

# Fixed Income Investment Funds Credit Quality and Market Risk Assessment Rating Methodology

**Effective date:** December 27, 2024

## Introduction

This rating methodology is approved by Moody's Local Peru to be applied to assess the credit quality and market risk assessment of fixed income or debt funds, mutual or closed-end, in Peru<sup>1</sup>. In this methodology, we explain our general approach to assessing the credit quality risk and market risk of investments within fixed income funds in Peru,<sup>2</sup> including the qualitative and quantitative factors that are likely to affect fixed income fund ratings. In general terms, this methodology will apply to funds that invest exclusively in fixed income in their different classifications, whether they are money market, growth or income.

Fixed income funds, which are also called bond funds, invest in a variety of fixed income instruments, and their holdings may include corporate bonds, government bonds/bills, asset-backed and other structured debt securities, commercial debt receivables, cash positions (typically in the form of bank deposits). They may also hold repurchase agreements (repos) and derivatives positions, such as currency futures.

This methodology applies to fixed income funds that hold bonds and other investments for which we have sufficient information to form an opinion regarding their credit quality. Our approach to rating fixed income funds includes an assessment of portfolio credit quality, asset manager quality and other considerations.

Fixed income fund ratings are not credit ratings. They are primarily opinions of the weighted-average credit quality of investments within mutual funds and similar investment vehicles that principally invest in fixed income obligations, among other factors.

---

<sup>1</sup> The methodology was approved by Moody's Local PE Clasificadora de Riesgo S.A. on December 11, 2024. Rating methodologies describe the analytical framework that Moody's Local Peru uses to assign ratings. Methodologies set out the key analytical factors that Moody's Local Peru believes are the most important for the relevant sector. However, methodologies are not exhaustive treatments of all factors reflected in Moody's Local Peru.

<sup>2</sup> Please see Moody's Local Peru Rating Scales on Appendix A.

We discuss the credit matrix we use for fixed income funds. The credit matrix can be used in most cases to approximate the maturity-adjusted credit quality of a fixed income fund's portfolio of investments. We may use historical or forward-looking data or both as inputs to the credit matrix.

We discuss the credit matrix we use for fixed income funds. The credit matrix can be used in most cases to approximate the maturity-adjusted credit quality of a fixed income fund's portfolio of investments. We may use historical or forward-looking data or both as inputs to the credit matrix.

In addition, we describe our general approach to assigning market risk assessments (MRAs) to mutual funds. MRAs are allocated separately to debt funds and are opinions of the relative degree of volatility, on a historical basis, of a rated fund's net asset value (NAV). They are allocated to investment funds in Peru and other similar investment vehicles (e.g., investment funds on listed indices). MRAs of net asset value are based on the historical price and total return of the fund; However, past management of the Fund may not reflect current or future management styles, and future results may be very different from historical results.

Our presentation of this methodology proceeds with (i) a discussion of the credit matrix in the assessment of a fund's portfolio credit quality; (ii) other considerations for fixed income fund ratings; and (iii) general limitations.

**FIGURE 1** Overall Approach to Assigning Fixed Income Fund Credit Quality Ratings and MRA



Source: Moody's Local Peru

### CONTENTS

Introduction	1
Discussion of the General Approach to Rating Fixed Income Funds	4
<hr/>	
Credit Matrix: Portfolio Credit Quality	4
Credit Matrix: Reference Points and Treatment of Unrated Investments	4
<hr/>	
Other Considerations	5
Sensitivity analysis	8
Assigning Market Risk Assessments	9
General Limitations of the Methodology	9
Appendix A: Moody's Local Peru Rating Scale	11
<hr/>	
Fixed Income Fund Ratings	11
Market Risk Assessments	12
<hr/>	
Appendix B: Glossary	13
Client Services Contact Information	14
<hr/>	

## Discussion of the General Approach to Rating Fixed Income Funds

Our approach to rating fixed income funds in Peru includes an assessment of the credit quality of a fund's portfolio using a credit matrix. We also discuss how we apply the credit matrix in our treatment of unrated securities that may be held in a fixed income fund.

### CREDIT MATRIX: PORTFOLIO CREDIT QUALITY

In assessing portfolio credit quality, we use a credit matrix, which is a tool that attributes a specified amount of risk to each security in the portfolio based on the par value the security represents in the total portfolio, that security's long-term rating or long-term credit reference point and its maturity. The tool uses a table of relative risk factors that are established based on expected performance of ratings over various time horizons,<sup>3</sup> and based on the assumption that cumulative default risk and the risk of loss increase incrementally (i) for any time horizon (beyond t=0) as an exposure moves down the rating scale (e.g., from Af.pe- to BBBf+.pe) and (ii) in any rating category as the time horizon increases (e.g., from 3 years to 4 years).

