Credit Analysis

Moody's Global Credit Policy

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Introducing Assumption Volatility Scores and Loss Sensitivities for Structured Finance Securities

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Executive Summary

Moody's recent Request for Comment on potential changes to the way we present structured finance ratings generated a large number of responses from a cross-section of market participants, including private sector and public sector respondents. Of particular note, fixed income investors, representing over U.S. $9 trillion in fixed income investments, submitted responses to the survey.

Most respondents preferred that structured securities continue to be rated on the same scale that is used to rate corporate bonds. To augment the ratings, nearly all respondents asked that we provide additional information about structured finance transactions. Given this predominant market sentiment as expressed through the survey responses, Moody's plans to continue using the familiar Aaa through C rating scale for structured securities. However, based on the equally strong desire expressed for additional information on the structured transactions that Moody's rates, we propose to introduce two additional risk measures: model assumption volatility scores and loss sensitivities.

These measures seek to address the two distinct questions asked by investors: 1) what is the degree of uncertainty around the assumptions that underlie our structured ratings; and 2) how sensitive are Moody's ratings to our collateral pool loss expectation assumptions?

Moody's Investors Service

Introducing Assumption Volatility Scores and Loss Sensitivities for Structured Finance Securities

1) *Assumption Volatility ("V")* scores rank transactions by the potential for significant rating changes owing to uncertainty around the assumptions and the modeling that underlie the ratings. The V score applies to the entirety of a transaction (rather than individual tranches) and is derived from an analysis of the following factors:

   - *Historical performance*: the historical rating volatility of similar transactions and similar underlying collateral pools;
   - *Data adequacy*: the quality and quantity of the data used to estimate key parameters and monitor transactions;
   - *Complexity & market value sensitivity*: the complexity of the structure and collateral and sensitivity to the market value of assets, which can increase collateral performance volatility; and
   - *Governance*: the alignment of interests among key parties to the transaction and, the reliability of the performance of the key parties and the legal structure of the transaction.

   These characteristics can be used to rank transactions by the assumption uncertainty that underlies the determination of their ratings. These same factors are, of course, already given substantial weight in our rating analysis: other things being equal, transactions with higher V scores require higher levels of credit enhancement or other structural sources of credit protection to support specific rating levels. Additional enhancements are sized so that transactions with higher V scores should have the same lifetime expected loss rates as similarly rated transactions with lower V scores. Consequently, given sufficient credit enhancement levels, even securities with high V scores can be rated Aaa.

   Notwithstanding the emphasis that Moody's ratings give to expected lifetime credit loss rates, when presented in stand-alone format, the Assumption Volatility Scores could help signal that subprime RMBS, ABS CDOs and market-value-based transactions have greater potential rating volatility than other similarly rated securities, including other types of structured finance instruments. Accordingly, we believe these scores might be predictive of relative rating volatility across asset classes.

2) *Loss Sensitivities* measure the number of notches that a Moody's-rated structured finance security would likely move downward if the underlying collateral pool's assumed loss expectations were to increase substantially. For this analysis, we "re-rate" different transactions assuming a uniform level of stress. Specifically, we assume that the expected loss rate on each transaction's underlying collateral pool rises from its original level to a level consistent with a 95th percentile loss level stress; i.e., expected losses rise to a level that would normally be assumed to occur with a one-in-twenty probability.[1]

   Loss Sensitivities quantify the rating of changes in collateral pool loss expectations across transactions. For transactions with multiple Aaa tranches, loss sensitivities measure the extent to which junior Aaa tranches are more vulnerable to downgrades than more senior Aaa's. Moreover, for investors who have their own views of the underlying collateral pool loss volatilities, loss sensitivities can facilitate their own assessments of rating transition risk across similarly rated transactions.

In the remainder of this document, we analyze the survey results in response to our previous Request for Comment, we define our Assumption Volatility scores and Loss Sensitivity measure, and we apply these metrics to prototypical prime and non-prime auto loan ABS, CLOs, and CDOs of RMBS.[2]

Towards the end of June, Moody's will present detailed analyses of these metrics in the context of prototypical transactions within the ABS vehicles sector, which is comprised of a variety of collateral types. The most significant are prime, mid-prime and subprime auto loans, dealer floorplan loans and auto leases. This analysis will illustrate the usefulness of these new concepts and detail our thinking around their determinants. In July, we will begin reporting these metrics for new transactions in the vehicles sector, and we will begin the process of rolling out similar research for new transactions in other sectors over the course of the 2nd half of 2008. We plan to incorporate market feedback from both this exposure draft and the forthcoming special comment on the vehicles sector on an ongoing as we finalize our approach to V scores and our Loss Sensitivity measures.

