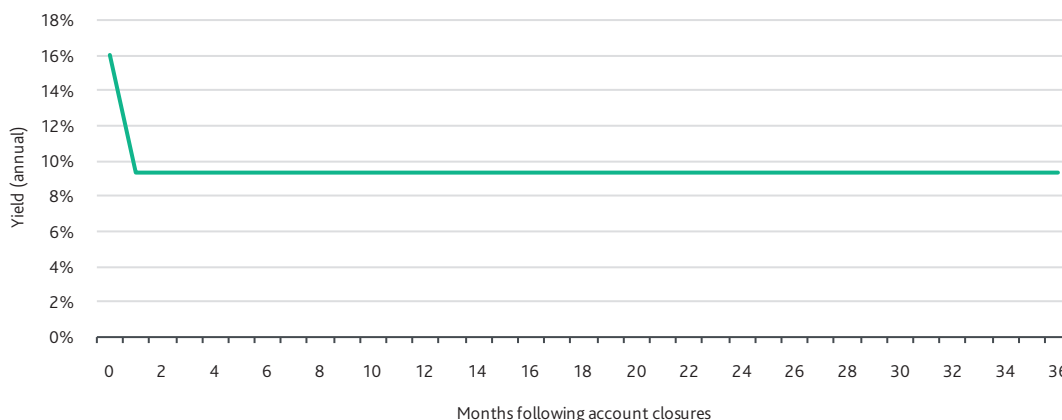
In the Aaa LGSD scenario, we assume that (1) any income from interchange and fees stops immediately (because we assume that the card accounts are closed and therefore cannot be used to make new purchases); (2) delinquencies and charge-offs rise, lowering finance charge collections; and (3) after the initial fall, yield stabilizes quickly after the decline in balances from convenience users, who typically do not incur finance charges. We vary our yield assumptions for each portfolio based on the size of the interchange and annual fee components of the portfolio. For example, portfolios with a higher share of convenience users will have a disproportionately higher share of interchange-derived yield. In addition, our yield assumption at the start of early amortization will be lower than the historical yield because we take into account the risk of changes in portfolio mix or that a sponsor in distress reduces finance charges and fees to compete with its peers.

Lower market interest rates will also lead to a drop in yield in some portfolios. We account for that possibility in a separate adjustment, which we describe in "Accounting for Mismatches in the Interest Rates of the Assets and Liabilities." Exhibit 3 provides an example of our assumptions for yield in a typical card trust portfolio over the course of an early amortization event.

<sup>9</sup> We assume that an economic downturn would cause or contribute to the sponsor's financial distress.

<sup>10</sup> Nearly all credit card securitizations allocate cash flows on a cash rather than accrual basis. This feature is particularly important when considering the yield because there may be a considerable difference between the amount charged and the amount collected.

EXHIBIT 3

**Example of Typical Yield (Annualized) Assumptions During Early Amortization**

Source: Moody's Investors Service

Note: Data are for illustrative purposes only. Actual data vary by trust.

**STRESSING PRINCIPAL PAYMENT RATE**

In the Aaa LGSD scenario, we assume that the principal payment rate will fall dramatically during the initial months of the early amortization event. First, the trust's convenience users will repay their outstanding balances and drop out of the collateral pool soon after the start of the amortization period.<sup>11</sup> Consequently, the weighted average payment rate of the remaining cardholders will be lower than the payment rate of the collateral pool prior to the departure of these convenience user accounts. Similarly, the receivables from other cardholders with relatively high payment rates will quickly shrink as a percentage of the remaining collateral pool, which in turn will cause a further decline in the weighted average payment rate of the trust. In addition, some cardholders whose accounts have closed will not be able to obtain alternative sources of financing for new purchases, which will stress their liquidity and require them to stretch out their payments on the closed accounts.

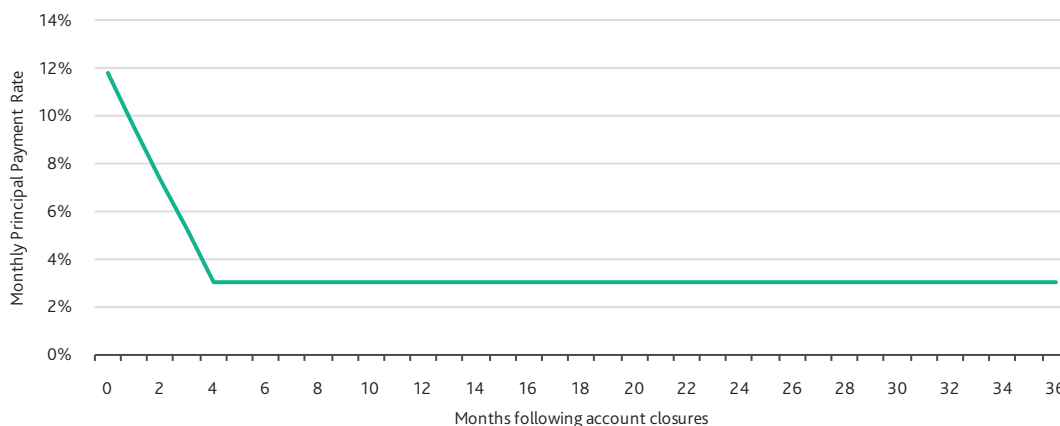
As such, we assume the principal payment rate for most credit card portfolios settles close to 3%, near the average minimum contractual payment rate on the accounts.<sup>12</sup> We may assume a higher payment rate for securitizations of credit cards whose payment terms indicate a higher contractual minimum payment rate.

Exhibit 4 provides an example of our assumptions for principal payment rate in a typical card trust portfolio over the course of an early amortization event.

<sup>11</sup> Depending on data availability and the card composition of the trust, we may assume that a share of convenience users repay their balances in full in the month following early amortization.

<sup>12</sup> The payment rate assumption at the start of early amortization will be based on the trust's historical payments rates, adjusted downwards for consistency with the assumed increased level of charge-offs at that time. For more information, see section "Stressing Charge-offs."

EXHIBIT 4

**Example of Typical Principal Payment Rate Assumptions During Early Amortization**

Source: Moody's Investors Service

Note: Data are for illustrative purposes only. Actual data vary by trust.

**Dilutions**

In the context of credit cards, dilution is the reduction in the principal amount of a receivable for reasons other than payment or charge-off, generally because of returns of goods. Sellers typically provide indemnities for dilutions and, in the context of credit card ABS, size the minimum seller's interest requirement to cover dilutions.

In the Aaa LGSD scenario, we assume that dilutions would occur in the first few months of the early amortization period as consumers seek to return purchases bought prior to account closure, although rates depend on the local jurisdiction's laws governing consumers' rights to return goods. The stressed dilution rate we use is a multiple of the historical monthly dilution rate. We expect in most trusts that the minimum seller's interest will adequately absorb dilutions, and we will disclose if we believe otherwise and adjust the Aaa LGSD and Aaa credit enhancement (Aaa CE) accordingly.

**Step 1B: Cash Flow Analysis****Analyzing Transaction Structure**

In our analysis of the transaction's stressed asset cash flows and stressed payment obligations, we also evaluate the structural features that determine the allocations of principal and finance charge cash flows. These include:

- » the allocations of finance charges and principal collections to pay various trust fees, such as administrative and servicing fees
- » the allocations of finance charges and principal collections between the seller's/transferor's interest and the investor's interest
- » the allocations of finance charges and principal collections between the various series of notes issued out of the trust
- » the trust's minimum seller's interest requirement
- » the accumulation of finance charge collections to fund the reserve account for certain classes of notes when excess spread drops below a certain level
- » any interest rate and/or currency swap agreements, or any other derivative or hedging agreement

- » any “discounting” mechanism that directs principal payment cash flows into the finance charge cash flow to boost yield and, by extension, excess spread

#### Accounting for Mismatches in the Interest Rates of Assets and Liabilities

We also analyze the trust structure for mismatches between the interest rates on the asset receivables (which accrue on the credit card balance according to the interest rate in the cardholder agreement) and those on the note liabilities. Interest rates on the credit card balances are either fixed or floating (and are subject to change by the sponsor under certain conditions). Similarly, interest rates on liabilities (the securitization notes), can also be fixed or floating and we evaluate them net the effects of any interest rate swaps. As such, we adjust our cash flow analysis to account for any variations in interest rates that could narrow the spread between the interest rates on the assets and the interest rates on the liabilities.

Exhibit 5 shows examples of levels of asset-liability mismatch stress in a generic US transaction. We look at historical variations and simulate the evolution of the relevant market rates in multiple scenarios, determining the stresses assuming a Aaa degree of confidence.<sup>13</sup> In a typical analysis, we either raise the interest rate on the liabilities or lower the interest rate on the assets; in both cases, the excess spread diminishes. For transactions with a mix of fixed- and floating-rate assets or fixed- and floating-rate liabilities, we apply a mix of stress factors accordingly. For structures in which all series in the trust share interest expenses (e.g. de-linked or “socialist” trusts), we generally analyze the trust as if it has floating-rate liabilities, because credit card securitizations are perpetual issuance vehicles and the issuer can switch from issuing fixed-rate notes to issuing floating-rate notes at any time. For structures in which series do not share interest expenses, we use the actual weighted-average coupon (WAC) of each series.

EXHIBIT 5

#### Examples of Levels of Stress to Account for Asset-Liability Mismatches in a Generic US Transaction

	Floating-Rate on Liabilities	Fixed-Rate on Liabilities
Floating APRs on assets	2.5%*	% = Floating reference rate <sup>†</sup>
Fixed APRs on assets	5.0% <sup>§</sup>	0%

APR—annual percentage rate

\* Buffer for APRs indexed to US prime rate and liabilities indexed to LIBOR or SOFR.

† The buffer accounts for the potential for a decline in floating-rate APRs, based on current interest rates. For a US transaction, we will use for example the current Fed Funds rate.

§ This particular assumption is also a function of the current interest rate environment. We are likely to reduce this buffer in a higher interest rate environment.

Source: Moody's Investors Service

In some cases, a derivatives instrument such as an interest rate swap or cap will mitigate the asset-liability mismatch; we assess the degree to which this occurs primarily based on:<sup>14</sup>

- » the counterparty's credit quality
- » the conditions that will trigger the replacement of the counterparty
- » the extent to which the tenor and duration of the derivative instrument and the bond match

<sup>13</sup> In rating US transactions with assets or liabilities referencing other floating interest rates or transactions outside of the US, we stress interest rates in a similar fashion, taking into account the characteristics and volatility of interest rates and the interest rate environment in those countries.

<sup>14</sup> See our approach to assessing swap counterparty exposures. A link to a list of sector and cross-sector methodologies can be found in the “Moody's Related Publications” section.

## ACCOUNTING FOR DIFFERENT INTEREST RATES IN A SHIFTING MIX OF LIABILITIES

To account for differences in interest rates between senior and subordinate classes of notes, we stress the weighted-average interest rate of the liabilities. Because the senior notes amortize before the subordinate notes, the weighted average coupon on the combined notes will increase over the course of the early amortization.

### Stressing the Market Value of the Residual Balance

As part of our cash flow analysis, we determine the value of the balance of receivables<sup>15</sup> that remains at the transaction's legal final maturity. Given the relatively low principal payment rate that we assume in our analysis, some residual receivables balance usually remains at the notes' legal maturity, and in the majority of securitizations, investors lose their right to collect on these receivables after that date. We also analyze the secondary market in the relevant country to ascertain the likelihood of a sale of the remaining receivables.

Since portfolio performance deteriorates following account closure, we estimate the market value of the residual balance based on the assumption that the accounts sell at a sharp discount to face value. The discount rate we use depends on the legal provisions requiring or permitting a sale, the strength of the sponsor and the credit quality of the portfolio. We apply the lowest discount rate to transactions with a mandatory receivable sale provision. If there are no mandatory sale provisions in the trust documentation, we consider the quality of the portfolio and the bank's importance in its country's banking system. A moderate discount rate applies to transactions where the sponsor is a diversified financial institution, is systemically important<sup>16</sup> and whose securitized portfolio is of prime quality.

We expect diversified and systemically important sponsors of prime portfolios will have more time and a greater variety of options to successfully wind down a portfolio than a sponsor whose sole focus is managing a weaker, lower-credit-quality portfolio. We measure portfolio quality by the Aaa LGSD, but remove any credit influence the legal structure (for example, differences in the legal final periods) has on the measurement, because we expect the best-quality portfolios will be those with the lowest Aaa LGSDs. The highest discount rate will apply to residual receivable balances in transactions with no or weak sale provisions and whose sponsors are not diversified or systemically important institutions operating prime quality credit card businesses.

