MOODY'S INVESTORS SERVICE

RATING METHODOLOGY

Rating Methodology

Municipal and Sub-Sovereign CDOs

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This rating methodology replaces the *Municipal and Sub-Sovereign CDOs Methodology* published in April 2020. In this update, we have edited the "Rating approach" section to provide more information on our modeling approach, revised the methodology's title, and made editorial updates to enhance consistency and readability. The updates do not change our methodological approach.

Scope

This methodology applies to cash and synthetic municipal collateralized debt obligations (muni CDOs) globally. We use this methodology to rate diversified pools of municipal debt obligations which may also include non-standard, not-for-profit municipal debt.[1] We may make adjustments for non-US transactions to account for specific circumstances when applicable.

[1] For more information, see our methodology for rating US state revolving fund debt and US municipal pool program debt. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

Rating approach

We base our ratings of muni CDO securities on the expected loss (EL) risk posed to investors. The EL for each security depends on the characteristics of the collateral and the structure of the transaction. The nature of the collateral determines the key modeling inputs, such as default probability, asset correlation, recovery rate or the weighted average life (WAL) of the assets. The structure of the transaction determines the distribution of available cash to the transaction's liability tranches. We use a Monte Carlo simulation model called CDOROM™ to derive default or loss distributions for asset portfolios when we rate muni CDO transactions.

In applying this methodology, we consider, where appropriate, all factors that we deem relevant to our analysis. Under certain circumstances, we may also use additional stress assumptions. For example, we may stress our correlation assumptions for transactions with significant concentrations in one sector or region, or with exposures to assets that have additional support from the state or central government. If the collateral in these transactions is composed of non-standard, not-for-profit municipal debt, we may adjust the default probability and correlation assumptions, and we may apply additional stresses to our recovery assumptions.

The model outputs derived by our quantitative modeling are important considerations in our rating committee process. However, the ratings assigned by the rating committee incorporate a variety of qualitative factors and may differ from the model output.

Asset-level analysis and related modeling

Model inputs

Recovery rate

We divide our universe of public sectors (see Appendix A) into two broad groups for our recovery assumptions, as we detail in Appendix B.

The first group, governmental issuers, has a mean recovery assumption of 65%. Governmental issuers include states, local governments, municipal-owned water and sewer enterprises, and public higher education. The second group, competitive enterprises, has a mean recovery assumption of 50%, which is also consistent with the mean recovery assumption for corporate issuers. This second group includes private higher education and healthcare issuers, whose operating and market risks are generally more comparable to corporate sectors.

To account for the uncertainty inherent in mean recovery rate assumptions, we incorporate a standard deviation in our model. This volatility measure varies by sector. Using CDOROM, we simulate the recovery rate for each defaulted asset assuming a beta distribution, with the mean and standard deviation values we set out in Appendix B.[2]

Default probability

We infer the default probability of a collateral instrument from its mean recovery rate, rating and average life. We calculate the default probability according to the formula shown in Exhibit 1:

[2] Consistent with our treatment of corporate assets, we also assume that recovery rates for municipal instruments are correlated. We apply a 10% correlation for muni CDOs in CDOROM, the same correlation we use for corporate pools.

Exhibit 1

Default probability

$$DP = EL/(1\text{-}RR)$$

Where:

» *DP* : default probability

» *EL*: expected loss

» *RR* : mean recovery rate

Source: Moody's Investors Service

We derive the collateral instrument's EL from its current rating and average life, based on Moody's Idealized Expected Loss table.[3] We determine the RR as described above in the "Recovery rate" section.

Asset correlation

Low-, medium- and high-correlation regimes

Using CDOROM, we model correlated defaults based on assumed asset correlations for each pair of collateral assets. Our asset correlation assumptions reflect our categorization of municipal assets into the sectors we define in Appendix A.

We use the same inter- and intra-sector correlation framework and parameter values for muni CDOs that we apply to corporate obligors. As such, we assume the geographical impact of all municipal sectors is "local" as opposed to "global," except for those assets in a municipal pool that we group into corporate sectors, for which we assume the geographical impact classification of the corporate sector.