[1] We assume that the increase in loss expectations does not affect the expected timing of losses.
[2] "ABS" denotes asset-backed securities; "CLO" denotes collateralized loan obligations; "CDO" denotes collateralized debt obligations; and "RMBS" denotes residential mortgage-backed securities.

Survey Results on Differentiating Structured Finance from Corporate Ratings

In February 2008, Moody's published a Request for Comment (RFC), soliciting views on whether we should assign ratings on structured securities using a different or annotated symbol set rather than our familiar Aaa – C system. This initiative was in direct response to the growing debate in the market about the appropriateness of a single rating scale for both structured and non-structured securities, or, more generically, for ratings developed using primarily fundamental credit analysis techniques versus primarily model-driven statistical analysis. In particular, some market participants, including public authorities, have asked credit rating agencies to consider: (i) distinguishing ratings assigned to structured products from those assigned to corporate[3] and government-related issuers, and/or (ii) providing information content about financial performance attributes of structured products other than credit risk.

Moody's aim in publishing the RFC was to provoke a broad dialogue with market participants, one that would help ensure that we considered the full range of ratings-related alternatives and perspectives. Our RFC solicited feedback on five options for changing the rating scale.[4] Responses were received through submissions to an electronic survey (the largest group); emails sent to Moody's Credit Policy Group in-box; and comments made directly to us during meetings with market participants.

We received over 200 submissions from institutions representing in excess of $9 trillion in fixed income assets under management. About 3/4 of all respondents (both by number and assets under management) voted for no change to the rating scale currently used by Moody's for rating structured securities. A large majority of market participants believe that Moody's should make changes and enhancements to the analysis and transparency of our structured finance ratings. (For a detailed discussion of the survey results please see the Appendix.)

Moody's would like to thank the respondents for their thoughtful submissions. They have been important in guiding us in the formulation of our approach to the question of how to improve our structured finance ratings. We look forward to maintaining this active and productive dialogue with market participants in the future.

Understanding Why Volatility May Vary across Structured Finance Transactions

The key challenge in rating structured finance securities is assessing how much credit protection is sufficient to offset the potential variability in performance of a transaction's underlying collateral. Estimates of a collateral pool's loss distribution are, however, inevitably imprecise: in addition to the risk characterized by the collateral pool's assumed loss distribution, there is also uncertainty about the shape of the probability distribution itself.[5]

The level of uncertainty around the shape of the collateral pool's potential loss distribution depends upon a variety of factors, including the sector's historical volatility, the quality and quantity of the data used in the analysis, the complexity of the collateral and the transaction's structure, and the quality of its governance. These uncertainty factors form the basis of our volatility score.

The level of uncertainty that surrounds the assumptions used to model a collateral pool's loss distribution is, of course, an important factor considered in the rating process. Securities generally need varying levels of credit protection to achieve targeted ratings depending on the certainty of estimates of their underlying collateral pool's loss distributions.

Determining the amount of credit protection needed to offset the risk arising from such uncertainty is necessarily an imperfect exercise. When these elements of uncertainty are elevated, the credit enhancement

[3] For purposes of this paper, the term "corporate ratings" encompasses ratings on industrial, utility, and financial institution companies.
[4] See the Special Comment from Moody's Global Credit Policy Group, "Should Moody's Consider Differentiating Structured Finance and Corporate Ratings?," February 2008.
[5] The distinction between "risk" (uncertain realizations drawn from a known distribution) and "uncertainty" (uncertainty about the risk distribution itself) has a long tradition in the economics and statistics literature. For the classic reference, see Knight, Frank H., *Risk, Uncertainty, and Profit*, Houghton Mifflin, 1921.

levels needed to achieve targeted ratings are likely to be determined less precisely. As a consequence, transactions with high levels of assumption uncertainty are more likely to have enhancement levels that will be either higher or lower than that which will subsequently prove necessary to achieve the long-term average loss performance associated with each individual rating category.

As a result, even when credit enhancement levels are sized to produce the same average expected loss rates for all similarly rated structured finance securities, potential ratings volatility (upward or downward, except at the Aaa and C limits of our rating scale) may be higher in those sectors where there is greater uncertainty around the assumptions used to estimate the collateral pool's loss distribution.

