MOODY'S
INVESTORS SERVICE

METHODOLOGY (OTHER PERMISSIBLE SERVICES)

Money Market Funds

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This rating methodology replaces the *Money Market Funds* methodology published in December 2016. This update includes a change in how we calculate the impact of 50% redemption on a fund's adjusted net asset value under a stress scenario in cases where the regulation of the jurisdiction of operations for the fund require it to hold a minimum level of weekly liquidity. We assume that a portion of the redemptions is covered by the assets equal to the required weekly liquidity and we assume these assets are liquidated at par. This update also further clarifies the mapping between obligations and the reference points we use as inputs into the credit matrix and NAV stress scenarios. It also provides more details about the mechanics of the credit matrix.

Introduction

In this methodology, we explain our general approach to assessing the investment quality of money market funds globally, including the qualitative and quantitative factors that are likely to affect money market fund (MMF) rating outcomes. MMF ratings are not credit ratings; they are opinions of the investment quality of shares in mutual funds and similar investment vehicles that principally invest in short-term fixed income obligations.[1]

We discuss the scorecard used for this sector. The scorecard[2] is a relatively simple reference tool that can be used in most cases to approximate MMF ratings and to explain, in summary form, many of the factors that are generally most important in assigning ratings to money market funds. The scorecard factors may be evaluated using historical or forward-looking data or both.

We also discuss other MMF rating considerations, which are factors that are assessed outside the scorecard, usually because the factor's importance varies widely among the funds in the sector or because the factor may be important only under certain circumstances or for a subset of funds. In addition, some of the methodological considerations described in one or more cross-sector rating methodologies may be relevant to ratings in this sector. Furthermore, we often incorporate directional views of risks and mitigants in a qualitative way.

As a result, the scorecard-indicated outcome is not expected to match the actual MMF rating for each fund.

[1] A money market fund rating is not a credit rating but is an Other Permissible Service. For more information on MMF ratings, please see *Moody's Ratings Symbols and Definitions*. A link to this publication can be found in the "Moody's Related Publications" section.

[2] In our methodologies and research, the terms "scorecard" and "grid" are used interchangeably.

Our presentation of this methodology proceeds with (i) the MMF rating scale; (ii) the scope of this methodology (iii) the scorecard framework; (iv) a discussion of the scorecard factors; (v) other MMF rating considerations; (vi) methodology assumptions; and (vii) limitations. In Appendix A, we describe how we use the scorecard to arrive at a scorecard-indicated outcome. Appendix B describes how we incorporate stress scenarios into our analysis, and Appendix C describes our treatment of investments in the credit matrix adjusted NAV.

Money Market Fund Rating Scale

MMF ratings are opinions of the investment quality of shares in mutual funds and similar investment vehicles that principally invest in short-term fixed income obligations. Please see *Rating Symbols and Definitions* for more details.[3]

We append an "-mf" modifier to the broad alpha rating categories (Aaa, Aa, A, Baa, B, and C) to differentiate MMF ratings from our alphanumeric credit ratings on the global long-term rating scale.

EXHIBIT 1
Money Market Fund Rating Scale

Rating	Definition
Aaa-mf	Money market funds rated Aaa-mf have very strong ability to meet the dual objectives of providing liquidity and preserving capital.
Aa-mf	Money market funds rated Aa-mf have strong ability to meet the dual objectives of providing liquidity and preserving capital.
A-mf	Money market funds rated A-mf have moderate ability to meet the dual objectives of providing liquidity and preserving capital.
Baa-mf	Money market funds rated Baa-mf have marginal ability to meet the dual objectives of providing liquidity and preserving capital.
B-mf	Money market funds rated B-mf are unable to meet the objective of providing liquidity and have marginal ability to meet the objective of preserving capital.
C-mf	Money market funds rated C-mf are unable to meet either objective of providing liquidity or preserving capital.

Scope of This Methodology

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 for the most updated credit rating action information and rating history.

This methodology applies to money market funds globally, which are open-end funds whose primary objectives are to preserve principal and provide liquidity to investors. Money market funds typically invest in fixed-income securities with short durations that provide income in the form of interest payments or short-term securities, such as bills and notes, that are purchased at a discount to par.

For example, this methodology applies to constant net asset value (CNAV) funds, low volatility net asset value (LVNAV) funds and variable net asset value (VNAV) funds, as long as the primary objective of these funds is to preserve principal and provide liquidity to investors on demand.[4]

[3] A link to this publication can be found in the "Moody's Related Publications" section.
[4] CNAV and VNAV funds have two important differences: 1) how they value their assets; and 2) how they price their shares. CNAV funds use the amortized cost to value securities and price their shares to two decimal places (also known as penny rounding), and VNAV funds use mark-to-market valuations and price shares to more than two decimal places. LVNAV are hybrid funds that use both amortized costs and mark-to-market valuations.