Consistent with our modeling approach for corporate synthetic obligations (CSOs),[4] we adopt a stochastic framework for inter-sector asset correlation to capture extreme tail events. Specifically, we assume low-, medium- and high-correlation environments with the corresponding probabilities in Exhibit 2.

Exhibit 2

Inter-sector asset correlations scenarios

	Low correlation	Medium correlation	High correlation
Investment-grade assets	5%	10%	20%
Ba-rated assets	3%	9%	12%
B-rated assets	3%	7%	10%
Probability	70%	20%	10%

Source: Moody's Investors Service

For two investment-grade assets in the US in different sectors (for example, one in the airport and port special facility sector and the other in the mass transit sector), we consider three correlations scenarios: 5% (with a 70% probability of occurrence), 10% (with a 20% probability of occurrence) and 20% (with a 10% probability of occurrence). In contrast, for two investment-grade assets in the US in the same sector (parking enterprise, for example), we assume asset correlations of 17%, 22% and 32% with the same probabilities of occurrence as above. The correlation values reflect a 12% correlation add-on for intra-sector correlation.

For transactions backed by US municipal assets, to capture the additional contagion risk for sectors whose municipal assets are in the same state, we consider a 10% correlation add-on for two municipal assets in the same state (see Appendix D). Furthermore, if two

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

[4] For more information, see our methodology for rating corporate synthetic collateralized debt obligations. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

municipal assets are in the same county, we apply an additional 10% correlation add-on to capture financial and economic dependency between assets within the same county.[5] This additional correlation applies for all US municipal sectors.

For transactions backed by non-US municipal assets, we may apply other correlations to account for specific circumstances on a case-by-case basis. We also analyze assets to consider any additional support from the state or central government. In particular, for countries where municipal/sub-sovereign assets have significant support from the central government, we may modify or regroup the sector classifications in Appendix A to take into account the higher correlation.

We may also apply additional overconcentration stresses for transactions with significant concentrations in one sector or region.

Correlation between municipal and corporate assets

We treat the correlation between a municipal asset and an unrelated corporate asset as if the municipal asset were also in an unrelated corporate sector. Hence, we assume the corresponding global asset correlation between the two assets as in Exhibit 2.

However, we view some municipal sectors as having an economic relationship to corporate sectors, which makes higher asset correlation assumptions more appropriate. In such cases, we assume that the municipal sector and the corporate sector are the same for the purpose of assigning an asset correlation, thus applying our corporate intra-industry correlation assumption. Below, we list the corporate industries that we effectively consider municipal sectors (see Appendix C for corporate sector code descriptions).

» Hospitals – Corporate Healthcare & Pharmaceuticals correlates with Municipal Hospitals (Not-for-Profit)

» Stadiums/Hotels – Corporate Hotel, Gaming & Leisure correlates with Municipal Hotel and Convention Center/Stadiums

» Utilities (Electric and Gas) – Corporate Utilities: Electric or Corporate Utilities: Oil & Gas correlate with Municipal Electric and Gas Enterprise (Transmission and Distribution); and Corporate Energy: Electricity or Corporate Energy: Oil & Gas correlate with Electric and Gas Enterprise (Generation and Joint Power Authorities)

» Utilities (Water) – Corporate Utilities: Water correlates with Municipal Water and Sewer

Structural analysis and liability modeling

Expected loss calculation

We generally incorporate the default and recovery characteristics of the muni CDO collateral into a model that calculates the EL for each rated muni CDO liability. Such models generally consist of two primary components: (1) a mechanism for associating collateral loss scenarios with the likelihood of each scenario (a collateral loss distribution); and (2) a cash flow (or, alternatively, a simple capital structure) component that relates each collateral default scenario to the cash that flows to the rated liability classes within the scenario. Once we apply such collateral default scenarios to the cash flow model (or simple capital structure), we can calculate the EL for each tranche.