For example, the trust documents for most transactions in the US stipulate a mandatory sale of the collateral at the legal final maturity. In this case we apply the lowest discount rate, resulting in a 55%-60% haircut to the face value of the collateral. For other trusts, if we apply the moderate discount rate, there is a 65%-70% haircut, and with the highest discount rate, a haircut of approximately 80%. We may also assign a residual value of zero to collateral in less-liquid markets that have a limited history of card portfolio sales.

The longer the amortization period (defined as the time between the expected maturity date and the legal maturity date), the lower the residual balance that will be subject to an adjustment. However, in our maximum stress scenario, we limit the credit we can give to payments from cardholders after a certain number of years following account closures. We generally cap the amortization period at approximately four years.<sup>17</sup>

<sup>15</sup> Rights to these receivables vary generally by jurisdiction or by transaction in a region.

<sup>16</sup> Our ratings and CR Assessment for a systemically important institution reflect that the institution benefits from some degree of governmental support.

<sup>17</sup> If the structure incorporates a long amortization period to match expected average life of revolving consumer loan or credit card products with historically low payment rate, we may give credit to a longer amortization period.

We perform our portfolio assessment and cash flow analysis to derive the Aaa LGSD, which is the maximum stress level of credit enhancement for the transaction, consistent with a Aaa (sf) rating. See Appendix 4 for how we model cash flow in a typical credit card transaction in the US to calculate the Aaa LGSD.

## Step 2: Incorporating Sponsor Credit Quality into the Analysis for Aaa Credit Enhancement

*Repayment of ABS depends primarily on the performance of the assets collateralizing the notes. However, in revolving consumer credit products such as credit cards, the performance of the assets depends to a large degree on the transaction sponsor's ability to maintain card utility by keeping the accounts open and extending the revolving part of the credit limit not funded by the ABS. We use the dependency ratio to capture this dependency on the sponsor.*

We determine the level of credit enhancement consistent with a Aaa (sf) rating by lowering the Aaa LGSD according to the applicable dependency ratio. The dependency ratio varies according to the sponsor's CR Assessment. The higher the sponsor's CR Assessment, the lower the dependency ratio. This relationship implies that a maximum stress scenario is less likely in a portfolio with a sponsor that has a high CR Assessment, which is thus less likely to close accounts and more likely to support the trust under adverse conditions.

We use the maximum stress scenario determined in step 1 (the Aaa LGSD) without applying any adjustments for sponsors with very low CR Assessments because it presumes that a sponsor that is insolvent or near insolvency will close poorly performing accounts. Therefore, for sponsors with very low CR Assessments (e.g. Ca(cr)), the Aaa LGSD will equal the Aaa CE.

The Aaa CE is lower for a sponsor with a high CR Assessment. Such a sponsor is more likely to try to prevent a further decline in the credit performance of a poorly performing credit card portfolio by selectively closing accounts, lowering credit limits, or selling the portfolio to another sponsor that can pursue those strategies.<sup>18</sup> As noted earlier, to keep the accounts open in the event of early amortization, the sponsor needs to finance the accounts with alternative funding sources rather than through the securitization market. A sponsor with a high CR Assessment would be able to access this financing.

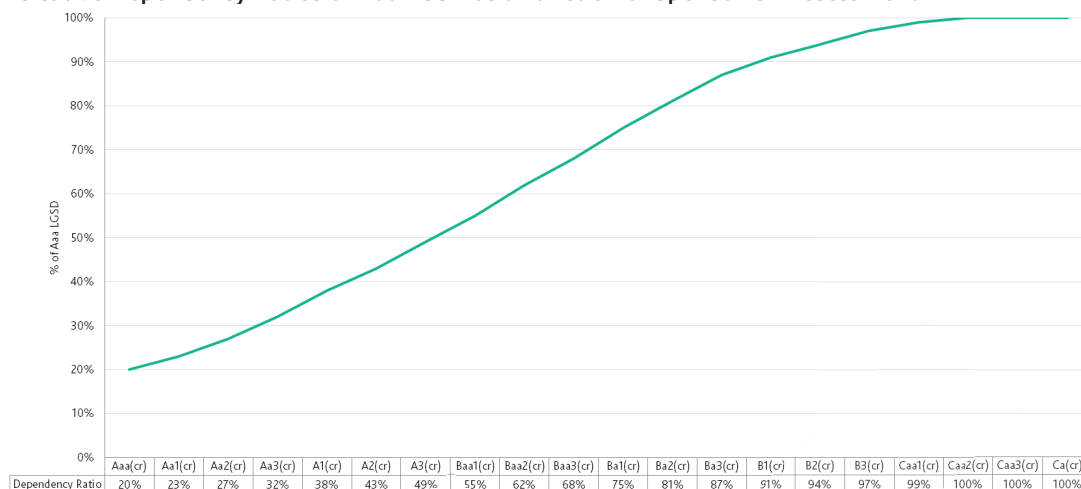
Moreover, financially sound sponsors have a greater ability to prevent their transactions from entering early amortization in the first place, typically by either discounting principal receivables to boost yield and, by extension, excess spread, or by replacing weaker credit quality card accounts with better quality card accounts. Finally, sponsors with high CR Assessments have a greater ability to increase the amount of credit enhancement in their transactions, thus protecting noteholders from greater losses during early amortization.

As a result, for transactions with sponsors that have high CR Assessments, we use the Aaa LGSD as a benchmark to determine the maximum level of portfolio losses during an early amortization scenario and then lower that enhancement level to account for the sponsor's likelihood of financial distress, based on its credit quality. The Aaa CE for a particular transaction represents a percentage of the transaction's Aaa LGSD, based on the credit quality of the transaction's sponsor. Exhibit 6 shows the dependency ratios we generally apply for each transaction, as determined by the sponsor's CR Assessment.

<sup>18</sup> We adjust this assumption in specific circumstances, such as when the card operations are a non-core business of a sponsor, or when a sponsor has publicly indicated that it intends to exit its card business by selling or winding down its portfolio.

EXHIBIT 6

## Indicative Dependency Ratios of Aaa LGSD as a Function of Sponsor CR Assessment



Source: Moody's Investors Service

The dependency ratios represent the percentage of the Aaa LGSD to achieve a Aaa (sf) rating on the credit card ABS, based on the sponsor's CR Assessment.<sup>19</sup>

The dependency ratios reflect (1) the likelihood of severe stress in the event of account closure, and (2) potential shortfalls in early amortization if the accounts remain open, but the sponsor chooses not to support the transaction. Transactions must have some amount of credit enhancement to achieve a Aaa (sf) rating, even for sponsors with the highest CR Assessments, because sponsors are under no contractual obligation to support their trusts.

Because a sponsor with a high CR Assessment is unlikely to shut down its portfolio, the need for enhancement stems from the risk that account performance deteriorates to the point that excess spread does not fully cover the charge-offs.<sup>20</sup> A deterioration in economic activity could lead to such a scenario, causing the sponsor to withdraw support rather than take measures to offset the deterioration.<sup>21</sup> The sponsor's reaction towards a deteriorating transaction depends on, among other things, the following:

- » the financial health of the sponsor
- » the sponsor's concern about how ABS note downgrades or investor losses would affect its reputation in the capital markets
- » the importance of the credit card business (and credit card securitization as a financing tool) to the sponsor (e.g., a company whose entire business relates to the credit card sector would have a strong incentive to avoid an early amortization) and any history of support
- » the accounting and tax treatment of any potential support
- » the extent to which the regulatory environment allows sponsors to provide support to transactions

<sup>19</sup> See Appendix 2 for more information on the Dependency Ratio.

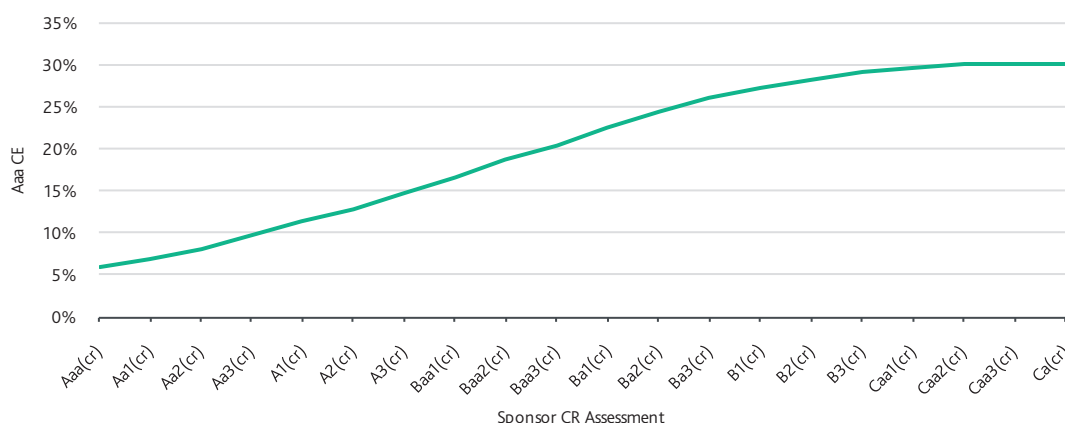
<sup>20</sup> This depends on the economics of the trust -- particularly on the cushion provided by excess spread to cover defaults, which will affect the likelihood of triggering an early amortization. We also account for this in the Aaa LGSD through the credit we give to excess spread.

<sup>21</sup> Although the documentation does not stipulate a contractual support obligation, credit card sponsors do have an incentive to provide support to avoid early amortization. However, doing so could require the sponsor to close the accounts if it does not have alternative funding sources. In practice, a number of sponsors have provided some support (e.g., by adding credit enhancement or using a principal receivables discounting mechanism) to their card programs.

These factors affect the likelihood that a solvent sponsor will provide support to poorly performing accounts, and therefore affect the shape and determine the lowest levels of the dependency curve in Exhibit 6. Notwithstanding the sponsor CR Assessment, we are likely to adjust the standard dependency curve upwards if we believe that it is less likely for the sponsor to provide any type of support.<sup>22</sup> We could also adjust the dependency ratio within the standard curve if we believe there is a probability of credit card account closure outside of a sponsor's financial distress.<sup>23</sup>

The sponsor's CR Assessment will determine the dependency ratio that we use to lower the Aaa LGSD and arrive at the Aaa CE level for a transaction. This level will change as the sponsor's CR Assessment changes. Exhibit 7 shows how the Aaa (sf) level of credit enhancement on the senior notes in a credit card trust changes as the credit quality of the sponsor changes, and as we apply the dependency ratios from Exhibit 6 to a Aaa LGSD of 30%.

EXHIBIT 7  
**Indicative Relationship between Aaa CE and Sponsor CR Assessment for a transaction with 30% Aaa LGSD**



Source: Moody's Investors Service

### Sponsor Counterparty Risk Assessment

We generally use the sponsor's Counterparty Risk Assessment as a proxy for the likelihood of the closure of its credit card business (and thus the wind-down of the portfolio) because account closures are more likely if the sponsor is insolvent or near insolvency. We generally use the CR Assessment, as opposed to other proxies, such as the sponsor's senior unsecured rating or bank deposit rating, because we expect that a successfully resolved bank will continue its core activities such as the origination of credit card receivables. The CR Assessment reflects this scenario. If the credit card business is not considered a core activity of the sponsor, or if we have other concerns about the viability of this specific business upon the bank failure, we may apply a lower reference point to assess the wind-down of the portfolio.

If the sponsor is not eligible for a CR Assessment<sup>24</sup> or one is not available, we will use the best alternative proxy, which we may, for example, derive from its senior unsecured debt rating (or equivalent) or, in some

<sup>22</sup> We note significant differences by jurisdiction in respect of sponsors' positioning towards securitization structures. If deemed relevant, we reflect these differences in our assumptions. Japan and several other countries serve as examples. See Appendix 3 for more information.

<sup>23</sup> We may adjust this assumption in specific circumstances, such as when the card operations are a non-core business of a sponsor, or when a sponsor has publicly indicated that it intends to exit its card business by selling or winding down its portfolio.

<sup>24</sup> For example, the entity is not a bank, or a bank-like entity.

cases, its deposit rating (or equivalent). In limited circumstances a sponsor may qualify for a low-volatility credit estimate in the absence of CR Assessment and a rating.<sup>25</sup>

If no CR Assessment, rating or credit estimate is available we assume that the Aaa CE equals the Aaa LGSD. Therefore, if senior notes have credit enhancement equal to or greater than our Aaa LGSD calculation, we can assign a Aaa (sf) rating (even if we have not determined a CR Assessment for the sponsor), provided that the structure contains provisions that mitigate operational, legal and counterparty risks.