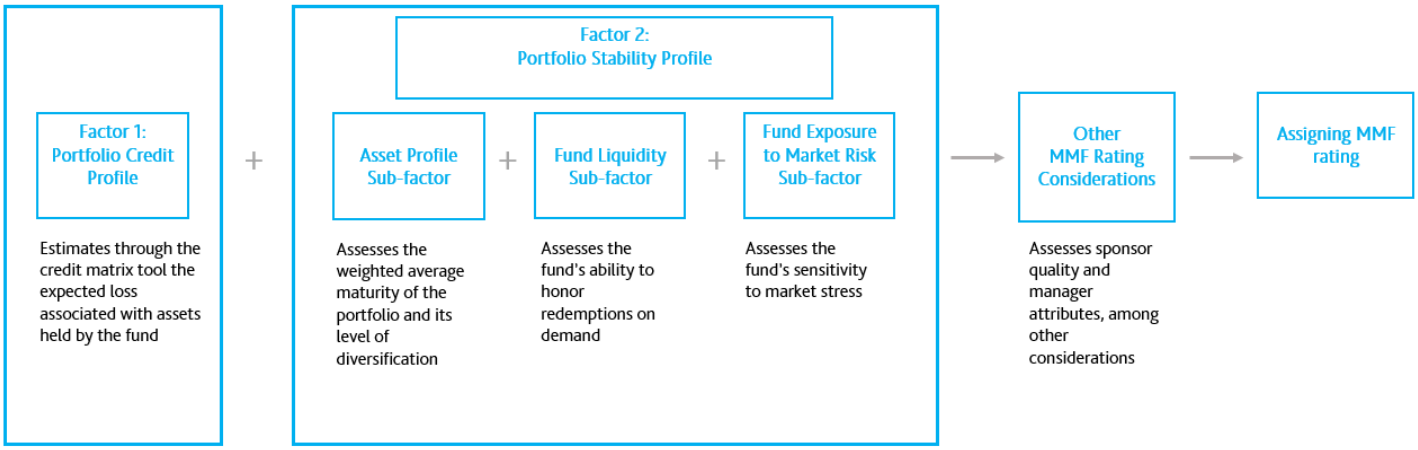
Scorecard Framework

The scorecard in this methodology is composed of two factors. One factor comprises sub-factors. We combine an assessment of a money market fund's Portfolio Credit Profile with an assessment of its Portfolio Stability Profile.

Please see Appendix A for general information relating to how we use the scorecard and for a discussion of scorecard mechanics. The scorecard does not include every rating consideration.[5]

EXHIBIT 2

Overall Approach to Assessing MMF Ratings



Discussion of the Scorecard Factors

In this section, we explain our general approach for scoring each scorecard sub-factor or factor, and we describe why they are meaningful as indicators of relative investment quality.

Factor 1: Portfolio Credit Profile

Why It Matters

The credit profile of the portfolio provides important indications of the relative investment quality of shares in the fund and the fund's exposure to credit risk.

How We Assess It for the Scorecard

Our assessment considers the credit quality of the individual fixed-income investments in the fund as well as the maturities of those investments. All else being equal, shorter-dated investments have lower credit risk than longer-dated investments (i.e., the cumulative default curve is upwardly sloping over time).

[5] Please see the "Other Considerations" and "Limitations" sections.

In assessing this factor, we use a credit matrix, which is a tool that attributes a specified amount of loss to each security in the portfolio based on the following:

» The par value of the security.

» The expected loss[6] associated with the security's long-term rating or long-term reference point[7] and its maturity, using our long-term idealized loss table.

For an instrument with a maturity of less than 12 months, the credit matrix assumes that the fund reinvests the proceeds in a security with the same long-term rating and maturity over the course of 12 months[8]. For instruments with maturities of more than 12 months, we use the expected loss associated with the instrument's maturity. For some types of investments where there is no stated maturity (e.g., where the MMF holds shares in another fund), we may use a look-through approach to assess or estimate the maturity and the credit quality of the investments held by the fund.

The expected loss for each security or other investment is aggregated, and the total loss is divided by the total volume of the portfolio, calculated as the sum of the par amounts of each of the assets held in the fund. The resulting ratio is mapped to the corresponding one year alphanumeric rating in the idealized expected loss rates table.[9]

Exhibit 3 shows schematically how, for the purpose of assessing a portfolio's credit profile, the expected loss associated with a given security's rating is adjusted for its maturity. For example, an Aa3-rated security with a 90-day remaining maturity is estimated to represent a similar amount of expected loss as that of an Aa1-rated security with a one-year remaining maturity.

[6] The idealized default rate table is used in implementing the model. Given that the idealized default rate table is used to obtain the expected loss associated with the security's long-term rating or long-term reference point and is also used to map the model expected loss output to a rating using a 1-year horizon, the use of the idealized default rate table is equivalent to the use of idealized expected loss rate table in the model. We derive interim expected loss below one year (e.g. 3 months) by using quadratic interpolation. We use linear interpolation beyond one year to derive non-yearly expected loss (e.g., 1.6 years). *Rating Symbols and Definitions* contains a link to a table of probability of default rates. Please see the "Moody's Related Publications" section for a link to that publication.

[7] Please see Appendix C.