Additional credit enhancement does not prevent transactions that are exposed to greater assumption uncertainty from experiencing greater rating volatility. In principle, greater rating volatility should take the form of a greater risk of both extreme negative and positive rating actions. Historically, however, sponsors of structured finance instruments have designed them so that the majority of the rated bonds receives high investment-grade ratings, making the boundary for rating upgrades (Aaa) a more proximate and frequent constraint than the boundary for downgrades (C).

Defining Assumption Volatility ("V") Scores

While ratings measure projected credit risk, volatility scores measure a transaction's exposure to factors that contribute to uncertainty in estimating credit risk and could give rise to ratings volatility. Assumption Volatility ("V") Scores are represented on a five-point scale:

Low Volatility

Low/Medium Volatility

Medium Volatility

Medium/High Volatility

High Volatility

The Assumption Volatility Score is determined based on an analysis of:

- *Historical performance*: the historical volatility of similar transactions and historical volatility of similar underlying collateral pools.
- *Data adequacy*: the quality and quantity of the data used to estimate key parameters and monitor transactions;
- *Complexity & market value sensitivity*: the complexity of the structure and collateral and sensitivity to the market value of assets, which can increase collateral performance volatility; and
- *Governance*: the alignment of interests among key parties to the transaction and the reliability of the performance of the key parties and the transaction's legal structure.

The last item, governance, covers a wide range of factors, including the alignment of incentives between key parties to a transaction and the interests of its senior debt investors, the reliability of the performance of key parties to the transaction (who may include a servicer, collateral manager, and trustee) or back-up arrangements in place, and the legal certainty of the responsibilities and rights of the key parties.[6]

An illustrative scorecard appears below. The composite V score is derived from a simple average of the four broad categories of assumption volatility, with each component scored on a simple 1 to 5 scale, where 1 is associated with a low level of assumption volatility and 5 is associated with high assumption volatility. Each of the four broad V factors is analyzed based on 2 or 3 subcomponents. The broad component V score is given by the maximum score on any of the subcomponents (e.g. the broad risk category is scored as a "high" if any subcomponent within the broad risk category is scored as "high").

[6] Performance reliability depends on the inherent capabilities of the key parties and/or the strength of agreements to transfer responsibilities to others if need arises.

Breakdown of the Assumption Volatility Score Assigned to Transaction XYZ

	Contribution to V				
	Low	Low/ Medium	Medium	Medium/ High	High
Historical Performance			○		
Historical variability of sector collateral performance over time			●		
Historical downgrade rates within the sector		●			
Data Adequacy		○			
Historical data for the asset class (sector)		●			
Historical data for sponsor, originator, & collateral manager	●				
Characteristics of the collateral pool, pre- and post-closing		●			
Complexity & Market Value Sensitivity	○				
Complexity of structure and collateral	●				
Market value sensitivity	●				
Governance		○			
Incentive alignment among key parties & sr. tranche investors		●			
Performance reliability of key parties to the transaction	●				
Structural integrity (legal, regulatory, other)	●				
Composite Assumption Volatility Score = V = Low/Medium					

Note: ○ denotes broad category score, and ● denotes narrow category score.

Applying the Volatility Scorecard to Some Prototypical Transactions

The usefulness of the scorecard as a basis for measuring potential ratings volatility can best be illustrated by example. Consider the following four types of transactions: bank-issued prime auto loan ABS, specialty finance company-issued nonprime (or mid-prime) auto loan ABS, CLOs, and CDOs of RMBS.[7] The following table reveals that prototypical transactions in the four sectors would likely score very differently along the dimensions captured in the volatility scorecard.

[7] "ABS" denotes asset-backed securities; "CLO" denotes collateralized loan obligations; "CDO" denotes collateralized debt obligations; and "RMBS" denotes residential mortgage-backed securities.

Breakdown of Assumption Volatility Scores for Four Prototypical Transactions

	Assumption Volatility Scores for:			
	Prime Bank Auto ABS	Nonprime Specialty Finance Auto ABS	Cash Flow Managed CLO	CDO of Subprime RMBS
Historical Performance	Low	Medium	Medium	High
Variability of sector's collateral performance	Low	Medium	Medium	High
Historical Baa downgrade rates for the sector	Low	Medium	Low	High
Data Adequacy	Low	Medium	Medium	High
Historical data for the asset class/sector	Low	Low/Medium	Low/Medium	High
Historical data for issuer (sponsor, originator, collateral manager)	Low	Low/Medium	Medium	Medium/High
Characteristics of the collateral pool pre- and post-closing	Low	Medium	Low/Medium	Medium/High
Complexity & Market Value Sensitivity	Low	Low	Medium	Medium/High
Complexity of structure & collateral	Low	Low	Medium	Medium/High
Market value sensitivity	Low	Low	Low	Medium
Governance	Low	Medium	Medium	High
Alignment of incentives between key parties and senior tranche investors	Low	Medium	Medium	High
Performance reliability of key parties (servicer, collateral manager, trustee, other)	Low	Medium	Low/Medium	Medium
Structural integrity (legal, regulatory, other)	Low	Low	Medium	Medium/High
Composite Score	Low	Medium	Medium	High