### Step 3: Analyzing Senior and Subordinate Notes

*In previous steps we derived the Aaa CE from the transaction's Aaa LGSD and the haircut determined by the dependency curve. In this third step of our rating analysis we consider the level of credit enhancement available to the senior notes compared with the Aaa CE, and determine if that amount sufficiently supports the Aaa (sf) rating. We also evaluate subordinate notes ratings by considering the sponsor CR Assessment, the amount of credit enhancement available and the expected loss severity on the subordinate notes.*

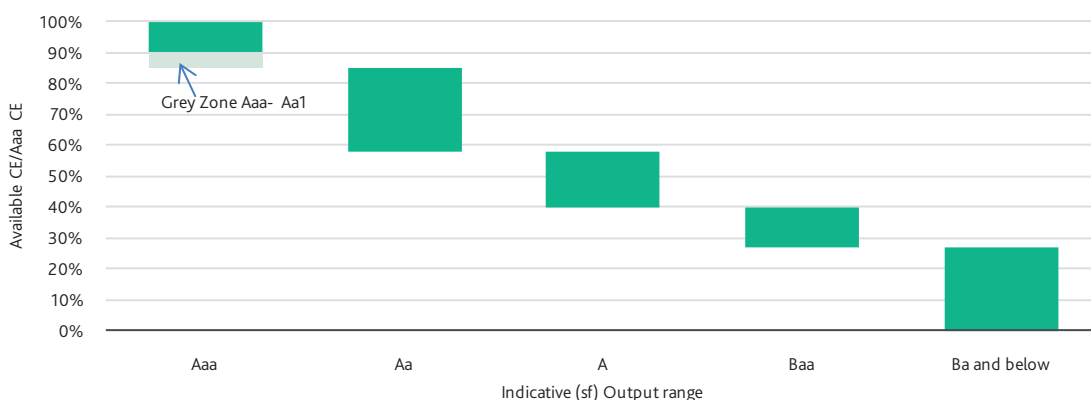
#### Step 3A: Senior Notes with Less or Greater Enhancement than the Aaa (sf) Level

*For credit card securitizations whose credit enhancement is less than that consistent with a Aaa (sf) rating, we adjust the rating of the notes to reflect the level of available enhancement.*

We compare the ratio of available credit enhancement to the Aaa CE to the range of such ratios corresponding to a given indicative rating. Exhibit 8 shows the approximate relationship between the ratio of available credit enhancement to the Aaa CE, expressed as a percentage, and the rating range for the senior note that would apply before we make any quantitative or qualitative adjustments.

EXHIBIT 8

#### Available CE to Aaa CE Ratio mapped into Output for Senior Note



Source: Moody's Investors Service

From Exhibits 6 and 8, we can determine how a change in the sponsor's CR Assessment is likely to affect the senior note rating. For example, suppose the Aaa LGSD for a transaction is 30% and the sponsor's CR Assessment is initially A2(cr). As Exhibit 6 shows, the dependency ratio for a sponsor with an A2(cr) CR Assessment is 43% and the resulting Aaa CE is 12.9% (0.43 x 30%).

If we assume a downgrade of the sponsor's CR Assessment to Baa1(cr), the dependency ratio increases to 55%. As a result, the Aaa CE rises to 16.5% (0.55 x 30%). Because the senior note has credit enhancement

<sup>25</sup> See our cross-sector methodology on the use of credit estimates in structured finance. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

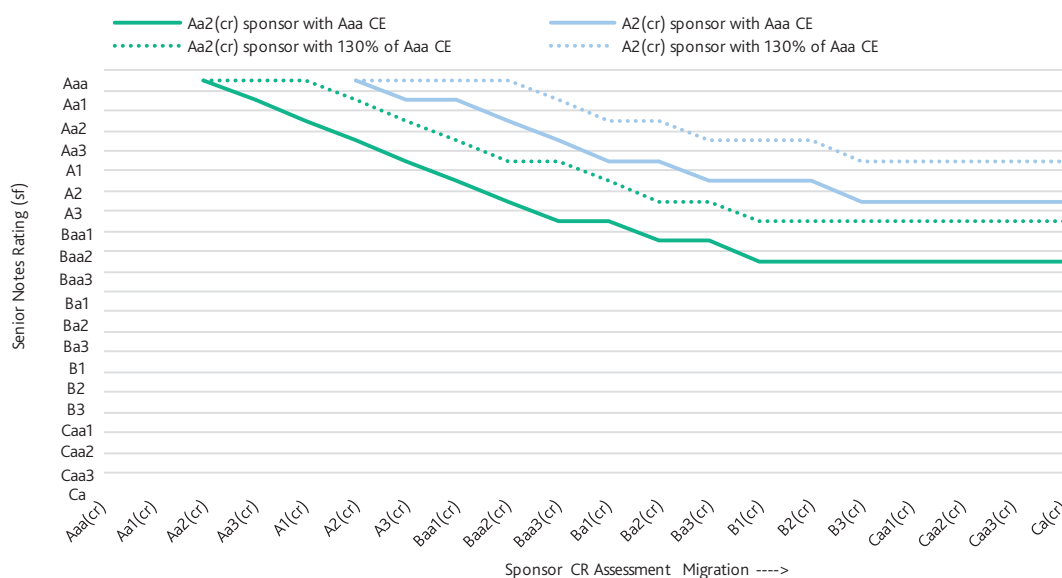
of only 12.9%, it has 78% of the new Aaa CE (12.9%/16.5%). As a result, we would likely downgrade the rating on the senior note to Aa1 (sf) based solely on this ratio, as Exhibit 8 indicates. Further adjustments might be necessary to account for trust-specific characteristics.

Exhibit 9 provides an example of rating changes of senior notes that would result from downgrades to two sponsors, whose initial CR Assessment s were Aa2(cr) and A2(cr), to a final CR Assessment of Ca(cr), assuming that the available credit enhancement remains the same and excluding any legal or operational risk or other quantitative or qualitative adjustments. The solid lines show the migration for a structure where the available credit enhancement equals the Aaa CE for the initial sponsor CR Assessment, whereas the dashed lines show the migration for a structure where the available credit enhancement is 130% of the Aaa CE for the initial sponsor CR Assessment.

We have provided the 130% examples to demonstrate the strength of the senior note ratings as the sponsor CR Assessment declines. For the 130% case with the Aa2(cr) sponsor, the senior notes retain the Aaa (sf) rating so long as the sponsor maintains a CR Assessment of A1(cr) or above. For the 130% case with a sponsor with an A2(cr) CR Assessment, the senior notes retain the Aaa (sf) rating so long as the sponsor maintains a CR Assessment of Baa2(cr) or above.

EXHIBIT 9

### Example of Senior Note Rating Migration from Aaa (sf) as a Result of Downgrade to Sponsor CR Assessment



Note: This example assumes (1) a Aaa LGSD of 30%, (2) two sponsors, one with a CR Assessment of Aa2(cr), the other, A2(cr), whose CR Assessments we subsequently downgraded to Ca(cr), and (3) that the sponsors do not add any credit enhancement to their transactions.

In the example for the solid lines, the initial Aaa CE is the product of the Aaa LGSD and the indicative dependency ratio in Exhibit 6 based on the initial sponsor CR Assessment. Upon a sponsor CR Assessment downgrade, the new Aaa CE is the product of the Aaa LGSD and the dependency ratio adjusted for the sponsor's new CR Assessment. We then calculate the ratio of the initial Aaa CE to the new Aaa CE and map this ratio to an indicative model output using Exhibit 8.

For the dashed lines the amount of Aaa CE is 130% of the amount of initial Aaa CE in the solid line scenarios.

Source: Moody's Investors Service

### Step 3B: Analyzing Subordinated Notes

*We evaluate ratings on subordinated notes by considering the sponsor CR Assessment, the ratio of available credit enhancement to the Aaa CE, and the expected loss severity on the subordinate notes.*

#### Subordinate note ratings will be more sensitive to the sponsor's credit quality

Given the smaller size and limited credit enhancement of a transaction's junior notes, their performance typically correlates more with the financial health of the sponsor than does the performance of the senior notes. If a sponsor is in financial distress and closes its accounts, the junior notes are likely to incur a loss unless they have sufficient credit enhancement to absorb the shortfalls that arise as the performance of the pool deteriorates.

Even if the sponsor was not in financial distress, the rating on the subordinate notes would still be sensitive to the credit quality of the sponsor, on the general expectation that the sponsor would support its trust for as long as possible. Typically, we will not rate a subordinated note with an expected severity of around 50% more than two notches lower than the sponsor CR Assessment, given the general expectation that a sponsor is likely to support its trust as long as it is not in financial distress.

However, since the sponsor has no contractual obligation to support the transaction, we typically cap the credit we give to sponsor support. As a result, we will generally not rate a subordinate note higher than Baa1 (sf) if it has limited or no hard credit enhancement (i.e., subordination or over-collateralization) to support it.

#### Assessing loss severity

Severity is a key consideration because the smaller size of subordinate notes leads to a higher severity of bond loss for each dollar of shortfall that exceeds the subordinate notes' credit enhancement. For example, a loss of \$2 on a senior note of \$100 leads to a loss severity of 2%, whereas the same loss of \$2 on a junior note of \$5 leads to a severity of 40%.

To measure the severity of loss on the subordinate notes we determine a scenario that is less stressful than the one we use to derive the Aaa LGSD level. In this scenario we assume a portfolio shut down, that results in a pool expected loss, and then we calculate the conditional severity using the expected loss given sponsor default, or ELGSD, the credit enhancement supporting the subordinate notes, and the relative size of the subordinate notes in the capital structure.

The ELGSD scenario is a key input we use to derive subordinated notes ratings. For each transaction where we assess the Aaa LGSD, we also determine the ELGSD. The implied multiple between the ELGSD and Aaa LGSD ranges from three to 10, with a higher multiple corresponding to a lower ELGSD. Exhibit 10 provides the ELGSD levels that correspond to Aaa LGSD levels.

EXHIBIT 10

**Indicative ELGSD Values that Correspond to Aaa LGSD Levels**

Aaa LGSD	ELGSD
15.0%	1.5%
16.0%	1.6%
17.0%	1.8%
18.0%	2.0%
19.0%	2.2%
20.0%	2.5%
21.0%	3.0%
22.0%	3.5%
23.0%	4.0%
24.0%	4.5%
25.0%	5.0%
26.0%	5.5%
27.0%	6.0%
28.0%	6.5%
29.0%	7.0%
30.0%	7.5%
31.0%	8.0%
32.0%	8.5%
33.0%	9.0%
34.0%	9.5%
35.0%	10.0%
36.0%	10.5%
37.0%	11.0%
38.0%	11.5%
39.0%	12.0%
40.0%	12.5%
41.0%	13.0%
42.0%	13.5%
43.0%	14.0%
44.0%	14.5%
45.0%	15.0%

Source: Moody's Investor Service

**Using the Available CE/Aaa CE ratio and adjusting for loss severity**

To evaluate subordinate note ratings, we first consider the ratio of available CE to Aaa CE, as in Exhibit 8. We then adjust down the indicated rating from Exhibit 8 by a baseline two-notch adjustment that corresponds to an expected severity upon sponsor default on the subordinated notes of around 50%.

We make an additional downward adjustment (by one notch) for subordinate notes where we expect the severity to be very high.<sup>26</sup> Conversely, we make an upward adjustment (by one notch) for subordinate notes where we expect the severity to be low.<sup>27</sup> We calculate the expected loss severity of the subordinate note using the transaction's ELGSD, the credit enhancement supporting the subordinate note and the thickness of the subordinate note. For example, if we have a 7% subordinated Class B note with an 8% Class C note underneath and a 10% ELGSD, we would expect the Class B note to have a severity of 29% (10% expected losses - 8% Class C note = 2% losses applicable to the 7% Class B note).

<sup>26</sup> Typically higher than 70%, based on our expected loss tables over a three-year horizon; for more information, see *Rating Symbols and Definitions*. A link can be found in the "Moody's Related Publications" section.

<sup>27</sup> Typically lower than 30%, based on our expected loss tables over a three-year horizon; for more information, see *Rating Symbols and Definitions*. A link can be found in the "Moody's Related Publications" section.