[8] For example, for a security with a 6 months maturity, the calculation is 360 days divided by 180 days (i.e. 6 months) multiplied by the expected loss associated with a 6 months security.

[9] The lower bound of loss consistent with a rating category is the midpoint (strictly, the arithmetic mean) between the idealized expected loss of the rating category and the idealized expected loss of the next higher rating category. The upper-bound of loss is analogously determined as the arithmetic mean between the idealized expected loss of the rating category and the idealized expected loss of the next lower rating category. Because they are end points, the lower bound of Aaa and upper bound of Caa3 are not derived using the mid-point approach.

EXHIBIT 3

Illustrative Table for Assessing the Portfolio Credit Profile[10]

Underlying Security Maturity (Days)	Aaa	Aa1	Aa2	Aa3	A1	A2
30	Aaa	Aaa	Aaa	Aa1	Aa1	Aa2
60	Aaa	Aaa	Aaa	Aa1	Aa2	Aa2
90	Aaa	Aaa	Aa1	Aa1	Aa2	Aa3
120	Aaa	Aaa	Aa1	Aa2	Aa2	Aa3
180	Aaa	Aaa	Aa1	Aa2	Aa3	A1
270	Aaa	Aa1	Aa1	Aa2	Aa3	A1
1 Year	Aaa	Aa1	Aa2	Aa3	A1	A2
2 Year	Aa2	Aa3	A1	A2	A3	Baa1

Note: The chart is based on Moody's credit matrix. It assumes that each asset with a maturity of less than 12 months will be reinvested in instruments with the same rating and be rolled to the 12-month point. Assets maturing beyond 12-months are assessed at their respective maturities.

We principally use long-term senior unsecured ratings as long-term reference point inputs in the credit matrix for assets held by money market funds. However, money market funds may also hold a variety of other assets for which there is no associated long-term senior unsecured rating, or for which we may consider that the senior unsecured rating is not representative of the underlying maturity-adjusted credit risk. In Appendix C, we discuss some of the investments that money market funds may have exposure to and the respective long-term-rating reference points we use for the purpose of the credit matrix.

Factor 2: Portfolio Stability Profile

Why It Matters

A fund's portfolio stability profile is important because money market funds are susceptible to interest rate and liquidity risks that may adversely affect their market value and ability to meet liquidity draws on demand. Our assessment of resilience to these risks is core to our assessment of relative investment quality.

This factor has three sub-factors:

Asset Profile

The profile of a money market fund's portfolio of assets in terms of maturity and diversification is an important indicator of its stability and sensitivity to interest rates. Shorter-dated assets can typically be sold more quickly at lower losses than longer-dated assets in times of market stress and can allow a fund to meet its redemption obligations in the short term. Shorter-dated assets also help lessen the impact to the fund from changes in interest rates.

[10] This table illustrates schematically some of the outcomes of the credit matrix based on portfolios of different credit quality and maturity. The table is not a comprehensive representation of all the possible combinations of portfolio credit qualities and maturities as well as resulting outcomes under the credit matrix.

Similarly, a fund's level of diversification is important because funds with higher asset concentrations are more exposed to credit losses in the case of a liquidation or a decline in market value, and thus are more likely to face challenges in meeting redemptions.

Fund Liquidity

A fund's liquidity profile provides important indications of its ability to honor redemption requests on demand. Funds that invest in high-quality, short-term securities are more liquid and thus better positioned to withstand market stress and redemptions. In addition, funds with a diversified base of investors may experience less volatility in terms of outflows. A fund with mostly retail investors is typically less susceptible to large redemptions than a fund with mostly institutional investors. Regardless of the makeup of its investor base, the level of liquidity buffers relative to the size of the fund also provides some indication on the fund's liquidity risk.

Fund Exposure to Market Risk

Exposure to market risk is important because, all else being equal, portfolios with low expected volatility have a lower risk of losses. Shifts in the mark-to-market value of a fund's invested portfolio can expose it to the risk of loss if investments decline in value; the loss is realized if investments are liquidated to satisfy redemptions when the value of invested assets falls below the amortized cost value.

How We Assess It for the Scorecard

ASSET PROFILE:

Our assessment of a fund's asset profile is based on the weighted average maturity (WAM) of the investments in the portfolio and the ratio of assets from the fund's top three obligors to the fund's total assets under management (AUM).

Weighted Average Maturity

We measure or estimate a fund's interest rate risk using the weighted average maturity (WAM). For each investment in the portfolio, we calculate the percentage it represents of the total portfolio of investments on a fair value basis. Percentages are multiplied by the investments' respective times to maturity, in days. For floating-rate notes, WAM is calculated using a floating-rate note's interest rate reset date instead of its maturity date. For shares in a fund, we use the weighted average life of the fund's assets to estimate maturity.

Top Three Obligors / Fund AUM

The numerator is the amount of assets from the money market fund's top three obligors, and the denominator is total assets under management. Affiliated obligors of the same corporate family are typically counted as one. For example, investments in a bank-sponsored, fully supported asset-backed commercial-paper program are typically rolled up with the bank's other exposures, including time deposits or certificates of deposit.