Bank-Issued Prime Auto Loan ABS

The prototypical bank-issued prime auto ABS securitization is backed by a pool of auto loans which have been originated by a bank to high quality borrowers. Such a transaction would score as low risk against all of the V score factors.[8]

- *Historical performance*: The historical volatility of bank-issued prime auto ABS collateral performance has been very low, with very few rating downgrades.
- *Data adequacy*: The historical data on prime auto loan sector performance goes back at least to the late 1980s, and many bank sponsors maintain performance data with broadly consistent underwriting practices for their own originations for a long period of time. The data provided to rating agencies are believed to be sufficient to differentiate variations in credit risk from one auto loan pool to another and to monitor their performance.[9]
- *Complexity and market value sensitivity*: The securitization structures are generally quite simple and the drivers of their performance are transparent to investors and the analysts that assign and monitor the credit ratings. Collateral performance is not materially affected by the market value of assets.
- *Governance*: The incentives of auto ABS bank sponsors are well aligned with those of senior debt investors. The sponsors generally choose to securitize in order to shrink their balance sheets and to reduce their regulatory capital requirements. Rather than seeking to arbitrage the maximum amount of profit out of every securitization, the sector's sponsors have a strong desire to maintain long-term access to the securitization market and would be willing, if able, to support troubled transactions under a variety of

[8] Auto loan ABS issued by the financial captives of automobile manufacturers would generally share most of the volatility characteristics of bank-issued paper, including incentives well-aligned with senior investors because they have a strong incentive to maintain long-term access to the ABS market to support their core business. If, however, the auto manufacturer itself faces material risk of bankruptcy, its securitization may possess more substantial volatility risk elements.

[9] It should be noted, however, that the auto loan market has not yet been tested by a very deep and broad economic recession, perhaps coupled with the failure of one of the major automobile manufacturers.

circumstances.[10] The servicers of bank-sponsored auto ABS generally are financially strong and highly experienced.

Specialty Finance Company-Issued Nonprime Auto Loan ABS

The prototypical nonprime auto ABS securitization is backed by a pool of auto loans to less-than-prime quality borrowers that have been originated by an unrated or speculative-grade rated specialty finance company. Such a transaction would score as low/medium or medium risk against most of the V score factors.

- *Historical performance*: The historical volatility of nonprime auto ABS collateral performance has been average, and there have historically been some downgrades of Baa tranches, with a downgrade rate similar to that of Baa corporates.
- *Data adequacy*: The historical data on nonprime auto loan sector performance goes back to the mid-1990s, and some specialty finance companies have maintained performance data with broadly consistent underwriting practices for their own originations for almost as long a period of time. The data provided to rating agencies are believed to be sufficient to differentiate variations in credit risk from one auto loan pool to another and to monitor their performance. In the late 1990s, a number of nonprime auto loan ABS seller/servicers failed, but their structured transactions continued to perform within expectations.
- *Complexity & market value sensitivity*: The securitization structures are generally quite simple and the drivers of their performance are transparent to investors and the analysts that assign and monitor the credit ratings. Collateral performance is not materially affected by the market value of assets.
- *Governance*: The incentives of the special finance company seller/servicer are generally well aligned with those of senior debt investors. The sponsors generally choose to securitize in order to fund their ongoing loan production. Rather than seeking to arbitrage the maximum amount of profit out of every securitization, the sponsors in the sector that have been active for many years have a strong desire to maintain long-term access to the securitization market and might be willing, if able, to support troubled transactions under a variety of circumstances. The servicers of finance company nonprime auto ABS are in some cases highly experienced, however, they are generally not financially strong and servicing could prove challenging to transfer if needed.

Collateralized Loan Obligations

The prototypical CLO securitization is backed by a pool of bank originated loans to speculative-grade corporate borrowers. Such a transaction would score as low/medium or medium risk against most of the V score factors.