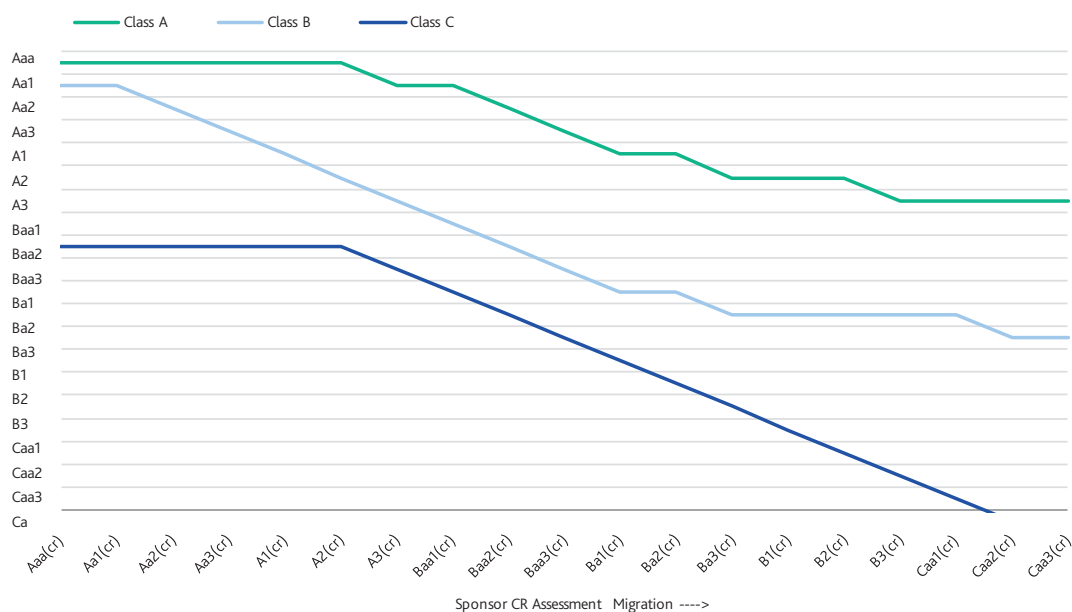
To summarize, the model implied (sf) rating of the subordinate notes will be the higher of:

- 1) the rating derived from the available CE to the Aaa CE ratio (reduced by one to three notches for severity)
- 2) the lower of Baa1 (as may be reduced or increased by one notch for severity) and the sponsor CR Assessment (reduced by one to three notches for severity)

Exhibit 11 shows an example of the initial note ratings and the rating migration of one senior and two subordinate notes as the sponsor CR Assessment changes from an initial A2(cr) assessment and credit enhancement stays the same (assuming no legal or operational risks). To each sponsor CR Assessment level we associate a Aaa CE that serves as the denominator of the ratio of available CE to Aaa CE. We apply the framework in Exhibit 8 and make severity adjustments for subordinate notes, to determine a model output for each class of notes and each sponsor CR Assessment level. We may cap further the rating of the notes when we also apply to these results our approach for securities in default.

EXHIBIT 11

### Example of ABS Notes Rating Migration for a A2(cr) Sponsor Assuming No Adjustment to Credit Enhancement When the Sponsor CR Assessment Changes



Source: Moody's Investors Service

## Assumptions for Exhibit 11

### Aaa CE calculation

Aaa LGSD	35%
Sponsor CR Assessment	A2(cr)
Dependency Ratio	43%
Aaa CE	15%
Expected loss given sponsor default	10%

Capital Structure	Class A	Class B	Class C
Note Size (as % of Invested Amount)	85%	7%	8%
Note Credit Enhancement (as % of Invested Amount)	15%	8%	0%
Available CE/Aaa CE	100%	53%	0%
Expected severity given sponsor default	0%	29%	100%
Initial Note Rating	Aaa(sf)	A2(sf)	Baa2(sf)

Source: Moody's Investors Service

### Accounting for excess spread capture mechanisms in the notes' available credit enhancement

Available credit enhancement, for either senior or subordinate notes, typically includes subordination, reserve accounts and other forms of hard enhancement, as well as the credit we give to potential excess spread-trapping triggers. In our ratings approach, we determine the credit we give to these triggers based on how much excess spread a trust will capture if its performance deteriorated at a pace consistent with prior early amortizations. We further stress this amount based on the rating of the notes that benefit from the triggers, so that the higher the rating of the notes, the lower the credit given to the triggers.

Trapping mechanisms have generally been of little value to investors in past early amortizations,<sup>28</sup> because these mechanisms only captured a small amount of excess spread before the trust entered early amortization. We adjust the credit we give to excess spread-trapping triggers based on, among other things, how tight the triggers are (i.e., how early or late the issuers must start trapping excess spread relative to the beginning of the early amortization) and the metrics the transaction stipulates to determine whether excess spread has to be trapped.

## Step 4: Final Risk Assessment

*In the final stage of our approach to rating credit card ABS, we supplement the collateral and structural analysis with a final risk assessment to derive the final ratings.*

The output of our quantitative modeling is an important input to our rating committee process. However, the actual ratings the rating committee assigns take into account numerous other factors, including the results of sensitivity analyses to a variety of charge-off, yield and payment rate assumptions, as well as quantitative and qualitative assessments relating to operational, legal, counterparty, commingling and sovereign risk factors.

In this step, we adjust the Aaa CE derived from the dependency curve to incorporate the transaction's specific risks, including operational, legal, counterparty and commingling risks. If such risks are material and appropriate structuring or additional credit enhancement or liquidity does not mitigate them adequately, we might cap the transaction's rating.

<sup>28</sup> Except for First Consumers, in which the triggers were tight and also used payment rates and delinquency levels to determine when and how much excess spread to trap.

### Operational Risk<sup>29</sup>

Operational risk relates to the effect of servicer insolvency on servicing and cash management, as well as any structural mitigants, such as servicer replacement triggers. It arises from (1) a transaction party that is deficient in performing important tasks; and (2) nonperformance of a transaction party's duties following termination or disruption of operations after bankruptcy or receivership. In a transaction structure that does not adequately address the operational risks, we might cap the notes' ratings at lower levels.

### Legal Risk

We assess the transaction's legal structure, including idiosyncratic structural features that we have not modeled explicitly. Our analysis of the legal aspects of the transaction ensures that its documentation reflects our assumptions regarding asset quality and transaction structure. As part of the legal analysis, we also review legal opinions to ensure that they adequately address any concerns regarding the assignment of the assets to the trust, bankruptcy remoteness of the trust, or other jurisdiction-specific issues.

### Counterparty Risk<sup>30</sup>

We typically assess counterparty default risks outside of the cash flow model. The process can result in adjustments to the model-implied assessment and include transaction-specific rating caps. The assessment considers structural mitigants, such as counterparty replacement triggers. The key elements of the counterparty default risk assessment relate to swap risk, operational disruption risk and the risk of default on transaction-related bank accounts.

Our approach to assessing the rating impact of linkage to swap counterparties in structured finance cash flow transactions depends on various factors, including (1) the counterparty's credit quality; (2) the trigger provisions in the swap documents; (3) the type and tenor of the swap; (4) the amount of credit enhancement supporting the notes; (5) the size of the relevant tranche; and (6) the rating on the notes before accounting for the effect of the linkage.

### Commingling Risk<sup>31</sup>

We assess the risk that cash collections of the transaction will not be remitted by the servicer to the issuer. In some transactions and subject to certain other conditions being met, commingling risk may be fully mitigated. For example under English law, a collection account that is held with a third party account bank and that is subject to a valid declaration of trust which excludes it from the bankruptcy estate of the servicer, could fully mitigate the risk. As another example, the Federal Deposit Insurance Corporation in the US has adopted a safe harbor rule to the effect that it will remit, as the insolvency official for US banks, collections to the issuer in accordance with the transaction documents should a bank sponsoring a credit card program default.<sup>32</sup> To be considered as a full mitigant, a bank sponsor may have to meet certain other conditions as stated in the relevant regulation.

Where the risk is not fully mitigated, we evaluate the probability that a servicer will become bankrupt at a time when it is still receiving collections, and the resulting loss to the transaction.

<sup>29</sup> 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.

<sup>30</sup> For more information, see our cross-sector methodology for assessing counterparty risks in structured finance, including swap counterparty exposures. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

<sup>31</sup> 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.

<sup>32</sup> Ibid.

The probability of such commingling mainly depends on the credit quality of the servicer and the effectiveness of any redirection triggers.<sup>33</sup> The extent to which commingling risk will cause a loss to a transaction depends on various factors, including, the frequency of cash sweeps from the servicer to the issuer, the expected monthly payment rate before a servicer bankruptcy, how long it will take to redirect collections, and the applicable laws and regulations in the relevant jurisdiction.

We assess these factors in accordance with our approach to commingling risk.<sup>34</sup> To measure the loss exposure in the Aaa LGSD scenario, we typically assume a loss rate equal to the expected monthly principal payment rate during the first period following sponsor default,<sup>35</sup> adjusted for a recovery rate of 45%. Other positive or negative adjustments may be considered in our analysis by rating committees on a case-by-case basis resulting in an adjusted exposure at risk. Adjustments may, for instance, result from mitigating factors such as reserve funds, additional subordination, effective borrower redirection triggers or other structural mitigants.

Once we have determined a commingling loss, we will add the loss percentage to the Aaa LGSD and then carry out our rating analysis as described above (see Steps 1 to 4).

### 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 the local currency country risk ceilings (LCC) in accordance with our sovereign ceiling methodology.<sup>36</sup>

We typically consider the credit enhancement consistent with the maximum achievable rating in a given country to be the same as the Aaa CE determined in application of Step 2 of this approach.

As a consequence, we typically lower the rating output from Step 3 by a number of notches equal to the difference between Aaa and the LCC (subject to the rating floor for subordinated notes mentioned in Step 3B of this approach). For example, if the LCC is Aa2, we lower the rating output by two notches. In instances, where the LCC is at or lower than A3, we may adjust our analysis of mezzanine and junior note ratings by taking into account additional qualitative factors.

## Monitoring

### 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 become less relevant over time, such as the review of a legal structure that has not changed. We also typically receive extensive data on transaction-specific performance that we use to monitor transactions.

<sup>33</sup> For this purpose, we are concerned with the probability that securitized collections will be owed by an entity in bankruptcy. If the servicer is a bank or a bank-like entity, we reference the CR Assessment. If a servicer does not have a CR Assessment, we will, for this purpose, use the best alternative proxy, which we may, for example, derive from its senior unsecured debt rating (or equivalent) or, in some cases, its deposit rating (or equivalent).

<sup>34</sup> 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.

<sup>35</sup> See section "Stressing Principal Payments Rates."

<sup>36</sup> See our approach to local currency country risk ceiling for bonds and other local currency obligations. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

When monitoring the performance of outstanding credit card transactions, we track the general regulatory and macroeconomic environment; performance of the underlying collateral; 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 credit strength of the sponsor and the collateral performance relative to our expectations as well as the credit enhancement available in the transaction. When appropriate, we run a model (or a simplified model) similar to the approach we use to assign the initial ratings.<sup>37</sup>

### Pool Size

We do not assign nor maintain ratings on credit card ABS transactions with the following characteristics:

- >> transactions that do not have support mechanisms, such as credit enhancement floors or reserve fund floors, once the underlying pool has decreased to an effective number<sup>38</sup> of borrowers of 75<sup>39</sup> or below
- >> transactions with reserve fund or credit enhancement floors that partially compensate for the increased exposure to single borrowers, when the underlying pool has decreased to an effective number of borrowers of 50<sup>40</sup> or below

However, we will continue to monitor ratings that do not rely on assessment of individual obligor creditworthiness, such as those that benefit from a full and unconditional third-party guarantee, whether at pool or note level,<sup>41</sup> or for securities that benefit from full cash collateralization.

<sup>37</sup> 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.

<sup>38</sup> The effective number is a measure of the pool diversity that looks beyond the nominal number of borrowers in a pool to take into account the actual size of their loans and express this number in terms of equally sized exposures. *Effective Number of n Borrowers* =  $1 / \sum_1^n (Wi)^2$  where *Wi* is the weight of borrower i in the total pool.

<sup>39</sup> If we cannot obtain the effective number, we will use a threshold of 130 borrowers instead. If we cannot obtain the effective number of borrowers, we will use the effective number of loans instead.

<sup>40</sup> If we cannot obtain the effective number, we will use a threshold of 90 borrowers instead.

<sup>41</sup> For structured finance securities, the rating applied will be the higher of the support provider's rating and the published or unpublished underlying rating. In the event of a downgrade of a financial guarantor's rating to below investment-grade, we expect to withdraw the rating for instruments that do not have published underlying ratings.