In our assessment, we exclude several categories of low-risk assets, such as Aa2 or higher-rated government securities, Aa2 or higher-rated government agency securities, repurchase agreements collateralized by Aa2 or better rated sovereign and or agency assets with maturities of seven days or fewer, and Aa2 or higher-rated supranational securities.

FUND LIQUIDITY:

Our assessment of a fund's liquidity is based on the ratio of overnight liquidity to the amount of equity owned by the three largest investors in the fund and the ratio of overnight liquidity to a fund's AUM.

Overnight Liquidity / Largest 3 Investors

The numerator is overnight liquidity and the denominator is the sum of the equity owned by the three largest investors in the fund.

Overnight liquidity includes cash on hand,[11] Aa2 and higher-rated government obligations maturing within the next 18 months and committed undrawn liquidity lines from P-1 counterparties. We also include overnight repurchase agreements as well as daily variable-rate demand notes and call accounts with one-day irrevocable mandatory redemption features.

The denominator is the sum of the fund's shares owned by the top three investors, based on the fund's disclosures. We treat investor distribution channels, such as input portals, sweep and omnibus accounts, which may cause multiple investors to act jointly and potentially cause significant unexpected redemptions, as a single investor.

Because a fund's level of disclosure on investor ownership may in some cases lead to an overestimation or underestimation of the risk of significant unexpected redemptions, we may adjust the score for this ratio. For example, for distribution channels such as input portals, sweep and omnibus accounts, if the account or portal cannot make investment decisions on behalf of its underlying investors, and those investment decisions are made independently by each underlying investor, we may consider the account or portal as having multiple investors. In such a case, we may adjust the score or ratio to reflect the greater underlying granularity of investors.

Similarly, we typically assess the relative size and terms of any intracompany investors[12] that are affiliated with the fund manager and whether the profile of such investments suggests redemption expectations that are different from those pertaining to unaffiliated investors. For example, affiliated investors may delay their redemption decisions in cases where a fund is facing large redemptions from other investors. In such a case, we may adjust the score upward to reflect the lower risk of large redemption from these investors if we believe that the ability to manage redemptions is sustainable.

Overnight Liquidity / Total AUM

The numerator is a fund's overnight liquidity and the denominator is total assets under management. Overnight liquidity is calculated or estimated as described above.

FUND EXPOSURE TO MARKET RISK:

In assessing a fund's exposure to market risk, we consider a combined stress scenario. The result of this analysis is the adjusted net asset value (NAV).[13]

[11] For funds whose shares settle in periods in excess of T+0 days (i.e., T+1, T+2, T+3), the calculation of overnight liquidity is adjusted to reflect this longer settlement period. For example, overnight liquidity for a fund with T+3 settlement would include all securities maturing in the next three days and direct government obligations rated Aa2 or higher with maturities of 18 months or less.

[12] For example, an equity or bond mutual fund managed by the MMF's sponsor that uses the money market fund as an investment option for its cash.

[13] See Appendix B for more information about our stress scenario.

Our starting point assumes that the fund is currently priced at 1.000 NAV. If warranted, this starting point is adjusted[14] based on the reported mark-to-market value provided by the fund administrator. We then apply the following stresses to a money market fund's portfolio:

- A shift in the yield curve (a 100 basis-point shift is applied to all securities)
- A shift in credit spreads (a 100 basis-point increase is applied to Aa2 securities, with a greater impact at lower rating levels)
- Outflows (50% redemption rate, adjusted for weekly liquidity regulatory requirement for the relevant jurisdiction, if met)

The loss derived from the combination of the three stresses described above is subtracted from the fund's initial NAV, and the resulting adjusted NAV is the basis for the sub-factor score.

EXHIBIT 4: FACTOR 2
Portfolio Stability Profile

		Score			
Sub-factor	Weight	1	2	3	4
Asset Profile	**20%**				
Weighted Average Maturity	10%	< 60 days	60-90 days	90-120 days	≥ 120 days
Top 3 Obligors / Total AUM	10%	< 15%	15-30%	30-50%	≥ 50%
Fund Liquidity	**40%**				
Overnight Liquidity / Largest 3 Investors	20%	> 90%	75-90%	25-75%	≤ 25%
Overnight Liquidity / Total AUM	20%	> 20%	10-20%	5-10%	≤ 5%
Fund Exposure to Market Risk	**40%**				
Adjusted NAV	40%	> 0.995	0.990-0.995	0.985-0.990	≤ 0.985

Other MMF Rating Considerations

MMF ratings may include additional factors that are not in the scorecard, usually because the factor's importance varies widely among the funds in the sector or because the factor may be important only under certain circumstances or for a subset of funds. Such factors include our assessment of sponsor quality, the operating environment, manager attributes, operating history and information disclosure, among others.

Following are some examples of additional considerations that may be reflected in our MMF ratings and may cause MMF ratings to be different from scorecard-indicated outcomes.