In the final step, we compare the EL for each tranche to a set of benchmarks. We first determine the tranche's weighted average life, which we calculate based on the timing of the tranche's principal payments assuming zero defaults on the underlying collateral. Next, using the tranche's WAL, we select the relevant EL benchmark from our Idealized Expected Loss Rates table. We then compare the tranche's EL results to the EL benchmarks.[6]

[5] The same-state and same-county correlation add-ons apply only to US municipals. We apply same-region correlation add-ons to non-US assets case by case.

[6] For more information, see the discussion of Idealized Probabilities of Default and Expected Losses in *Rating Symbols and Definitions* (a link can be found in the "Moody's related publications" section) and in the "Loss benchmarks" section.

Modeling loss distribution

Preserving the non-taxable characteristics of the underlying assets generally requires that the muni CDO waterfall be simple in comparison with the waterfalls of corporate-backed transactions. Our approach to defining the default distribution for muni CDO collateral depends on the structure of the CDO itself:

- **Synthetic muni CDO**: Synthetic muni CDOs typically have a simple waterfall. For such transactions, we generally use CDOROM to model the loss distribution and calculate the EL for each rated tranche.
- **Static cash muni CDO**: For static muni CDOs with a cash flow waterfall, for which available interest proceeds are directly linked to the coupon paid by the underlying assets, we generally model the portfolio loss distribution using CDOROM in combination with a cash flow model (in which we model the resulting cash flows to each liability tranche to calculate the EL for the tranche).
- **Managed cash muni CDO**: For managed muni CDOs with a cash flow waterfall, we generally use CDOROM to model the worst-case portfolio consistent with the transaction covenants that produce the highest EL for one or more of the rated tranches. We use this loss distribution in our cash flow model. For managed transactions whose managers trade assets throughout the life of the CDO,[7] we may also apply the Correlated Binomial Expansion Technique in combination with a cash flow model.[8]

Other modeling considerations

Our cash flow model considers a range of interest-rate scenarios and default timing profiles, as we do in our CLO methodology.[9] We may consider default timing profiles that are different from our CLO methodology, and we may run further sensitivity analysis on transactions with assets suggesting an extended average life.

Loss benchmarks

In evaluating the model output for municipal and sub-sovereign CDOs, we select loss benchmarks referencing the Idealized Expected Loss table[10] using the Wide Asymmetric Range, in which the lower-bound of loss consistent with the rating category is given by the Idealized Expected Loss rate associated with the next higher rating category. For initial ratings and upgrade rating actions, the upper-bound of loss consistent with a given rating category is equal to the Idealized Expected Loss rate associated with the given rating category. When monitoring a rating for downgrade, the upper-bound of loss is computed as a 50/50 weighted average on a logarithmic scale. That is, the benchmark boundaries of loss appropriate for evaluating rating category R are given by the formulas shown in Exhibit 3.

7 For low-diversity transactions with "chunky" portfolios, the use of the correlated binomial – that is, approximating the loss distribution with a set of identical assets – is not appropriate.

8 For more information, see our methodology for rating structured finance CDOs. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section. The use of the correlated binomial is similar.

9 For more information, see our CLO rating methodology. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

10 For more information, see the discussion of Idealized Probabilities of Default and Expected Losses in *Rating Symbols and Definitions*. A link can be found in the "Moody's related publications" section.

Exhibit 3

Wide asymmetric loss benchmark boundaries

[1] $Rating\ Lower\ Bound_R = Idealized\ Expected\ Loss_{R-1}$

[2] $Initial\ Rating\ Upper\ Bound_R = Idealized\ Expected\ Loss_R$

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

Where:

» *Rating Lower Bound*$_R$ means the lowest Idealized Expected Loss associated with rating *R* and the expected loss range of rating *R* is inclusive of the *Rating Lower Bound*$_R$.

» *Initial Rating Upper Bound*$_R$ means the highest Idealized Expected Loss associated with rating *R* that is either initially assigned or upgraded and the expected loss range of rating *R* is exclusive of the *Rating Upper Bound*$_R$.

» *Current Rating Upper Bound*$_R$ means the highest Idealized Expected Loss associated with rating *R* that is currently outstanding and the expected loss range of rating *R* is exclusive of the *Rating Upper Bound*$_R$.