- *Historical performance*: While the history of the rated market is fairly limited, the long-term performance record of bank-originated commercial & industrial loans goes back many years and reveals a "medium" level of volatility, with credit losses rising in recessions to double or more of its long-term expectation. To date, the downgrade rates of Baa CLO tranches have been low.
- *Data adequacy*: Data on leveraged loan performance goes back at least to the mid-1990s and data on C&I loans in general goes back many decades. While the covenants behind leveraged loans have changed modestly over time, the historical data remains indicative of the range of collateral performance one should expect during recessions of modest depth. The performance of rated leveraged loans has not been tested by an extremely deep recession. Although CLO collateral is not always in place at the time of origination because of the typical use of a ramp-up period and some trading often is permitted during the life of the transaction, the transaction's documentation requires collateral managers to purchase new collateral with predictable characteristics. As a result, investors and Moody's analysts are provided with a fairly high level of transparency with respect to the underlying collateral.

[10] A number of additional factors help explain why incentives are better aligned in bank-sponsored auto loan ABS than, say, in the subprime RMBS transactions. Prime bank auto loans are generally originated by the banks, themselves, rather than by brokers, compared to subprime RMBS. Moreover, most bank auto loan ABS issuers have multiple lines of business and are less dependent on strong earnings from their auto loan securitizations, compared to the many finance companies that specialized in subprime mortgage originations and securitizations.

- *Complexity & market value sensitivity*: The securitization structures generally are simple and the drivers of their performance are transparent to investors and the analysts that assign and monitor the credit ratings. Triggers based on collateral performance play an important role in limiting collateral manager discretion when performance starts to deteriorate. For a typical cash flow CLO, collateral performance is not materially affected by the market value of assets.
- *Governance*: The incentives of the sponsor and collateral managers of CLOs are closely aligned with the owners of the securitization's equity tranche; however, a variety of structural elements serve to encourage these players to perform their functions in ways which benefit senior tranche investors. In addition, many sponsors and collateral managers have been active in this market for many years, have strong track records, and have a strong incentive to maintain strong long-term reputations for profitable transactions.

CDOs of Subprime RMBS

The prototypical CDO of RMBS transaction in the market today is backed by a pool of mezzanine tranches from subprime RMBS securitizations issued in 2006 and 2007 and has a simple senior/junior liability structure.[11] The transaction is typically put together by a hedge fund or an investment fund sponsored by a securities firm.

- *Historical performance*: The historical performance of the collateral – tranches of subprime RMBS and tranches of CDOs of ABS – has been quite volatile, showing some of the highest sectoral downgrade rates. Baa tranches of CDOs of RMBS have experienced a very high rate of downgrades.
- *Data adequacy*: The historical data on the specific types of subprime mortgages backing RMBS tranches had been limited until recently, both because types of loans prevalent in the subprime market changed rapidly over time and because the performance of subprime loans had never been tested in an environment in which home prices were declining nationwide. With respect to the characteristics of specific mortgage loan pools, data quality represents a considerable source of assumption risk with regard to the borrowers' financial condition (debt-to-income, credit history, etc.), the borrowers' intended use of the property, and the borrowers' cumulative loan-to-value ratio.
- *Complexity and market value sensitivity*: The CDO of RMBS securitization structures exhibit considerable complexity in cash flow characteristics and waterfall structures and can be opaque in the sense that the transaction's ultimate performance depends on the performance of perhaps 100 other securitizations in a highly non-linear fashion and whose tail properties are not well known. In addition, some transactions contain "event of default" triggers that can prompt rapid liquidations of the underlying collateral at prevailing market prices.
- *Governance*: The incentives of the CDO sponsors, equity holders, and collateral managers can be considerably misaligned with those of senior debt investors. The primary motives for many sponsors are to earn fees on the transaction flow or to earn "arbitrage" profits on their equity positions. Equity investments can sometimes be recouped in relatively short periods of time. For these reasons, CDO sponsors and their collateral managers have an incentive to select the highest yielding and most highly correlated assets for inclusion in their CDOs. A variety of explicit collateral selection criteria and performance triggers mitigate the impact of these adverse incentives.

[11] The senior-most ratings of the few RMBS CDOs issued in 2008 are generally rated below investment grade. CDOs of RMBS transactions issued in 2006 and 2007 typically had more complex liability structures, included mezzanine CDO tranches as well as RMBS tranches as part of their underlying collateral pools, and were issued with Aaa senior- tranche ratings.