[14] We would typically use the reported-mark-to-market value in very rare cases, for example in period of severe market stress or when a fund exhibits NAV fluctuations that are reflective of a fundamental stress.

Sponsor Quality

Money market funds typically have operated in stable environments, with minimal incremental risk stemming from their sponsor's own operational, market or funding challenges. Risks associated with the sponsor could cause assigned MMF ratings to be lower than score-card indicated outcomes.

For example, the sponsor may experience a poor financial performance or significant negative publicity, which could cause investors to lose confidence in its money market funds. This, in turn, may result in significant redemptions and potentially a suspension of redemptions.

We consider the quality of a fund's sponsor when assigning MMF ratings. Typically, funds rated in the Aaa-mf category are sponsored by firms having an investment-grade or equivalent credit profile. If a sponsor is unrated, we would typically obtain a regularly updated credit estimate.[15]

Operating Environment

This methodology applies to money market funds globally. However, each regional market has characteristics that reflect the local political, social, regulatory and economic environment as well as its own legal framework and litigation environment. Regional governance practices, capital structures, taxation and accounting rules and practices as well as public reporting requirements also affect the operating environment for money market funds.

For example, in certain regions, regulators have expanded the tools available to funds to address the risk of mass redemptions, known as run risk. These tools include mandatory suspension of redemptions or the application of fees on redemptions under certain stress scenarios. Because MMF ratings reflect our opinion of a fund's ability to provide liquidity on demand, we take into account the risk of redemption suspensions when assigning MMF ratings. Trends in daily and weekly liquidity profiles are important considerations in identifying funds that may be at a greater risk of restricting liquidity through redemption gates or redemption fees.

Any temporary or permanent action taken by a fund to restrict liquidity would typically result in a downgrade to B-mf or lower. The extent of the downgrade is typically a function of the duration of the redemption restriction and the expected investor recovery. If the recovery rate is expected to be 95% or higher, the rating would typically be downgraded to B-mf. An expected recovery rate lower than 95% would generally be consistent with a C-mf rating. In cases where we consider that the risk of redemption fees or redemption gates is rising meaningfully but gradually, the MMF rating would typically be downgraded incrementally.

Furthermore, country-specific trends and developments, such as the trajectory of the economy relative to the economies of other countries, major social and political developments, bank crises, market turmoil or other events can, over time, have a meaningful impact on the quality of investments in a money market fund and, in some circumstances, the ability of the manager to respond to these developments. To the extent we have visibility into these regional considerations, we typically incorporate them into our assessments.

Manager Attributes

The attributes of a fund manager are important because they generally drive a fund's performance. Such attributes include the manager's investment process and ability to exercise control over the

[15] Please see our cross-sector methodology that discusses the use of credit estimates. For clarity, in this case we would not apply a two-notch haircut to the credit estimate, nor would we apply a jump-to-default test.

activities it engages in on behalf of its clients. Operations quality and corporate governance are also important considerations. The scorecard does not include fund manager attributes, because managers of most rated money market funds have been appropriately strong. Where a manager's policies and procedures depart materially from industry best practices, we may assign an MMF rating that is lower than the scorecard-indicated outcome.

In addition, there may be cases where investment guidelines are changing or we consider them likely to change in a manner that will create a shift in the fund's investment credit profile. In these cases, we typically consider the fund's new strategy, its transition plans and whether the fund has the expertise to manage the transition.

Limited or No Operating History

In certain circumstances, we may assign MMF ratings to funds prior to their launch and initial funding, or to funds with short track records.

Our analysis typically focuses on a model portfolio and on the manager's experience and track record for managing funds with similar strategies as well as the investment guidelines outlined in the funds' prospectuses.

In cases where we assign a rating to an unfunded fund based on a pro forma portfolio, we assess the actual portfolio composition after its launch to confirm that it is materially consistent with the pro forma portfolio. If there is a material difference, we may upgrade or downgrade the MMF rating to reflect the actual credit quality of the portfolio.

Frequency and Quality of Reporting

We rely on the accuracy of a fund's financial reporting to assign and monitor MMF ratings. The quality of reporting may be influenced by internal controls, including the proper tone at the top, centralized operations and consistency in accounting policies and procedures. Poor quality of reporting or delays in reporting, which is typically done on a monthly basis, may affect our view of investment quality.

Trends in Portfolio Credit and Stability Profiles

In some cases, scorecard-indicated outcomes based on the most recent monthly portfolio data are different from the most recently assigned rating.[16] In these cases, we typically assess the cause of the change, for example if it is the result of missing information such as a large unrated security in the portfolio with no credit estimate available. We typically form a view on whether the change in the portfolio is temporary or reflects a more lasting evolution in the MMF's portfolio credit profile or stability profile, and we incorporate this view into the MMF's rating.

Assumptions

Our forward-looking opinions are based on assumptions that may prove, in hindsight, to have been incorrect. Reasons for this could include unanticipated changes in any of the following: the macroeconomic environment, general financial market conditions, industry competition, disruptive technology, or regulatory and legal actions.

[16] In this analysis, we would take into account any of the other MMF rating considerations underlying differences between the scorecard-indicated outcome and the MMF rating at the time it was assigned.