The specified amount of risk is based on the stated final maturity of the security, with the following exceptions. For structured instruments such as asset-backed securities and mortgage-backed securities, we use the weighted average life (WAL) as the input for the security's maturity in lieu of the stated final maturity.

To arrive at the portfolio maturity-adjusted weighted average credit quality, the specified amounts of risk are summed and divided by the total par value of the portfolio, yielding a maturity-adjusted average amount of risk of the portfolio. Using the table of relative risk factors and the weighted average life (WAL) of the portfolio as the horizon,<sup>4</sup> the tool then maps the maturity-adjusted average amount of risk to a broad alpha rating category (AAAf.pe, AAf.pe, Af.pe, BBBf.pe, BBf.pe, Bf.pe, CCCf.pe, CCf.pe, Cf.pe).

### CREDIT MATRIX: REFERENCE POINTS AND TREATMENT OF UNRATED INVESTMENTS

We principally use long-term senior unsecured ratings as long-term reference point inputs in the credit matrix for securities held by fixed income funds. However, fixed income funds may also hold a variety of other securities 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 some cases, we may adjust the credit matrix inputs. For credit ratings under review for downgrade, we typically apply one downward notch to the credit matrix input.

#### Treatment of Unrated Investments

<sup>3</sup> The table of relative risk factors may be adjusted over time based on historical performance. For intermediate horizons (e.g., 2 years and 3 months), we may use interpolation, and we may use reinvestment assumptions for short-term securities.

<sup>4</sup> We select a horizon in the relative risk factors table that is closest to the fund's WAL, but not less than its WAL.

Fixed income funds may hold a variety of securities for which there is no associated long-term rating. Unrated securities are typically assessed based on other sources of information and through the use of other analytic proxies to establish a long-term credit reference point that we use as a designated credit equivalent input to the matrix. For example, we may use point-in-time estimates of the approximate credit quality of an issuing entity derived from scorecards or models of ML Peru or its affiliates.

### → INTERNAL CREDIT ASSESSMENT (ICA)

Fixed income funds may hold a variety of assets for which there is no associated long-term rating granted by Moody's Local Peru. Assets that we do not rate are typically assessed based on other sources of information and using other analytic techniques resulting in internal credit assessments (ICA).

### → RATING ASSUMPTIONS

If no rating or designated credit equivalent input is available, we use a credit matrix input assumption of the lower of (i) an alpha rating category of BBf.pe, in cases where the investment is performing; (ii) CCCf.pe in cases where the investment is non-performing (i.e., there are delayed or missed debt service payments beyond any applicable grace period).

Typically, the use of these rating assumptions is subject to certain limitations, as follows:

- **Limit per investment:** In general, an investment representing more than 5% of the fund's portfolio during two consecutive monthly reports must have a rating or ICA assigned by Moody's Local Peru. In other words, rating assumptions may not be used for individual investments that represent more than 5% of the investment portfolio. In these cases, we would normally seek to obtain a rating or ICA for that investment, to maintain the rating of the fixed income fund.
- **Total Rating Assumptions Limit:** Investments that are unrated and for which we were unable to assign an ICA (and for which we assigned a rating assumption) are generally limited to 20% of a fund's total managed investments. This limit may be exceeded only for two consecutive monthly reports. If the limit is exceeded, in order to maintain the fund's rating, Moody's Local Peru will seek to obtain a rating or ICA of the unrated investments in order to maintain the maximum of 20% with a rating assumption (i.e., no rating or no ICA assigned by Moody's Local Peru).
- **Limit of rating assumptions by credit matrix differentiation:** Generally, due to its construction, our rating assumption of a particular investment will tend to be lower than the rating or the ICA that we could assign if we had the information to do so. For those fixed income funds that have some percentage of investments with a rating assumption (i.e., non-rated and without ICAs), we compare (i) the credit matrix result using the fund's total investment portfolio; and (ii) the credit matrix result for the same portfolio excluding investments for which we use a rating assumption. The difference between (i) and (ii) in a monthly portfolio report may not exceed more than three notches, if this limit is exceeded, we would normally seek to obtain enough ICAs so that the respective credit matrix results have a difference of no more than three notches.

## Other Considerations

Fixed income fund ratings may include additional risk considerations that could affect the portfolio credit quality in addition to the, usually because the factor's credit importance varies widely among fixed income funds or because the factor may be important only under certain circumstances or for a subset of funds.

Following are some examples of additional risks that will be assessed y could affect our ratings of fixed income funds.