Defining Loss Sensitivity Analysis

Market participants have also requested additional information about the sensitivity of Moody's ratings to parameter assumptions made during the rating process. In response, Moody's plans to provide expanded analyses of the sensitivity of the ratings we assign to changes in our parameter assumptions. In order to provide a tool that facilitates comparison across sectors, we plan to introduce a loss sensitivity metric, discussed below, that can be applied to most Aaa-rated structured finance securities on a consistent basis and can be expanded to cover other rated tranches as well.

Loss Sensitivities measure the likely rating impact on the tranche of a given transaction that would result from a change in the expected loss rate on the transaction's underlying collateral pool. We focus on the expected loss (EL) rates of the underlying collateral pool because this parameter is the single most important component of many structured finance rating methodologies. The analysis assumes that the deal has not aged and measures the impact on the initial rating of a tranche of a significant increase in the collateral pool EL assumption.[12] Specifically, we increase the EL assumption to a level that would be associated with the 95th percentile – or a one-time in twenty – loss level from the original pool loss distribution.[13] We stress the assumed EL rate to the same percentile loss level – rather than, say, a simple doubling of the EL rate – across all transactions because the likelihood of observing a doubling in EL is greater (and hence a less stressful test) for some asset classes than for others, whereas a 95th percentile event necessarily has a consistent likelihood.

The focus on the 95th percentile is convenient because it represents a seriously stressed but not extraordinarily rare scenario – i.e., the chance of pool losses exceeding this loss level is only 5%, or one out of twenty.[14] Other loss levels are either insufficiently stressful or overly stressful, yielding less differentiation across transactions.

Applying Loss Sensitivity Analysis to Some Prototypical Transactions

The table below indicates the original and stressed collateral pool expected loss rates associated with prototypical transactions from four different structured finance sectors and the negative change in ratings that would result if the expected pool loss assumptions were to increase substantially. The four examples cover a wide spectrum of credit quality for the underlying asset pools, ranging from very high quality in the case of prime auto securitizations (EL at only 1.3%) to lower quality assets in the case of CLOs (EL at 12.8%).

Loss Sensitivities:
Rating Impacts from Changing Collateral Pool Loss Expectations

Asset Class	Original EL	Stressed EL (95th percentile level on the original distribution)	Super Senior Aaa	Junior Aaa	Aa	A	Baa
CDO of RMBS	3.3%	15.5%	1	6 4*	7	7	6
CLO	12.8%	17.1%	2		7	8	7
Prime Auto	1.3%	3.3%	2		NA	8	NA
Nonprime Auto	4.0%	8.0%	3		10	11	NA

** For the purpose of this illustration, the mezzanine RMBS CDO transaction structure has been created hypothetically assuming the current RMBS CDO modeling parameters that Moody's would use for rating any new RMBS CDO transaction. As per many existing RMBS CDOs, we created multiple Aaa tranches for this structure. If we combine the two Aaa tranches shown in the table, the rating impact is 4 notches.*

[12] Changing the EL assumption typically results in a change of the entire loss distribution including its mean, standard deviation and tail probabilities.
[13] EL scenario analysis is different from loss scenario analysis. Choosing a new EL for the collateral pool retains uncertainty and results in a new loss distribution for the collateral pool, under which new tranche ratings can be determined. A deterministic collateral pool loss scenario analysis removes risk and uncertainty and evaluates the resulting default and loss performance of tranches under the specified collateral pool loss scenario.
[14] For the purpose of determining the percentile level when analyzing loss sensitivities, we assume that the initial general model assumptions are correct. V scores separately addresses issues related to general model assumptions.

The table illustrates the following:

- Although expected loss levels vary greatly across the four examples, the expected impacts on ratings (from substantially higher expected loss rates) would be fairly similar because the stress scenarios share the same small likelihood of occurrence under their respective original loss distributions. In particular, tranches rated Aaa under the original EL assumption largely remain highly rated (at Aa or single-A) under the stressed EL assumptions.[15] Tranches rated below Aaa under the original EL assumptions, however, likely would fall into below investment-grade under the stressed EL assumptions.
- With different ELs and loss distributions, the distance between the EL and the 95th percentile loss level based on the original distribution varies substantially across asset classes. For CLOs, the expected variance of collateral performance is expected to be relatively low, so that losses equal to 17.1% of the collateral pool (relative to a 12.3% mean loss rate) are viewed as a 95th percentile event. In contrast, RMBS CDO collateral losses are expected to be relatively high, so that losses equal to 15.5% of the collateral pool (relative to a 3.3% mean loss rate) are viewed as a 95th percentile event. The percentage changes in EL, relative to the original ELs, generally are smaller for asset classes with higher original ELs than those with lower original ELs.
- As evident in the RMBS CDO example, junior tranches rated Aaa have more sensitivity than super senior Aaa's. This is to be expected because super senior Aaa's have more credit enhancement as protection against additional collateral pool losses and they have lower expected loss rates than junior Aaa's.
- Even when the two Aaa RMBS CDO tranches are combined to form a single tranche, the Aaa-rated tranche's rating appears more sensitive to changes in its collateral pool's EL assumption than the Aaa-rated tranches from the CLO and prime auto ABS deals.
- The non-Aaa tranches from the nonprime auto deal experience more severe rating sensitivity than those from the other deals.