## Appendix 1: The Historical Impact of Account Closures on Credit Card Trust Performance

There have been six cases in which sponsors of credit card transactions have shut down all of the accounts in transactions that were performing poorly. In all six cases, the sponsors of the affected transactions were financially weak, which limited their ability to keep the accounts open. Generally, closing accounts led to further deterioration in the performance of the receivables. The six card portfolios that were closed were those backing the Advanta Business Card Master Trust, CompuCredit Acquired Business Portfolio Trust, CompuCredit Acquired Portfolio Voltage Master Business Trust, First Consumers Credit Card Master Note Trust, Spiegel Credit Card Master Note Trust and NextCard Master Note Trust.

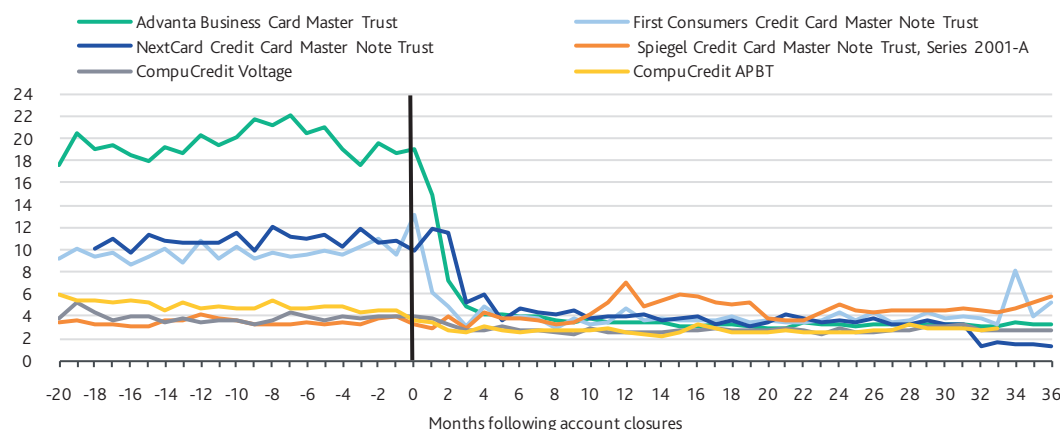
### Trust performance deteriorated after the account closures

In the cases in which sponsors closed their credit card accounts, the shutdown typically led to a significant decline in performance. Generally, principal payment rates fell, charge-offs rose and yields declined because the cardholders' incentive to repay their balances declined materially when their charging privileges ended.

**Principal payment rates fell rapidly.** Typically, a few months after sponsors revoked charging privileges, payment rates fell to the 3%-4% range, roughly the minimum account payment requirements, and remained there, as Exhibit 1A shows. The exception was the Spiegel Trust, whose payment rate was already in the 3%-4% range before the account closures and was slightly higher, on average, afterward.

EXHIBIT 1A

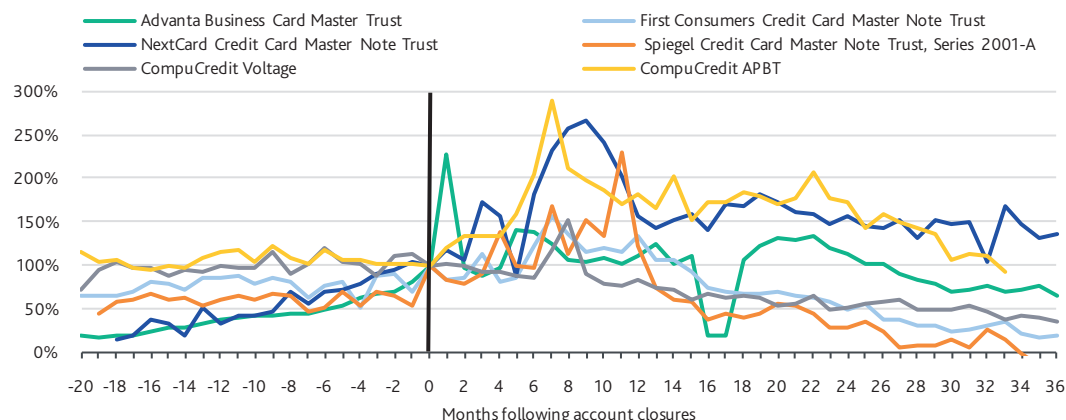
#### Principal Payment Rate %



Source: Moody's Investors Service, based on data from trusts

**Charge-offs rose sharply.** In the six to 12 months after the accounts closed, charge-offs rose sharply. They subsided gradually over the next two years to the levels roughly the same as before the early amortization, as Exhibit 1B shows. After adjusting for outside factors, we found that charge-offs in five of the six trusts rose as a result of the account closures. The exception was the CompuCredit Voltage Trust, whose average charge-off rate in the 12 months after closing the accounts declined, probably because the account closures occurred at the end of 2010, when the macroeconomic environment was generally improving.

EXHIBIT 1B

**Charge-off Rates, Indexed to the Rate the Month the Accounts Closed (Month 0)**

Note: A change in the servicer's charge-off policy explains the initial uptick and later reversal (in month 16) of Advanta's charge-offs.

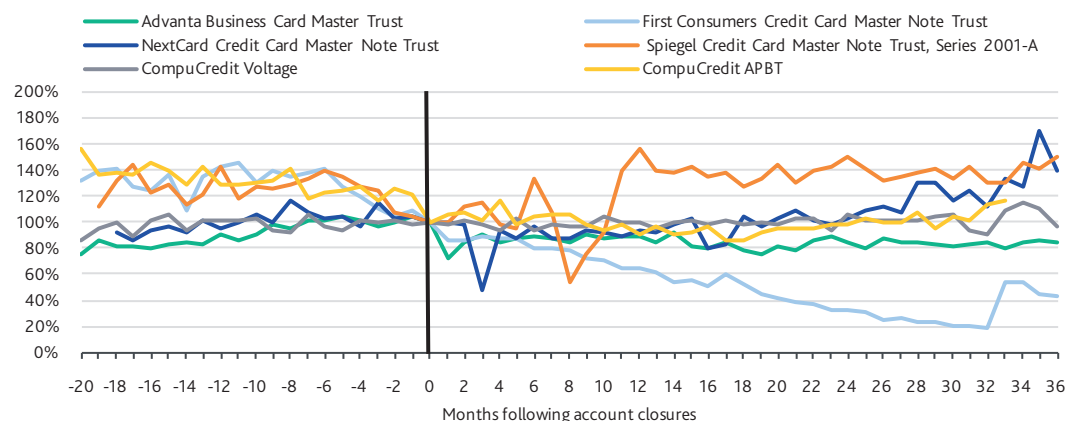
Source: Moody's Investors Service, based on data from service reports

**Yields fell moderately but leveled off.** Exhibit 1C shows that yields generally declined moderately after the account closures but eventually leveled off. The yield for the First Consumers Trust, which had been falling before the account closures, declined more rapidly afterward than the previous decline suggested.

The general pattern reflects two offsetting effects:

- >> once the sponsors closed the accounts, they no longer earned interchange or annual fees, which typically account for approximately 15% of yield
- >> the reduction in convenience users, who typically do not incur finance charges, partly offset the loss of interchange and annual fees

EXHIBIT 1C

**Yield, Indexed to the Rate the Month of the Account Closures (Month 0)**

Source: Moody's Investors Service, based on data from service reports

## Implications for full payment by final maturity date

As the payment rate in these programs fell towards the cards' minimum payment terms, payments to the noteholders fell as well, exacerbating the risk that the ABS notes would not be repaid by the final maturity date. However, as Exhibit 1D shows, in most cases the notes repaid (or were written down) before their final maturity dates.

EXHIBIT 1D

### Most Notes Either Repaid or Were Written Down by Final Maturity

	NextCard Master Note Trust <sup>1</sup>	Spiegel Credit Card Master Note Trust	First Consumers Credit Card Master Note Trust	Advanta Business Card Master Trust	CompuCredit Acquired Business Portfolio Trust <sup>4</sup>	CompuCredit Acquired Portfolio Voltage Master Business Trust <sup>4</sup>
Class A	Paid in full	Paid in full <sup>2</sup>	Paid in full	Paid in full	Paid in full	Paid in full
Class B	Paid in full		Partially written down	Partially written down in all but one case (see next section)		Paid in full
Class C	Partially written down		Paid in, or nearly in, full <sup>3</sup>	Fully written down		
Class D	Fully written down			Fully written down		

<sup>1</sup> The FDIC as receiver sold a portion of the NextCard receivables that it held outside the securitized trust in July 2002 to CardWorks. At that time, the FDIC was unable to find a buyer for NextBank's residual interest and servicing rights to the trust.

<sup>2</sup> The transaction benefited from an MBIA insurance guarantee.

<sup>3</sup> Thanks to the excess spread captured for its exclusive benefit prior to the trust entering early amortization, the Series 2001-A Class C was fully collateralized until a month prior to its final maturity date, after which point information is not available.

<sup>4</sup> The capital structures of both of CompuCredit transactions included a Class A1, A2, A3, A4 and a Class B.

Source: Moody's Investors Service, based on data from servicer reports

## Advanta is an exception

The Advanta trust had 24 series of notes outstanding when it entered its early amortization period. Only one of those series neither repaid nor was written down in full before its final maturity date. Specifically, the Class B 2006-B1 note reached its final maturity date with approximately 5% of the original balance of the note still outstanding. Investors in those notes received a foreclosure certificate, which effectively extended their rights to cash flows beyond the final maturity date. In contrast to Advanta, other US trusts require the sale of the remaining receivables backing the notes if ABS notes are not paid in full or are not written down by the final maturity date.

## Background on the Closed Trusts

### Advanta Business Card Master Trust

Advanta, a monoline credit card bank, closed the accounts in the Business Card Master Trust in June 2009, when the trust hit an early amortization event. In November of 2009 Advanta Bank's parent, Advanta Corp., filed for bankruptcy and in March 2010 the bank itself went into receivership. The credit card obligors in the trust were prime-credit-quality small businesses. We rated Advanta Caa3 at the time of the account closures.

**CompuCredit:****Acquired Business Portfolio Trust and CompuCredit Acquired Portfolio Voltage Master Business Trust**

CompuCredit's Acquired Business Portfolio Trust and the CompuCredit Acquired Portfolio Voltage Master Business Trust started amortizing immediately after issuance, a result of their trust structures, which are markedly different from that of a typical credit card trust. Consequently, neither of the two CompuCredit trusts provided a continuing source of funding for the sponsor and, as a result, CompuCredit's incentive to keep the poorly performing card accounts open was lower than it would have been had the trusts been structured as revolving transactions.<sup>42</sup>

CompuCredit's Business Portfolio Trust was backed by credit card receivables of subprime borrowers; CompuCredit had purchased these accounts from other originators. CompuCredit closed all accounts backing this transaction, and the portfolio went into run-off mode at the end of 2008, after excess spread declined from an average of 3.4% in the first three quarters of 2008 to 0.5% in the fourth quarter and -0.9% in December 2008.<sup>43</sup> We had not rated CompuCredit when it closed the accounts. The securitization was paid off in full in 2011.

CompuCredit's Voltage Master Business Trust was backed by credit card receivables of relatively weak-credit-quality consumers; the trust had purchased these receivables from other originators. The pool backing the securities generated negative excess spread in most months from the start of the transaction in May 2007 until CompuCredit closed the accounts in November 2010, with an average excess spread of -1.9%. We did not rate CompuCredit when it closed the accounts.

**First Consumers National Bank:****First Consumers Credit Card Master Note Trust and Spiegel Credit Card Master Note Trust**

First Consumer National Bank (FCNB), an unrated credit card bank owned by Spiegel, Inc., also unrated, sponsored First Consumers' and Spiegel's trusts. The First Consumers trust was backed by receivables generated by general-purpose credit cards, mostly subprime. The Spiegel trust was backed by Spiegel's private label retail credit cards, also mostly subprime.

Although the trusts hit early amortization triggers when FCNB went into receivership in May 2002, the FDIC as receiver disallowed the early amortization.<sup>44</sup> In March 2003, once the excess spread for the First Consumers' trust fell below zero, forcing the early amortization, the Office of the Comptroller of the Currency (OCC) ordered FCNB to close the accounts backing both transactions. For the First Consumers trust, excess spread had averaged -1.0% in the three months (December 2002 through February 2003) immediately preceding the account shutdown, compared with 6.0% in the preceding 12 months. For the Spiegel trust, excess spread averaged 0.4% in the three months preceding the account shutdown, compared with 5.3% in the preceding 12 months. We did not rate FCNB or Spiegel, Inc. when the latter closed the accounts.