Limitations

In the preceding sections, we have discussed the scorecard factors, many of the other considerations that may be important in assigning MMF ratings, and certain key assumptions. In this section, we discuss limitations that pertain to the scorecard and to the overall methodology.

Limitations of the Scorecard

There are various reasons why scorecard-indicated outcomes may not map closely to actual MMF ratings.

The scorecard in this methodology is a relatively simple tool focused on indicators for relative investment quality.

The weights for each sub-factor and factor in the scorecard represent an approximation of their importance for MMF ratings decisions across the sector, but the actual importance of a particular factor may vary substantially based on an individual fund's circumstances.

Factors that are outside of the scorecard, including those discussed above in the "Other MMF Rating Considerations" section, may be important for MMF ratings, and their relative importance may also vary from fund to fund. In addition, certain broad methodological considerations described in one or more cross-sector rating methodologies may be relevant to the ratings used as inputs to the MMF credit matrix and the adjusted NAV. Examples of such considerations include the following: how sovereign credit quality affects non-sovereign issuers and the assessment of credit support from other entities.

We may use the scorecard over various historical or forward-looking time periods. Furthermore, in our MMF ratings we often incorporate directional views of risks and mitigants in a qualitative way.

General Limitations of the Methodology

This methodology document does not include an exhaustive description of all factors that we may consider in assigning MMF ratings. Money market funds and the investments they hold may face new risks or new combinations of risks, and they may develop new strategies to mitigate risk. We seek to incorporate all material investment quality considerations in MMF ratings and to take the most forward-looking perspective that visibility into these risks and mitigants permits.

MMF ratings are opinions of the investment quality of shares in mutual funds and similar investment vehicles that principally invest in short-term fixed income obligations; however, as the forward horizon lengthens, uncertainty increases and the utility of precise estimates, as scorecard inputs or in other rating considerations, typically diminishes. In any case, predicting the future is subject to substantial uncertainty.

Appendix A: Using the Scorecard to Arrive at a Scorecard-Indicated Outcome

1. Measurement or Estimation of Factors in the Scorecard

In the "Discussion of the Scorecard Factors" section, we explain our analytical approach for scoring each scorecard sub-factor or factor,[17] and we describe why they are meaningful as indicators of investment quality in shares of mutual funds and similar investment vehicles that principally invest in short-term fixed income obligations.

The information used in assessing the sub-factors is generally found in or calculated from information provided by the fund's administrator or investment adviser. We may also incorporate non-public information.

Our MMF ratings are opinions of investment quality. Historical results are helpful in understanding patterns and trends of a fund's performance as well as for peer comparisons. Metrics in the Portfolio Stability Profile factor, unless otherwise indicated, are typically calculated based on a point-in-time period, reported on a monthly basis. However, the factors in the scorecard can be assessed using various time periods. For example, MMF rating committees may find it analytically useful to examine both historical and expected future performance for shorter or longer periods.

We may also make other analytical adjustments that are specific to a particular fund.

2. Mapping Scorecard Factors to a Numeric Score and Determining the Overall Scorecard-Indicated Outcome

We assign each sub-factor under the Portfolio Stability Profile factor a numeric score of 1 (best) to 4 (worst). The numeric score for each sub-factor is then multiplied by its relative importance, or weight, with the results then summed to produce an aggregate weighted Portfolio Stability Factor score. The aggregate weighted factor score is then combined with the alpha score for the Portfolio Credit Profile factor to arrive at a scorecard-indicated outcome based on the table in Exhibit 5.

EXHIBIT 5

Combining Factor Scores to Arrive at an Overall Scorecard-Indicated Outcome

		Portfolio Credit Profile				
		Aaa	**Aa**	**A**	**Baa**	**Ba and below**
Portfolio Stability Profile	**1.00 ≤ n<1.75**	Aaa-mf	Aaa-mf	Aa-mf	A-mf	Baa-mf
	1.75 ≤ n<2.51	Aaa-mf	Aa-mf	A-mf	Baa-mf	B-mf
	2.51 ≤ n<3.51	Aa-mf	A-mf	Baa-mf	B-mf	C-mf
	3.51 ≤ n ≤ 4.00	A-mf	Baa-mf	B-mf	C-mf	C-mf

[17] When a factor comprises sub-factors, we score at the sub-factor level. Some factors do not have sub-factors, in which case we score at the factor level.

Appendix B: Adjusted NAV

In order to capture a fund's exposure to market risk, we typically consider a combined stress scenario as a fundamental part of our rating analysis. The result of this analysis is the adjusted net asset value (NAV). This appendix explains the components of our approach.

(1) Portfolio Base NAV – Our stress scenario assumes that the fund is currently priced at 1.000 NAV. This starting point is, if warranted, adjusted based on the reported mark-to-market value provided by the fund administrator.