Finally, we note that this loss sensitivity analysis does not reveal why rating impacts are different across asset classes. Possible reasons may include differences in asset risk profiles, deal structures, and modeling approaches. Instead, loss sensitivity analysis reveals how tranche ratings might migrate if the EL assumption were to be substantially revised, holding everything else constant.

Next Steps

Towards the end of June, Moody's will present detailed analyses of these metrics in the context of prototypical transactions within the ABS vehicles sector, which is comprised of a variety of collateral types. The most significant are prime, mid-prime and subprime auto loans, dealer floorplan loans and auto leases. This analysis will illustrate the usefulness of these new concepts and detail our thinking around their determinants. In July, we will begin reporting these metrics for new transactions in the vehicles sector, and we will begin the process of rolling out similar research for new transactions in other sectors over the course of the 2nd half of 2008. We plan to incorporate market feedback from both this exposure draft and the forthcoming special comment on the vehicles sector on an ongoing as we finalize our approach to V scores and our Loss Sensitivity measures.

Moody's looks forward to discussing the usefulness of these concepts with market participants in the coming weeks. Comments are always welcome at ***cpc@moodys.com***.

[15] Note that some Aaa-rated tranches of CDOs of RMBS issued in 2006 and 2007 have experienced significantly greater downgrades than the rating changes indicated in this table. The collateral performance in those existing transactions has been substantially worse than the performance we would have associated with the 95th percentile at the time the transactions were originally rated. The assumptions we now employ when rating CDOs imply a greater probability to the possibility that collateral performance might again turn out to be so poor.

Appendix: Details of the Survey Results

The RFC solicited market feedback on five options.

1. Move to a completely new rating scale for structured securities, for example, numerical rankings of 1-21.
2. Add a modifier to all structured ratings utilizing the existing rating scale, e.g., Aaa.sf, thereby designating the issue as a structured financing.
3. Attach a suffix to the existing rating scale for structured ratings that contains additional information. For example, Aaa.v1, Aaa.v2, etc.
4. Use the existing rating scale for structured securities, and put additional analytical information in a separate scale that would exist in a separate data field. For example, an issue could have a "Aaa rating, with a ratings volatility indicator of v1". The added field would be analogous to our existing ratings outlooks and watchlists.
5. Make no changes to the rating scale, but provide additional information and commentary through written research.

Figure 1 shows the breakdown of all responses to the rating scale options. For ease of discussion we grouped together Options 1, 2, and 3 under the heading "new scale", while Options 4 and 5 represent "no change". The majority of responses (52%) were for Option 5, i.e., that Moody's should make no change in the rating scale, but that we should publish additional commentary and information. This, together with Option 4, constitute the 73% vote for "no change"

Figure 1: Survey Results for All Respondents

	New Scale			No Change	
	1	2	3	4	5
	Totally new SF scale	Modified scale (Aaa.sf)	Modified scale (Aaa.v1, Aaa.v2)	Existing scale with additional info on a separate scale	No change, publish more info
All responses	11%	5%	11%	21%	52%
New Scale vs. No change		**27%**		**73%**	

Figure 2 focuses on buyside responses. The percentage of investors in favor of no change in the current structured finance rating scale was the same as for all respondents (73%). European investors were more in favor of maintaining the status quo than their U.S. and Canadian counterparts. Fifty-eight percent of submissions came from North America, compared to 39% from Continental Europe and the United Kingdom. The rest were from Asia and South America.