» *R-1* means the rating just above *R*.

» *R+1* means the rating just below *R*.

» The Rating Lower Bound for Aaa is 0% and the Rating Upper Bound for C is 100%. These are not derived using the formula.

Source: Moody's Investors Service

Other considerations

We review the economics and governance of the transactions. In some instances, a municipal asset portfolio can be subject to adverse selection risk, if a sponsor or manager attempts to exploit arbitrage possibilities between ratings and spreads when selecting a portfolio. In our analysis of the collateral, we use ratings as well as other market information to apply further stresses if the various sources diverge and indicate selection concerns.

Legal risks

Our overall assessment of the legal structure of a muni CDO typically includes a review of numerous documents, including the indenture, collateral management agreement, trust deed, swap documentation, other transactional agreements, and legal opinions provided to the issuer and the arranger. The legal opinions typically include a general corporate opinion for each transaction party, a security interest opinion, an enforceability opinion covering the agreements made by each transaction party, and relevant tax opinions. In certain cases, we review additional opinions related to the specifics of a transaction's structure, such as a true sale opinion if the seller of the assets and the muni CDO have a close relationship.

The legal opinions apply the law of the jurisdiction that the transaction parties have chosen as the governing law of the transaction documents. Therefore, the opinions do not ask the reader to assume that the law of one jurisdiction is the same as that of any other jurisdiction.

In our review of muni CDO transaction documents and opinions, we seek to identify any features, ambiguities, or incentives that could result in the muni CDO performing in a manner that is inconsistent with our rating analysis. Our rating analysis depends on the adequate understanding of how a muni CDO functions, as the legal documentation describes. If the documentation language is vague, we generally adopt a more conservative approach..

Environmental, social and governance considerations

Environmental, social and governance (ESG) considerations may affect the ratings of securities backed by a portfolio of muni CDOs. For information about our approach to assessing ESG issues, please see our methodology that describes our general principles for assessing these risks.[11]

[11] A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

Monitoring

We generally apply the key components of the approach described in this methodology when monitoring muni CDO transactions, except for those elements of the methodology that become less relevant over time or are not expected to change. Certain components, such as reviews of legal structures of existing transactions, are static and will generally not be reviewed again unless circumstances warrant.

In general, we track the performance of the underlying collateral, characteristics of the transactions, and other relevant developments. If performance measures vary materially from initial considerations or their prior levels, or the transaction structure changes, we may review the transaction and outstanding ratings in more detail.[12]

[12] 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.