(2) When there is substantial market turmoil, it is quite possible that many investors will seek to redeem their shares. The MMF will realize losses when assets are liquidated to meet the redemption (see step 6). In cases where the regulation of the jurisdiction of operations or the fund's governing documents[18] require the fund to hold weekly liquidity (as defined by the jurisdiction), we assume that a portion of the redemptions are covered by the assets equal to the required weekly liquidity. For the NAV stress, we assume these assets are liquidated at par, with the remaining assets facing the stresses described below (curve shift, spread shift).

STRESS SCENARIO:

We apply the following stresses:

(3) Curve Shift – A parallel 100 basis-point curve shift is applied across all remaining security types in the fund. The impact of the shift on NAV depends on the maturity of the security. A security with a one year maturity has a loss of 1%. The loss is proportionally lower or higher for securities with respectively shorter or longer maturities.

(4) Spread Shift – An additional spread is added to remaining credit securities of Aa2 or lower quality. It is adjusted in conjunction with declines in the rating of the underlying security. The spread shift is 100 basis points at the Aa2 rating level. Adjustments to lower ratings are based on the relative increase in risk as reflected in Moody's Weighted Average Rating Factor (WARF)[19] for each rating level. As is the case for the curve shift, the impact of the spread shift is proportionally lower or higher for securities with respectively shorter or longer maturities.

(5) Stressed NAV – The quantums of loss resulting from the curve and spread shifts are summed with the sum being subtracted to the portfolio's NAV of 1.000 to arrive at the stressed NAV.

(6) Outflow Impact –The stress scenario uses outflows of 50%, and the fund must liquidate sufficient assets to meet the redemption. As described in step 2, we assume that assets equal to the regulatory requirement for the fund's weekly liquidity will be liquidated at par value, with the remainder liquidated at the stressed NAV.

(7) The resultant post-redemption NAV from step 6 is compared to the table below to arrive at the Adjusted NAV score.

[18] Money market funds may be indirectly governed by regulations of jurisdictions other than where they operate. Funds that share very tight linkages with their sponsors located in other jurisdictions may by extension be governed by the jurisdiction of their sponsors. For example, linkages can be driven by reputational risk or by governing documents that specify the fund will replicate the holdings of a fund located in a jurisdiction governed by a more stringent regulation. When we consider that a money market fund is governed by the regulatory requirements of a jurisdiction other than that of its operations, we typically consider the most conservative requirements of weekly liquidity holdings in our calculation of the adjusted NAV.

[19] For more details, see our methodology that describes our approach to rating collateralized loan obligations. A link to an index of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

Let us take two examples, both where the starting point is a NAV of 1.000.

- In the first example, the money market fund operates in a jurisdiction with no one week liquidity requirement. The combined scenario of a shift in the curve and credit spreads leads to an NAV of 0.9962. Applying the 50% redemption scenario, the remaining investors face an NAV loss of 0.0076, calculated as (1-0.9962)*1/(1-50%), resulting in a post-redemption NAV of 0.9924, which is also the adjusted NAV. The score is 2.
- In the second example, the money market fund operates with a 30% one week liquidity requirement. The combined scenario of a shift in the curve and credit spreads leads to an NAV of 0.9950 on the 70% of remaining assets. Applying the redemption scenario discounted for redemptions absorbed through weekly liquidity (i.e. applying 20% of initial portfolio, or 28.6% of new portfolio), the remaining investors face a loss of 0.0070, calculated as (1-0.9950)*1/(1-28.6%). This post-redemption NAV is adjusted for the 30% initial redemptions covered by weekly liquidity (30%*1+ 70%*post-redemption NAV) to arrive at the adjusted NAV of 0.9951. The score is 1.

		Score			
Sub-factor	Weight	1	2	3	4
Adjusted NAV	40%	> 0.995	0.990-0.995	0.985-0.990	≤ 0.985

Appendix C:
Treatment of Investments in the Credit Matrix and Adjusted NAV Tools

Unrated Investments

Assets that we do not rate are typically assessed based on other sources of information and through the use of other analytic techniques. In the absence of a Moody's rating, we first consider using inputs from model-based tools, such as Moody's CreditEdge[20] or, if this tool is not available, Moody's RiskCalc.[21] If no input is available from the model-based tools, we typically use a default rating input of Baa3. If the use of Baa3 as a default input rating results in a change to the credit matrix outcome relative to the pre-existing credit matrix outcome, we typically assess the credit risk of the unrated investments through credit estimates.[22] Reference points used for unrated investments are capped at the sovereign's rating level.

In some cases, we may adjust the inputs used in the credit matrix and adjusted NAV. For credit ratings under review for downgrade, we typically apply a one notch downward adjustment, and we may in some cases make a one notch upward adjustment for credit ratings on review for upgrade. We may also make adjustments where we consider that instruments are vulnerable to particularly rapid rating transitions.

For several types of financial obligations, we use a proxy rating as a reference point in the credit matrix and in the adjusted NAV. The following table shows the mapping between these different types of financial obligations and the long-term-rating reference points used in the credit matrix.