**NextCard Master Note Trust**

NextBank, which originated prime general-purpose credit cards solely through the Internet, sponsored the NextCard Master Note Trust. The OCC closed the bank in March 2002, after it found that the bank "was operating in an unsafe and unsound manner," and appointed the FDIC as receiver.<sup>45</sup> In July 2002, the FDIC terminated cardholders' ability to make any additional purchases on their NextCard credit card accounts. In

<sup>42</sup> In an amortizing transaction, the trust uses credit card collections to pay the noteholders rather than to fund new purchases on the credit cards. In contrast, in a revolving transaction, the trust uses credit card collections to fund new purchases until the start of the amortization period.

<sup>43</sup> Because the securitization was structured to amortize from the start of the transaction, it did not incorporate an early amortization event linked to negative excess spread, which is the norm in most credit card structures.

<sup>44</sup> The FDIC disallowed the receivership as a cause for the trust to enter early amortization, even though the trust documents had explicit language stating that the receivership of the sponsor was one of the early am triggers.

<sup>45</sup> See "OCC Closes NextBank and Appoints FDIC Receiver," Comptroller of the Currency, 7 February 2013.

the same month that the FDIC closed the accounts, the trust hit an early amortization event because of a sharp decline in excess spread; in the three months (April 2002 through June 2002) before the account shutdown, excess spread had averaged -0.3%, compared with 5.2% in the preceding 12 months. We did not rate NextBank when the OCC closed the bank.

OUTDATED  
METHODOLOGY

## Appendix 2: Expected Loss and Probability of Default Calculations behind the Dependency Curve

We derive our dependency ratios from calculations of a transaction's expected loss and probability of default in two scenarios: one in which a sponsor closes accounts and one in which it does not. To calculate the security's overall expected loss and probability of default, we calculate a weighted average of each of the scenario's results. The weights that we use in the calculation are (1) the probability of sponsor default or financial distress; and (2) the probability that the sponsor is not in financial distress. We will also consider an additional probability of account closure outside a sponsor default or financial distress in certain circumstances, such as a poorly performing non-core business or a history of the sponsor not supporting transactions.

In both cases, we start by making assumptions about the shape of the probability curve showing the distribution of the transaction's aggregate lifetime shortfalls (typically, lognormal). We then derive a specific lognormal probability curve of the distribution of the asset pool's shortfalls using assessments of the asset pool's expected shortfalls and their variability. (A shortfall distribution is a curve that associates each shortfall scenario with its corresponding probability).

We can plot this distribution if we have a measure of the central tendency and a measure of dispersion (e.g., the standard deviation or a percentile). We derive the central tendency from the asset pool's expected shortfall depending on whether the sponsor closes the accounts or leaves them open. We infer the standard deviation from the level of credit enhancement that is consistent with a Aaa (sf) rating in that scenario, meaning that with the Aaa level of credit enhancement, a bond with a simple structure (backed by the transaction's pool of assets) would have an expected loss and a probability of default that is consistent with a Aaa (sf) rating. We adjust the standard deviation of the distribution (assuming a lognormal distribution) until the calculated expected loss, which we derive from the distribution and the Aaa level of credit enhancement, is consistent with the Aaa expected loss.

Once we determine the specific shortfall distribution that the central tendency and standard deviation specify, we use that distribution to determine the probability that the shortfalls will exceed the note's level of credit enhancement. Similarly, to determine a note's expected loss, we use the shortfall distribution to calculate the investor loss in each scenario in which the shortfall exceeds the enhancement. The expected loss is the weighted average of those losses (the weight is the probability of that loss scenario, as indicated by the probability curve showing the distribution of the shortfalls).

### Scenario I: Sponsor Closes Accounts

In this scenario, our assumption about the level of credit enhancement that is consistent with a Aaa (sf) rating is the Aaa LGSD, which we describe in step 1 of this methodology. We base our expected shortfall assumption (or the pool expected loss upon sponsor default) on the portfolio's characteristics and the historical shortfalls in transactions in which early amortization occurred and the sponsor closed the accounts.<sup>46</sup>

<sup>46</sup> On average, the shortfalls (net of excess spread) were around 10%-12% for the First Consumers, Next Card and Advanta transactions. These past early amortizations and account closures involved mainly weak originators with average- to low-quality portfolios. In our approach, we differentiate trust performance in the event of a sponsor default based on, among other things, the portfolio's characteristics and performance, as well as on the economics (e.g., excess spread) and structural features (e.g., legal maturity) of the trust. As a result, we have a wider range of expected loss assumptions (ELGSD) than the 10% - 12% of the past early amortizations.

## Scenario II: Sponsor Does Not Close Accounts

In this scenario, we base our assumption about the level of credit enhancement that is consistent with a Aaa (sf) rating on the shortfalls in the event of stress that is not as severe as in Scenario I. In such a scenario, we usually assume that the expected shortfalls are close to zero, given the typical credit quality of the obligors, the sponsor's motivation to provide voluntary support (and general history of sponsor support), the ongoing charges on, and utility of, the accounts, and other structural protections. We may modify our assumption depending on transaction- or jurisdiction-specific factors.

## The Dependency Ratios: Changes in Enhancement That Offset Changes in a Sponsor's Credit Quality

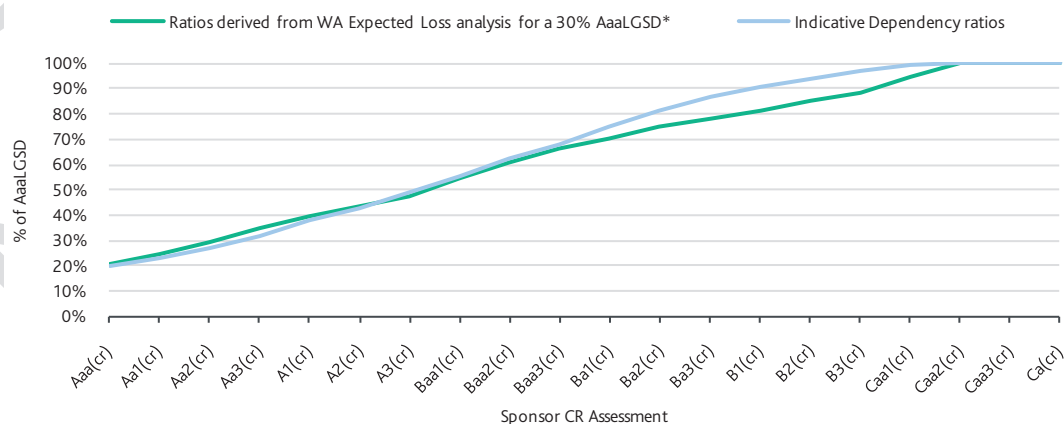
As we have noted, the Aaa LGSD is the minimum amount of credit enhancement that is consistent with a Aaa (sf) rating for a particular transaction if the weight in Scenario I equals one, the weight in Scenario II is zero, meaning the sponsor defaults.

For a transaction where a sponsor is upgraded and therefore after the upgrade has a lower probability of default, the expected loss and probability of default of the notes will be lower, because we will assign a lower weight to Scenario I and a higher weight to (the lower-shortfall) Scenario II. Therefore, the amount of credit enhancement prior to the upgrade will be higher than the new amount necessary to be consistent with a Aaa (sf) rating. In that case, the original credit enhancement could be lowered to the new minimum amount consistent with a Aaa (sf) rating (i.e., the new Aaa CE) for the note with the transaction sponsor with a higher credit quality.

The effect of a change in the sponsor credit quality on the note's Aaa CE varies according to the characteristics of the transaction. In addition, the effect differs depending on whether we are using the note's expected loss or probability of default as the basis of our calculations. For simplicity, we have calculated a set of average effects, as Exhibit 2A shows, based on both expected loss and probability of default across transactions that have varying characteristics.

EXHIBIT 2A

### Dependency Ratios as a Function of Sponsor Credit Quality



\* In this example, we derive the probability of default corresponding to the sponsor credit quality (expressed as its CR Assessment) from our idealized default table to weight the notes' expected loss in each of the two scenarios.

Source: Moody's Investors Service

## Subordinate Notes: Impact of Limited Credit Enhancement

If a note benefits from limited credit enhancement besides that provided by excess spread, its expected loss in both scenarios becomes the expected shortfall in each scenario divided by the size of the note.<sup>47</sup> We then calculate a weighted average of the two scenarios using the probability of sponsor default or financial distress<sup>48</sup> for Scenario I, and using the probability of sponsor not defaulting for Scenario II. Because the expected shortfall in Scenario II is usually close to zero, the note's expected loss correlates closely with the product of (1) the sponsor's probability of default or financial distress, multiplied by (2) the pool's expected loss upon sponsor default, divided by the amount of the note's size. For this reason, the rating on a subordinate note with little or no hard credit enhancement depends largely on the credit quality of the sponsor.

We adjust ratings downwards in the following scenarios:

- » if the pool expected loss (net of spread) in a non-sponsor default scenario is higher than zero
- » if we believe that the probability of sponsor support is weaker than usual
- » if we believe that the sponsor may close the accounts for reasons other than financial distress

<sup>47</sup> This is not the case when the security benefits from credit enhancement: the note's expected loss does not equal the pool's shortfall in all instances. Rather, it is a function of the probability attached to each shortfall scenario in which the credit enhancement is smaller than the shortfall.

<sup>48</sup> We typically adjust this probability by two notches to account for the probability of financial distress ahead of sponsor default.

## Appendix 3: Adjustments for Japanese and Korean Credit Card Transactions

### A. Japan

#### How Japanese credit card securitizations differ from those in the US, the UK, Canada and South Korea

There are several key structural and practical differences between Japanese credit card securitizations and those typically seen in the US, the UK, Canada and South Korea, which lead to methodological differences.

In Japanese transactions:

- » The sponsors are generally low-investment-grade (or unrated) finance companies offering a wide range of consumer or corporate finance products; the credit card business is often just one of several of the sponsor's businesses. As a result, the probability of the sponsor providing support to its programs in the event of a non-sponsor default will be weaker than in other markets.
- » Receivables pools can consist of specifically designated receivables generated by the accounts, rather than all of the receivables originated in the accounts. The sponsor can stop generating newly designated receivables while continuing to generate non-designated receivables. As a result, the trust balance could amortize even if the sponsor does not close the accounts.
- » The trust usually allocates principal collections among series pro rata, even if a controlled amortization is in progress.<sup>49</sup> As a result, the structure of credit card receivables transactions in Japan is more like that of a standard consumer loan transaction; notes can incur losses if the sponsor is not in default, if the credit enhancement does not cover such losses.
- » Generally, collateral pools do not contain convenience user accounts; if they do, their balance is usually funded by the seller's share and we give no credit to the related cash flow because they would be subject to commingling risk. Nor do we include interchange and fees in the yield.
- » Japanese cards allow for a number of different payment options for each purchase, including single payment, two payments, installment payments and revolving payments. We determine the contractual minimum payment amounts according to each originator's minimum payment schedule, usually based on the original balance or the outstanding balance at the end of the previous month. Exhibit 3A provides an example. The result is a payment rate that rises sharply towards the end of the product's life.

EXHIBIT 3A

#### Japanese Contractual Minimum Payments as a Function of Original Balance, in JPY

Cash Advances Credit Line	Payment Amount
0 - 200,000	10,000
300,000	20,000
400,000 - 500,000	30,000
800,000	40,000
1,000,000	50,000

Source: Moody's Investors Service

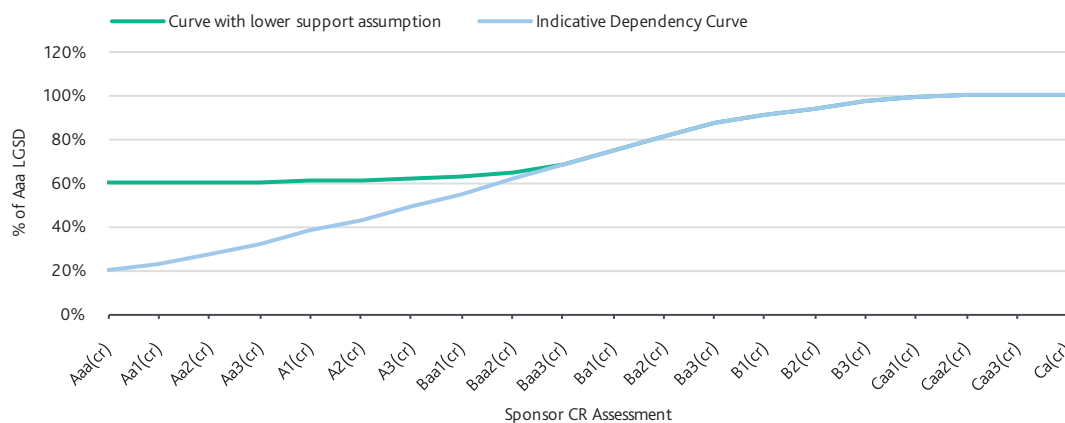
<sup>49</sup> Principal collections from the credit card receivables are allocated to the investors' portion and seller's portion pro-rata. Principal collections for the investors' portion are allocated among each series according to the outstanding balance (rather than notional balance) of each series pro-rata under a normal amortizing situation.