Appendix A: Municipal sector code descriptions

Exhibit 4

Municipal sector code descriptions

Sector ID	Public finance sector	Geographical impact	Description	Same-state correlation add-on*	Same-county correlation add-on*
201	Airport and Port Special Facility	Local	Revenue of a single facility at an airport or port	0%	10%
202	Airport General Revenue	Local	Broad revenue pledge from an airport or port	0%	10%
203	Charter Schools	Local	Revenue pledge of a publicly funded school established under a state charter as an alternative to traditional public school systems	10%	10%
204	Cultural Institutions and Other Not-for-Profits	Local	Revenue pledge of a cultural, research, service, philanthropic, allied health or other not-for-profit entity, excluding higher education, hospitals and long-term care	0%	10%
205	Electric and Gas Enterprise (Generation and Joint Power Authorities)	Local	Revenue pledge of public power utility (including joint power authorities) that does produce its own power	10%	10%
206	Electric and Gas Enterprise (Transmission and distribution)	Local	Revenue pledge of public power utility that does not generate its own power	10%	10%
207	Higher Education - Public	Local	Revenue pledge of a public college, university, or university system	10%	10%
208	Hospitals (Not-for-Profit)	Local	Revenue pledge of a not-for-profit hospital or health system	0%	10%
209	Hotel and Convention Center	Local	Revenue pledge of a project without significant public sector involvement	0%	10%
210	Housing Project Financings	Local	Revenue pledge of housing for military personnel, affordable housing, or student housing projects	0%	10%
211	Housing-Affiliated/Actively Managed	Local	Housing revenue pledge; issuer actively oversees bond programs	0%	10%
212	Housing-Unaffiliated/Passively Managed	Local	Housing revenue pledge; issuer is a passive conduit	0%	10%
213	Local Government General Obligations	Local	Full faith and credit and taxing power of a political subdivision of a state, usually with the power to levy property taxes	10%	10%
214	Long-Term Care (Not-for-Profit)	Local	Revenue pledge of a not-for-profit nursing home, continuing care retirement community, assisted living facility, or similar entity	0%	10%
215	Mass Transit Enterprise	Local	Pledge of revenues of mass transit rail, bus or combined system	10%	10%
216	Parking Enterprise	Local	Revenue pledge of a parking garage or system	0%	10%
217	Private Higher Education and Private K-12	Local	Revenue pledge of a not-for-profit college, university or independent K-12 school	0%	10%
218	Solid Waste and Resource Recovery (established)	Local	Revenue pledge of a solid waste or resource recovery system or project with three or more years' history of achieving debt service coverage	0%	10%
219	Solid Waste and Resource Recovery (startup)	Local	Revenue pledge of a solid waste or resource recovery system or project with less than three years' history of achieving debt service coverage	0%	10%
220	Stadiums and Other Projects	Local	Revenue pledge of project with significant involvement of public sector evidenced by public funding of a portion of the project or management oversight; includes privatized student housing	0%	10%
221	State Government General Obligations	Local	Full faith and taxing power of one of the US states or territories	10%	10%
222	State and Local Lease, Appropriation and Moral Obligation	Local	Pledge of payments made by a state or local government, may be subject to appropriation and/or abatement risk	10%	10%
223	State and Local Special Tax (lottery, GARVEES, assessment, etc.)	Local	Revenue pledge of lottery receipts, federal transportation revenues, or state assessments	10%	10%
224	State Revolving Fund	Local	Revenue pledge of an issuer managing a pool of loans made to local governments or utility districts for water pollution control projects	10%	10%

Sector ID	Public finance sector	Geographical impact	Description	Same-state correlation add-on*	Same-county correlation add-on*
225	Tax Increment (established)	Local	Pledge of property tax revenues from a small, concentrated geographic area, usually a single redevelopment district; three or more years' history of achieving debt service coverage	10%	10%
226	Tax Increment (startup)	Local	Pledge of property tax revenues from a small, concentrated geographic area, usually a single redevelopment district; less than three years' history of achieving debt service coverage	10%	10%
227	Toll Roads and Bridges (established)	Local	Revenue pledge of toll road/bridge (single asset or system) with three or more years' history of achieving debt service coverage	0%	10%
228	Toll Roads and Bridges (startup)	Local	Revenue pledge of toll road/bridge (single asset or system) with less than three years' history of achieving debt service coverage	0%	10%
229	Water and Sewer	Local	Revenue pledge of public water and/or sewer utility	10%	10%

* For US only.

Source: Moody's Investors Service

Appendix B: Recovery rates by public finance sector

Exhibit 5

Recovery rates

		Recovery rate	
Sector ID	**Public finance sector**	**Mean**	**Standard deviation**
201	Airport and Port Special Facility	50%	25%
202	Airport General Revenue	65%	20%
203	Charter Schools	50%	25%
204	Cultural Institutions and Other Not-for-Profits	50%	25%
205	Electric and Gas Enterprise (Generation and Joint Power Authorities)	65%	20%
206	Electric and Gas Enterprise (Transmission and distribution)	65%	20%
207	Higher Education - Public	65%	20%
208	Hospitals (Not-for-Profit)	50%	25%
209	Hotel and Convention Center	50%	25%
210	Housing Project Financings	50%	25%
211	Housing-Affiliated/Actively Managed	65%	20%
212	Housing-Unaffiliated/Passively Managed	50%	25%
213	Local Government General Obligations	65%	20%
214	Long-Term Care (Not-for-Profit)	50%	25%
215	Mass Transit Enterprise	65%	20%
216	Parking Enterprise	50%	25%
217	Private Higher Education and Private K-12	50%	25%
218	Solid Waste and Resource Recovery (established)	65%	20%
219	Solid Waste and Resource Recovery (startup)	50%	25%
220	Stadiums and Other Projects	50%	25%
221	State / Central Government General Obligations	65%	20%
222	State and Local Lease, Appropriation and Moral Obligation	50%	25%
223	State and Local Special Tax (lottery, GARVEES, assessment, etc.)	65%	20%
224	State Revolving Fund	65%	20%
225	Tax Increment (established)	65%	20%
226	Tax Increment (startup)	50%	25%
227	Toll Roads and Bridges (established)	65%	20%
228	Toll Roads and Bridges (startup)	50%	25%
229	Water and Sewer	65%	20%