[20] For more details on CreditEdge, please visit moodys.com.
[21] For more details on RiskCalc, please visit moody.com.
[22] Please see our cross-sector rating methodology that discusses the use of credit estimates. For clarity, we do not apply the two notch haircut or the jump-to-default test described in the methodology. A link to our sector and cross-sector rating methodologies can be found in the "Moody's Related Publications" section.

EXHIBIT 6

Mapping Between Investment Types and Reference Points

Investment Type	Reference Point	Comments
Cash and Cash Equivalents (e.g., uninvested cash, checking accounts and sight accounts)	Long-Term Deposit Rating	
Time Deposits and Certificates of Deposit	Long-Term Deposit Rating	
Commercial Paper	Senior Unsecured Rating	Where long-term ratings are not available, P-1 maps to A2, P-2 maps to Baa2, P-3 maps to Baa3 and NP maps to Caa1. In circumstances where commercial paper is not pari passu with senior unsecured long-term debt, we use the long-term rating that corresponds to the priority of the commercial paper. For instance, in a country with a resolution regime where bank commercial paper is senior to senior unsecured debt and pari passu with junior deposits, we use the long-term rating of junior deposits.
Partially Supported Asset Backed Commercial Paper (ABCP) Programs	Use Aa3 as the rating input	Due to having only partial support, we assume that for the ABCP to be marketable, the asset quality in a partially supported asset backed commercial paper program is at least Aa3 quality.
Fully Supported Asset Backed Commercial Paper Programs	CR Assessment	If the primary activity of the ABCP program is to directly fund a bank's commercial clients on a revolving basis (activity that might be sustained in the bank's resolution), we generally consider the bank's CR Assessment to be the reference point.
Fully Supported Asset Backed Commercial Paper Programs	Senior Unsecured Rating	If the primary activity of the ABCP conduit is to fund securities or other assets transferred to it by a bank, which is generally the sponsor, we consider the motive and function of the program to be consistent with the bank's own funding activities and, as a result, use the bank's senior unsecured rating as the reference point.
Fully Supported Asset Backed Commercial Paper Programs	Use A2 rating as the rating input	If the primary activity of the ABCP conduit is to fund assets through support agreements with P-1-rated support providers but the program sponsor does not disclose the names of the support providers, we use an A2 rating for the input into Moody's credit matrix and adjusted NAV.
Variable-Rate Demand Obligations	CR Assessment	We treat variable-rate demand obligations as exposure to the financial institution providing the liquidity or credit support, and we use the CR Assessment for that financial institution as the reference point.
Repurchase Agreements	Rating of Repurchase Agreement Collateral or Counterparty's Counterparty Risk Rating / Issuer Rating	Depending on the legal treatment of the transaction in a jurisdiction, we treat repurchase agreements as direct investments in the underlying collateral or as exposure to the repurchase agreement counterparty. Where the repurchase agreement is treated as a true sale (i.e., the repurchase agreement transfers legal title to the collateral from the seller to the buyer by means of an outright sale), we look through to the repurchase agreement collateral. Otherwise, we treat it as exposure to the counterparty and use the counterparty's Counterparty Risk Rating (CRR) or its issuer rating.

Treatment of Derivatives

Money market funds may use derivative products for a wide variety of purposes, including hedging interest-rate, currency and other market risks, as a substitute for a direct investment in the underlying instrument, or to increase returns.

In assessing the impact of derivatives on an MMF rating, we typically enter the individual components of the derivative transaction into the credit matrix and in adjusted NAV to reflect the derivatives' associated risks. These components include the reference point for the credit matrix (i.e., the counterparty risk captured through a bank's Counterparty Risk Rating (CRR),[23] the exposure (the derivative's mark-to-market value) and the maturity (next settlement date). For example, the exposure from an interest rate swap is the net value of the long and short legs. If the net value is positive, a payment is owed to the fund by the swap counterparty. As a result, the fund has incremental credit exposure to the derivative's counterparty, absent any posted collateral. If the net value is negative, the fund is in the position of payor, in which case we do not input the value into the credit matrix and adjusted NAV.

Certain derivative instruments, such as credit default swaps and forward purchase contracts, add credit risk to the fund. For example, if a fund were to sell credit protection on a reference credit, it would then have credit exposure to that reference credit. In such a case, we would include the position in the credit matrix, using the senior unsecured rating of the reference security and the notional amount of the swap. If the fund were to instead purchase credit protection on an investment in its portfolio, we would use the CR Assessment of the swap counterparty as the input in the credit matrix and adjusted NAV.[24]

[23] We use the CRR, the rating or other indicator that is most closely aligned to the counterparty risk. We may consider available posted collateral.
[24] If the fund does not purchase 100% credit protection, credit substitution would only then be applied to the percentage of the position that is credit-hedged.

Moody's Related Publications

Money market fund ratings are primarily determined by this methodology. Certain broad methodological considerations (described in one or more rating, cross-sector rating, or assessment methodologies) may also be relevant to the determination of the assessments in this sector. An index of sector and cross-sector credit rating methodologies can be found here.

The above link can be also be used to access any Moody's rating methodology referenced in this report.

For further information, please refer to *Rating Symbols and Definitions*, which is available here.

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