### Implications for the Dependency Curve

We typically adjust the dependency curve for Japanese financial companies to incorporate the lower likelihood that a Japanese sponsor will support its credit card transactions if pool performance deteriorates. This results in a flatter curve than in other credit card markets, with higher implied Aaa CE for sponsors with a rating of Baa or above.<sup>50</sup> Exhibit 3B shows the potential dependency curve based on a lower support assumption from the sponsor, and therefore a higher loss assumption for noteholders in scenarios in which the sponsor has not defaulted.

EXHIBIT 3B

#### Dependency Curve Assuming a Lower Likelihood of Support from Sponsor



Source: Moody's Investors Service

### Implications for Our Yield and Principal Payment Assumptions

#### Yield

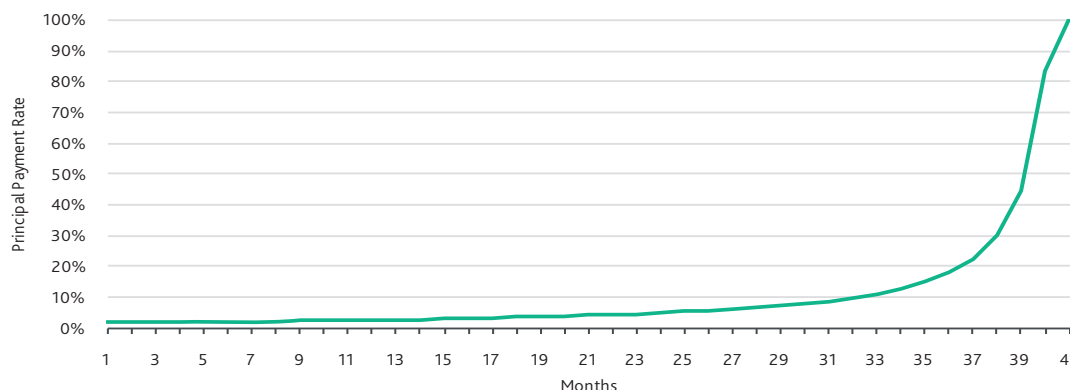
Because the securitization yield does not include interchange or fees, the difference between our yield assumption pre- and post-sponsor default in our Aaa LGSD scenario in Japan is smaller, the main residual difference being the haircut for delinquent receivables.

#### Principal Payments

In the US, we typically assume a material drop in the principal payment rate (close to the minimum contractual payment rate) in the event of sponsor default in our Aaa LGSD scenario. In contrast, in Japan we use the minimum contractual payment to model the principal payment rate. Exhibit 3C shows an example of assumed principal payment rate in our Aaa LGSD assumptions for a Japanese trust.

<sup>50</sup> In those cases where the Japanese originator is a bank or bank-like entity, we generally use its CR Assessment.

EXHIBIT 3C

**Example of Principal Payment Rate Profile in Japanese Credit Cards**

Source: Moody's Investors Service

**Over-paid interest risk**

Some consumer loans, including cash advances from credit cards in Japan, are subject to claims by borrowers for "overpaid interest" on the loans. Prior to 2010, such loans had interest rates that (1) exceeded maximums stipulated under the Interest Rate Restriction Law (IRRL); but (2) were less than the maximum rates established by the Law Concerning Regulation of Receiving of Capital, Deposits and Interest on Deposits (Capital Subscription Law, Law No. 195 of 1954 as amended).<sup>51, 52, 53</sup> If the court grants a claim for overpaid interest, or the originator voluntarily agrees to it, then the originator must calculate the cumulative overpaid interest amount and apply it as a principal payment, thus lowering the remaining principal. If the cumulative overpaid interest exceeds the current principal balance, the originators can refund the remaining overpaid interest amount. Furthermore, if the originator enters bankruptcy, the receiver can recalculate all loans with overpaid interest in the bankruptcy proceedings.

For securitized loans, if the principal balance has been recalculated because of overpaid interest, the originator typically must repurchase the loan from the securitization at full value (i.e., undiluted for overpaid interest reductions of principal). However, if the originator does not repurchase the loan (e.g., if the originator becomes bankrupt), this would dilute the securitization's principal (from the application of the loan's overpaid interest to its principal balance), and the originator would have to pay the remaining claim. Consequently, for transactions that contain loans subject to claims for overpaid interest, we account for the risk by incorporating into our analysis an assessment of the originator's credit quality, which indicates its ability to repurchase the loans as required by the transaction documents, and the likelihood of a recalculation of principal balance.

Our credit quality analysis also includes guidelines on the highest achievable rating on a transaction based on the originator's rating. The relationship between the originator's rating and the rating ceiling on the transaction depends on the type of lender; the relationship is generally more restrictive for originators that are consumer finance companies than for originators that are credit card (Shinpan) companies, because consumer finance companies typically have greater exposure to loans with overpaid interest risk, and tend to operate less-diversified businesses. Consequently, for consumer finance companies, we expect a higher

<sup>51</sup> Overpaid interest is sometimes referred to as "gray zone interest."

<sup>52</sup> Overpaid interest was abolished in December 2009 by an amendment to the Law Concerning the Regulation of Money Lending Business, which prohibits originators from lending at rates higher than the maximum rates stipulated by the IRRL.

<sup>53</sup> The potential amount of overpaid interest is the cumulative amount of interest paid over the life of the loan that exceeds the interest that would have been paid if the loan had, and amortized at, the IRRL rate.

correlation between claims for overpaid interest and financial distress on the part of the originator. We show the indicative relationships in Exhibit 3D below.

EXHIBIT 3D

### Relationships Between Ratings of Originators and Maximum Ratings Possible on Consumer Loan ABS with Exposure to Overpaid Interest Risk\*

Originator's Rating**	Maximum Rating Possible on Consumer Loan ABS	
	Shinpan/Credit Card Companies	Consumer Finance Companies***
Aa-A	Aaa	Aa
Baa	Aaa	A
Ba	Aa	Baa
B	A	Ba
Caa1 or lower	Baa	B

Notes: \* Originator's credit quality and industry are the only factors considered in these guidelines. (Ratings on actual deals may be lower than the level indicated here depending on the transaction's available credit enhancement). In addition, the risk of recalculation depends on regulatory conditions, and therefore may change if the regulatory environment changes.

\*\* If we do not rate an originator, we may use credit estimates in our assessment of the transaction. (See our cross-sector rating methodology on the usage of credit estimates in the Moody's Related Research section at the end of this report).

\*\*\*These guidelines apply to consumer finance companies, which are neither consolidated nor equity-method affiliates of a bank with high credit quality.

Source: Moody's Investors Service

Actual ratings may be higher than indicated by the rating guidelines if the transactions include additional positive factors, such as:

- >> additional credit enhancement that sufficiently covers the potential amount of dilution
- >> a short remaining transaction term (for example, less than six months)
- >> a lower concentration in the originator's business of the types of loans likely to be exposed to recalculation compared with other companies' businesses in the same industry, lowering the correlation between claims for overpaid interest and financial distress on the part of the originator

## B. South Korea

### How South Korean credit card securitizations differ from those in Japan, the US, the UK and Canada

South Korean credit card securitizations also differ from US, UK, Japanese and Canadian credit card securitizations in several key structural and practical ways.

Specifically, in South Korean transactions:

- >> Collateral pools consist of receivables generated by a mix of traditional credit card purchases, cash advances and installment purchases. Cash advance receivables typically constitute a much higher share of receivables in South Korea than in other regions. In South Korea, cash advance borrowers typically have lower credit profiles, and thus collateral pools of cash advance receivables have credit profiles that are riskier than collateral pools of other credit card products.
- >> Payments can be lump sum, installment or revolving. Moreover, for some operators managing transactions backed by cardholders with revolving credit limits, lump-sum accounts can convert to a revolving product if the cardholder does not pay the account down in full by the due date. Thus, payment rates are high in a normal scenario.

- » South Korean transaction structures typically include a minimum payment rate as an early amortization trigger. As a result, the payment rate in these transactions is typically relatively high at the start of early amortization, lowering the credit risk of the transactions.
- » Although charge-off rates are typically lower in South Korea than in the US, historical data show that they can rise quite sharply in an economic downturn. In particular, during the South Korean credit crisis of 2003-04, the proportion of delinquent and restructured loans soared to an annualized default rate of 31%.<sup>54</sup>
- » South Korean credit card operators also offer cash points to credit cardholders for the amount the cardholders spend with their cards, which they can use to settle their outstanding balance. These programs pose additional dilution risk.
- » The securitization yield in South Korean transactions does not usually include interchange.
- » South Korean sponsors are generally unrated finance companies. A backup servicer is normally in place at transaction closing.
- » Commingling risk tends to be minimal because cardholders generally make their payments directly and automatically to the transaction trust account through direct debit.
- » Transactions may incorporate cross-currency swaps (CCS) to offset currency transferability and convertibility risks in South Korea, as captured by its foreign currency country risk ceiling.

#### Implications for Our Charge-off, Yield and Principal Payment Assumptions

Some of the differences between South Korean credit card securitizations and those in the US, the UK, Canada and Japan have resulted in modifications to our modeling assumptions.

#### Charge-Offs

In choosing our Aaa LGSD scenario, we stress charge-off rates at a higher multiple in South Korea than in securitizations in those other countries, to reflect the potentially higher volatility of South Korean transactions. As a result, we assume that the peak charge-off rate will amount to five times (compared with four times in other markets) the long run steady-state expected charge-off rate following account closures. Higher payment rate assumptions that reflect the specific product mix in South Korea's credit card market mitigate the higher stress on charge-off rates.

#### Yield

Yield depends on the mix of lump sum, installment, cash-advance and revolving payment schedules.<sup>55</sup> The average yield tends to be lower than in other markets because (1) portfolios have a higher payment rate; and (2) the yield does not include interchange. When modeling the yield of South Korean credit card transactions, we consider the portfolio mix and the interest rate on the respective assets.

#### Principal Payment Rate

Like yield, the principal payment rate depends on the mix of payment types. In our Aaa LGSD scenario, we assume a stressed portfolio mix with a high concentration of installment, revolving and cash advance receivables.<sup>56</sup> We assume that the revolving and cash advance payment rates fall to a very low level, reflecting competitive pressures and deteriorating receivables performance might force institutions to lower

<sup>54</sup> See [Moody's Quarterly Evaluation of Korean Consumer Receivables-Backed Transactions – 2Q 2003](#).

<sup>55</sup> Yields tend to be highest for cash advances, to compensate for the higher credit risk.

<sup>56</sup> Given the lack of a minimum concentration limit on this product and the borrower's flexibility to switch to another repayment pattern.

the minimum payment rates. For installment receivables, we assume that borrowers will repay them according to their monthly schedule within 15 to 18 months.

### *Swap Risk*

Although the balance-guaranteed cross-currency swaps would pose both counterparty and termination risk if the credit card sponsor were to default, we believe that the following standard structural protections adequately address the risk: <sup>57</sup>

- » A backup servicer, typically a South Korean bank with long-term deposit rating of A2 and a short-term deposit rating of P-1, is in place at closing. The back-up servicer has a commitment to take on servicing within 60 days of sponsor default.
- » An independent calculation agent/transaction administrator or trustee will provide instructions to pay the swap counterparty during the two-month servicing transfer transition.
- » A reserve fund covers two months of swap payments at the bond issuer level in the event of a cash flow interruption at the trust level.
- » The trustee or transaction administrator controls the transaction accounts.
- » We base the swap amounts upon early amortization on the amount of cash available in the bond issuer account. As a result, the only obligation from the issuer to the swap counterparty in the event of sponsor default is to pass the minimum of (1) what is due to the swap counterparty and (2) whatever cash is available at the issuer level.