Source: Moody's Investors Service

Appendix C: Moody's industry classification

For the calculation, we treat obligors in a given local industry but from different regions as if they were in different industries. We group obligors in global industries based on their corresponding industries, regardless of their regions.[13] The industry classifications are as follows (local industries are underlined).

1) Aerospace & Defense
2) Automotive
3) Banking, Finance, Insurance & Real Estate
4) Beverage, Food & Tobacco
5) Capital Equipment
6) Chemicals, Plastics & Rubber
7) Construction & Building
8) Consumer Goods – Durable
9) Consumer Goods – Non-durable
10) Containers, Packaging & Glass
11) Energy – Electricity
12) Energy – Oil & Gas
13) Environmental Industries
14) Forest Products & Paper
15) Healthcare & Pharmaceuticals
16) High Tech Industries
17) Hotel, Gaming & Leisure
18) Media – Advertising, Printing & Publishing
19) Media – Broadcasting & Subscription
20) Media – Diversified & Production
21) Metals & Mining
22) Retail
23) Services – Business
24) Services – Consumer
25) Sovereign & Public Finance
26) Telecommunications
27) Transportation – Cargo
28) Transportation – Consumer
29) Utilities – Electric
30) Utilities – Oil & Gas
31) Utilities – Water
32) Wholesale

[13] A link to the corresponding industries can be found in the "Moody's related publications" section.

Appendix D: Correlation examples

Below are some examples of correlation for different pairs of municipal and corporate investment-grade assets (for the low global correlation scenario, i.e., 5%). For example, the total correlation between asset A and asset B (both Mass Transit obligations in the same state and the same county) is 37%. It is the sum of 5% (global correlation) plus 12% (intra-sector correlation) plus 10% (same-state correlation add-on) plus 10% (same-county add-on).

Exhibit 6

Correlation examples

	Asset type	Sector	Sector with state add-on?	State	County	A	B	C	D	E	F	G	H	I	J
A	Muni	Mass Transit	Yes	State 1	County 1	-									
B	Muni	Mass Transit	Yes	State 1	County 1	37%	-								
C	Muni	Mass Transit	Yes	State 1	County 2	27%	27%	-							
D	Muni	Mass Transit	Yes	State 2	County 3	17%	17%	17%	-						
E	Muni	Local government GO	Yes	State 1	County 1	25%	25%	15%	5%	-					
F	Muni	Local government GO	Yes	State 1	County 2	15%	15%	25%	5%	27%	-				
G	Muni	Local government GO	Yes	State 2	County 3	5%	5%	5%	25%	17%	17%	-			
H	Muni	Hospitals (Not-for-Profit)	No	State 1	County 1	15%	15%	5%	5%	15%	5%	5%	-		
I	Muni	Hospitals (Not-for-Profit)	No	State 1	County 2	5%	5%	15%	5%	5%	15%	5%	17%	-	
J	Corp*	Healthcare & Pharmaceuticals	No	State 1	County 1	5%	5%	5%	5%	5%	5%	5%	17%	17%	-

* The same-state and same-county correlation add-ons apply only to pairs of municipal assets in the US.

Source: Moody's Investors Service

Moody's related publications

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

A list of the specific industries corresponding to the industries listed in Appendix C can be found here.

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

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

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