Figure 2: Survey Responses, Buyside Only by Region

	New Scale			No Change	
	1	2	1	2	1
	Totally new SF scale	Modified scale (Aaa.sf)	Modified scale (Aaa.v1, Aaa.v2)	Existing scale with additional info on a separate scale	No change, publish more info
All Buyside Responses	13%	4%	10%	20%	53%
Change vs. No Change		**27%**		**73%**	
Americas	14%	7%	10%	16%	55%
Change vs. No Change		**29%**		**71%**	
Europe	12%	0%	10%	29%	45%
Change vs. No Change		**22%**		**78%**	

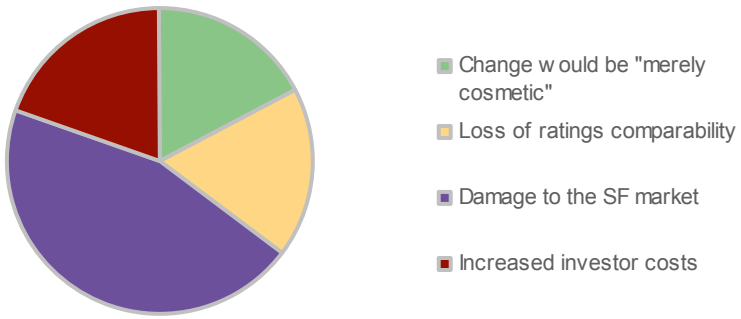
Introducing Assumption Volatility Scores and Loss Sensitivities for Structured Finance Securities

The percentage for "no change" was approximately the same when the responses were weighed by fixed income assets under management. This means that investor sentiment on the structured finance rating scale question was generally the same for the big and small players. Note too that the U.S.$ 9 trillion figure for aggregate assets under management is almost certainly an undercount: for many large investors we only had approximate asset figures, and took a conservative approach to estimating the scale of their managed funds. The U.S.$ 9 trillion figure represents approximately 25% of global public fixed income assets (excluding money market instruments and most floating rate notes).[16]

Finally, the buyside made up the majority of responses, with the balance coming from the sellside, corporations, trade associations, and regulators.

The submissions contained explanations of the respondents' votes and suggestions about what Moody's can do to improve our structured finance ratings. While these covered a range of topics, many of the comments followed common themes. In **Figure 3** we summarize the more frequently observed responses. In terms of reasons for *not* switching to a new rating scale, the dominant response was concern that a different scale would hurt, rather than help, the structured finance market. This is followed by the related issue of the costs investors would incur if a new scale were introduced.

Figure 3: Breakdown of Common Reasons for Not Changing the SF Rating Scale



In terms of costs and market damage, many investors cited how deeply embedded ratings are in their systems, processes, and investment guidelines. For example, ratings are referenced in a number of investment fund prospectuses and guidelines, as well as in regulation and legislation. This use of ratings governs the types of securities that institutional investors may hold. Incorporating a new rating scale into such rules and regulations would be a slow, cumbersome and potentially costly process. Failure to change these governance rules to reflect a new rating scale could force a large number of investors to sell structured securities, with potentially inadvertent but negative consequences for bond valuations and market stability.[17]

Finally, a number of respondents warned against the risk of cumulative negative effect, noting that a change to Moody's scale now could cause substantial upheaval at a time when credit markets are already fragile.

[16] The estimate of the global public fixed income market is calculated by combining the value of securities in the Lehman Brothers Global Family of Indices Multiverse Index with the ex-index volume of structured finance issues rated by Moody's.

[17] These concerns are magnified by the sheer size of the structured finance market. According to Moody's data, rated structured deals total $14.3 trillion (on a book value basis). This equates to around 40% of public fixed income assets.

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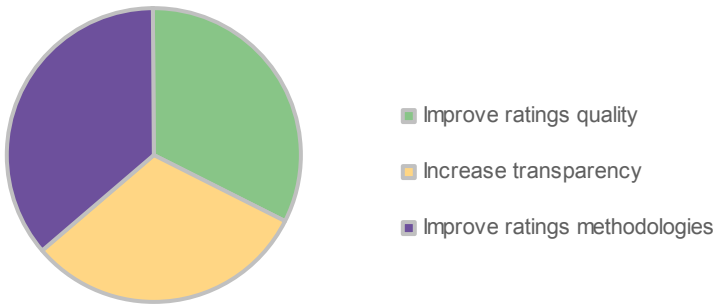
The most frequently offered suggestions as to what Moody's should do next are shown in **Figure 4**. "Improving ratings quality" is always a goal of Moody's ratings management. We agree with these principal recommendations, and a number of initiatives are already underway to increase transparency and enhance our ratings methodologies and processes.

Figure 4: What should Moody's do to improve its SF Ratings?



Moody's Related Research

Special Comment:

- Should Moody's Consider Differentiating Structured Finance and Corporate Ratings?, February 2008 (107318)

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