<sup>57</sup> For more information, see our cross-sector methodology for assessing counterparty risks in structured finance, including swap counterparty exposures. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

## Appendix 4: Modeling Cash Flows – An Early Amortization Scenario

The following exhibits show a specific stress scenario for a credit card transaction that uses a trust structure common in the US. Below, we list the key assumptions during the amortization period, assuming a full wind-down of the credit card portfolio after the sponsor closes the accounts.

### Trust Characteristics Assumptions

- » The sponsor CR Assessment is A2(cr).
- » The historical principal payment rate (PPR) range is 17%-19%.
- » The historical peak charge-off rate is 12%.
- » The yield range is 19%-21%, including 20% interchange and fees.
- » The annual servicing fee is 2%.
- » The weighted average note coupon is 1%.
- » Floating-rate assets are indexed to one reference rate and floating-rate liabilities are indexed to another, resulting in basis risk.
- » The number of months from expected maturity to legal final maturity is 30; we add a buffer of six months to account for the accumulation period and the possible timing of early amortization ahead of the expected maturity date.
- » The investors' share of the pool at the beginning of early amortization is 96%. The trust's documentation indicates that, during early amortization, the principal allocation is based on the initial bond balance divided by the trust balance (fixed numerator).<sup>58</sup> The finance charge allocation is pro rata.
- » We assume no dilution or set-off risk.
- » The documentation contains a mandatory sale provision at legal final maturity, resulting in a residual value haircut of approximately 60%.

### Maximum Stress Scenario Assumptions

In Exhibit 4A, we show the different assumptions for key variables during early amortization that we described in step 1 of this methodology:

- » Principal payment rate (PPR): The PPR vector is similar to the assumed principal prepayment rate pattern shown in Exhibit 5. The initial PPR is based on the trust's historical payment rates, which we adjust downwards for the assumed increase in charge-offs at the start of early amortization. We start with an initial assumption of 12%, corresponding to a 33% discount to the average historical range of 18%, followed by a sharp decline to 3%.
- » Yield: We assume an average yield of 20%. After removing interchange and fees and assuming a portion of delinquent users, we stress the yield down to 12.2%.
- » Charge-off rate: We calculate the charge-off rate at the beginning of the wind-down by assuming a break-even level of excess spread, using the following formula:

*The yield minus the servicing fee minus the coupon,*

*or*

$$20\% \text{ minus } 2\% \text{ minus } 1\% = 17\%$$

<sup>58</sup> This principal allocation feature is more beneficial for the repayment of investor interest than the fixed percentage principal allocation when the trust balance is declining, as the monthly principal allocation percentage with the fixed numerator increases progressively to 100%.

We assume a long-run steady-state charge-off rate of 12%, equal to the historical peak charge-off rate. As Exhibit 4A shows, the annualized charge-off rate increases rapidly from 17% to a peak of 48% by month eight and then decreases steadily over the following 16 months to 12%, where it remains.

- » Excess spread: We assume that excess spread after charge-offs is zero just before amortization starts. The starting coupon rate of 1% is the current coupon. We add a buffer of 3.5% (2.5% for basis risk and 1% for the change in weighted average spread as the senior notes amortize), to account for the mismatch in interest rates between assets and liabilities, leading to a coupon rate of 4.5%. We set the servicing fee at a stressed level of 2%, which remains constant over the amortization period.

EXHIBIT 4A

**Assumptions for Key Variables During Early Amortization\***

Month	Payment Rate	Charge-off Rate	Yield	Servicing Rate	Coupon	Excess Spread
0	12.00%	17.00%	20.00%	2.00%	1.00%	0.00%
1	9.75%	20.88%	12.16%	2.00%	4.50%	-15.22%
2	7.50%	24.75%	12.16%	2.00%	4.50%	-19.09%
3	5.25%	28.63%	12.16%	2.00%	4.50%	-22.97%
4	3.00%	32.50%	12.16%	2.00%	4.50%	-26.84%
5	3.00%	36.38%	12.16%	2.00%	4.50%	-30.72%
6	3.00%	40.25%	12.16%	2.00%	4.50%	-34.59%
7	3.00%	44.13%	12.16%	2.00%	4.50%	-38.47%
8	3.00%	48.00%	12.16%	2.00%	4.50%	-42.34%
9	3.00%	45.75%	12.16%	2.00%	4.50%	-40.09%
10	3.00%	43.50%	12.16%	2.00%	4.50%	-37.84%
11	3.00%	41.25%	12.16%	2.00%	4.50%	-35.59%
12	3.00%	39.00%	12.16%	2.00%	4.50%	-33.34%
13	3.00%	36.75%	12.16%	2.00%	4.50%	-31.09%
14	3.00%	34.50%	12.16%	2.00%	4.50%	-28.84%
15	3.00%	32.25%	12.16%	2.00%	4.50%	-26.59%
16	3.00%	30.00%	12.16%	2.00%	4.50%	-24.34%
17	3.00%	27.75%	12.16%	2.00%	4.50%	-22.09%
18	3.00%	25.50%	12.16%	2.00%	4.50%	-19.84%
19	3.00%	23.25%	12.16%	2.00%	4.50%	-17.59%
20	3.00%	21.00%	12.16%	2.00%	4.50%	-15.34%
21	3.00%	18.75%	12.16%	2.00%	4.50%	-13.09%
22	3.00%	16.50%	12.16%	2.00%	4.50%	-10.84%
23	3.00%	14.25%	12.16%	2.00%	4.50%	-8.59%
24	3.00%	12.00%	12.16%	2.00%	4.50%	-6.34%

\*From month 24 to the end of the amortization period, values are the same as in month 24.

Source: Moody's Investors Service

Exhibit 4B shows the results of the allocation of cash flows down to the last months of the amortization period, based on the assumptions in Exhibit 4A.

## EXHIBIT 4B

## Cash Flow During Early Amortization

Month	Trust Receivables Beginning of Period	Bond Balance Beginning of Period	Allocations		Distributions							
			Finance Charge Allocation	Principal Allocation	Principal	Finance Charges	Charge-offs	Servicing	Coupon Repayment	Short fall	Cumulative Shortfall	Bond Balance End of Period
1	1,041,667	1,000,000	96.0%	96.0%	97,500	10,133	17,396	1,667	3,750	(12,679)	(12,679)	885,104
2	921,984	885,104	96.0%	100.0%	69,149	8,969	18,255	1,475	3,319	(14,081)	(26,760)	797,700
3	833,819	797,700	95.7%	100.0%	43,775	8,083	19,028	1,330	2,991	(15,266)	(42,026)	734,896
33	164,313	145,748	88.7%	100.0%	4,929	1,477	1,457	243	547	(770)	(260,200)	139,361
34	157,741	139,361	88.3%	100.0%	4,732	1,412	1,394	232	523	(736)	(260,937)	133,235
35	151,431	133,235	88.0%	100.0%	4,543	1,350	1,332	222	500	(704)	(261,641)	127,360
36	145,374	127,360	87.6%	100.0%	4,361	1,291	1,274	212	478	(673)	(262,313)	121,725

Source: Moody's Investors Service

The shortfall column measures the deficiency of finance charge allocations to meet the deal expenses (charge-offs, servicing and investor coupon) for each month. The end-of-month principal tracks the remaining bond balance after deducting allocated principal payments and write-downs because of charge-offs.

To determine the second component of the Aaa LGSD, the residual balance loss, we deduct from the remaining bond balance at the end of month 36 the present value of the cash flows beyond the legal final maturity over a period of 18 months.<sup>59</sup> This calculation translates into roughly a 60% loss on the bond's residual balance of \$121,725. In this example, because we assume that the documentation forces a sale of the collateral before the legal final maturity, we use a less stressful haircut.

The sum of the cumulative shortfall amount, 26.2%, and the residual balance loss, 7.3% (both expressed as a percentage of the original principal balance of the bonds), at the end of the amortization period is the Aaa LGSD, in this case, 33.5%.

We calculate the necessary level of Aaa credit enhancement using the dependency ratio for the sponsor CR Assessment of 43% and the Aaa LGSD of 33.5%. In this case, the Aaa CE is 14.4%.

## Sensitivity Analysis

Exhibits 4C through 4J show the relationship between the various model inputs and the output credit enhancement. The cells in blue are the assumptions in the base case in Exhibits 4A and 4B.

## EXHIBIT 4C

## Impact of Sponsor CR Assessment on Aaa Credit Enhancement

Sponsor CR Assessment	Aa1(cr)	Aa3(cr)	A2(cr)	Baa1(cr)	Baa3(cr)
Aaa CE	7.7%	10.7%	14.4%	18.4%	22.8%

Sources Moody's Investor Services

<sup>59</sup> We cut the cash flow for the present value calculation at 54 months after the start of amortization; therefore, for a time from expected to legal final maturity of 36 months for this trust, we count 18 months of cash flows.

## EXHIBIT 4D

## Impact of Principal Payment Rate Assumptions on Aaa Credit Enhancement

Principal Payment Rate at the start of Early Amortization	10%	12%	14%	16%	18%
Aaa LGSD	34.6%	33.5%	32.4%	31.4%	30.3%
Aaa CE	14.9%	14.4%	13.9%	13.5%	13.0%

Source: Moody's Investors Service

## EXHIBIT 4E

## Impact of Principal Payment Rate Floor Assumptions on Aaa Credit Enhancement

Principal Payment Rate Floor	2%	3%	4%	5%
Aaa LGSD	41.3%	33.5%	28.1%	24.2%
Aaa CE	17.7%	14.4%	12.1%	10.4%

Source: Moody's Investors Service

## EXHIBIT 4F

## Impact of Charge-off Rate Assumptions on Aaa Credit Enhancement

Long-Run Charge-Off	9%	10%	11%	12%	13%	14%	15%
Aaa LGSD	27.5%	29.6%	31.6%	33.5%	35.3%	37.1%	38.8%
Aaa CE	11.8%	12.7%	13.6%	14.4%	15.2%	15.9%	16.7%

Source: Moody's Investors Service

## EXHIBIT 4G

## Impact of Yield Assumptions on Aaa Credit Enhancement

Gross Yield	15%	17.5%	20%	22.5%	25%
Aaa LGSD	36.5%	35.0%	33.5%	32.1%	30.6%
Aaa CE	15.7%	15.0%	14.4%	13.8%	13.2%

Note: The relationship between yield and credit enhancement is linear, holding all other variables constant. In this example, every 2.5 percentage point of change in the yield assumption affects credit enhancement by approximately 0.6%.

Source: Moody's Investors Service

## EXHIBIT 4H

## Impact of Weighted Average Note Coupon on Aaa Credit Enhancement

Weighted average note coupon	1%	2%	3%	4%	5%
Aaa LGSD	33.5%	34.5%	35.5%	36.4%	37.4%
Aaa CE	14.4%	14.8%	15.2%	15.7%	16.1%

Source: Moody's Investors Service

EXHIBIT 4I

**Impact of Legal Final Maturity on Aaa Credit Enhancement**

Months from expected to legal final maturity	18	24	30	36	42
Aaa LGSD	36.4%	34.7%	33.5%	32.7%	32.3%
Cumulative Shortfall up to legal final maturity	25.2%	25.8%	26.2%	26.6%	26.8%
Residual Balance Loss	11.2%	8.9%	7.3%	6.2%	5.5%
Aaa CE	15.7%	14.9%	14.4%	14.1%	13.9%

Source: Moody's Investors Service

The example in Exhibit 4I assumes a mandatory sale at legal final maturity and no credit to cash flow after 54 months in the present value calculation. If we take a conservative 80% market value impact of legal final maturity on Aaa CE because of expected difficulties accessing and selling the collateral, the impact is greater the longer the period of time to legal final maturity; however, it starts to decrease as the time to legal final maturity approaches four years, as Exhibit 4J shows.

EXHIBIT 4J

**Impact of Legal Final Maturity on Aaa Credit Enhancement for a Higher Market Value Haircut on the Residual Balance**

Months from expected to legal final maturity	18	24	30	36	42
Aaa LGSD	41.8%	38.5%	36.0%	34.1%	32.8%
Cumulative Shortfall up to legal final maturity	25.2%	25.8%	26.2%	26.6%	26.8%
Residual Balance Loss	16.6%	12.7%	9.7%	7.5%	5.7%
Aaa CE	18.0%	16.6%	15.5%	14.6%	14.1%

Source: Moody's Investors Service

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OUTDATED  
METHODOLOGY

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