### **Operational, legal and reputational risks**

We consider the quality and experience of a fund's investment manager, as well as their attributes, in relation to the type of investments they manage. A strong asset manager can provide a very stable investment environment for fund flows, which can be reflected in a stable and predictable allocation of portfolio assets. Conversely, a weak asset manager can have a negative impact on the predictability of a debt fund's performance and its cash flows, incurring losses due to failures or insufficiencies in contractual, reputational or legal processes or problems, which could result in a deterioration in the quality of the fund's investment portfolio. Likewise, an asset manager may be strong for one type of investment based on its structure and experience and not so strong for the management of other types of portfolios. Typically, when assessing asset manager quality, we use the investment management activities factor described in our methodology for assessing the quality of investment managers (MQs), among others.

In addition to the evaluation of the fund's investment manager, we will evaluate the quality of the custody service providers engaged, considering their experience in providing custody services, their relationship with global custodians, their independence and management of conflicts of interest between the custodian and the management company.

### **Liquidity risk**

Our liquidity risk assessment considers the following parameters:

- **The marketability of the instruments that make up the portfolio**, which may be associated with the type of instrument and the credit quality of the issuer.
- **Portion of assets held in cash**, liquidity ratio established by the manager, always depending on the type of fund (money market, growth, income).
- **Concentration by investor**, since the more concentrated an investor is, the fund could suffer liquidity problems if this investor seeks to liquidate their investments.
- **Fund leverage**, which could limit the fund's ability to liquidate investments or acquire greater leverage to meet liquidity needs.

We will evaluate the liquidity characteristics of the investment fund according to these variables and in combination with the liquidation and withdrawal of funds policies, in general, we expect that a fund that invests in less liquid assets, with a higher concentration per investor, with a higher level of leverage and a greater duration of the fund will have more restrictive conditions for the liquidation of its investors' resources according to amounts and terms of settlement. We will adjust the rating positively or negatively of those funds that show relatively better or worse liquidity levels than other funds with the similar credit matrix and the similar withdrawal policies.

### **Foreign exchange risk**

Portfolios with investments in different currencies could face additional liquidity and currency exchange risks in extreme situations. For this reason, we will adjust the ratings of those funds

with high levels of multi-currency exposures compared to other funds with the same credit matrix level.

**Trends and Expectations for Future Changes in the Portfolio**

Because fixed income funds are actively managed, longer-term trends in credit matrix outcomes may have a greater bearing on our assessment of long-term credit quality than short-term trends. For example, we typically would not change our view of the credit quality of a fixed income fund's portfolio based on one-off, opportunistic changes in its composition that may temporarily drive up or down the portfolio credit quality outcome and that are aligned with the expected economic environment. Our expectations for future changes to the investment portfolio may also be based on our assessment of the flexibility afforded to a fund by its investment prospectus as well as the fund managers expectations and ability to adapt to potential downward economic turns.

**Frequency and Quality of Financial Reporting**

Given our role as a rating agency, our opinions regarding creditworthiness rely on the accuracy and frequency of a fixed income fund's financial statements, particularly its portfolio data, to assign and monitor fund ratings. The quality of financial statements and portfolio data may be influenced by internal controls, including corporate governance practices, centralized operations, and consistency in accounting policies and procedures. The absence of audited statements or auditors' comments in financial reports and unusual restatements of financial statements or delays in regulatory filings may indicate weaknesses in internal controls.

**Limited or No Operating History**

In certain circumstances, we may assign fund ratings to funds prior to their launch and initial funding, or to funds with short track records. In these cases, we may adjust the credit matrix outcome down by one or more notches to reflect the degree of uncertainty about the capacity of the fund to execute its investment model or sustain its portfolio composition.

Our assessment typically focuses on the manager's experience and track record for managing fixed income 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 fixed income 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 fund rating to reflect the actual credit quality of the portfolio.

**Regulatory Considerations**

Fixed income funds in Peru may be subject to varying degrees of regulatory oversight. Effects of these regulations may entail limitations on operations, higher costs, and higher potential for technology disruptions and demand substitution.

**Environmental, Social and Governance Considerations**

Environmental, social and governance (ESG) considerations may also be reflected in the ratings of the investments held by a fixed income fund, and they may also affect the relative management quality of fixed income funds in Peru. Fund governance includes the management of financial assets under the terms of a contract. Serious deficiencies in fund governance, if not mitigated by other considerations, may have a negative impact on fixed income fund ratings. Good corporate governance as promoted by the board of directors is an important contributor to the financial health and management quality of a firm. We generally consider the depth of corporate governance based on the board's independence, expertise and involvement as well as

in its ability to align governance practices with proper oversight of the management team and corporate strategy.

Independent review of a fixed income fund's financial reporting and risk management processes is important, as is oversight of compliance and regulatory issues. The board plays a central role in ensuring that management sets the appropriate controls within the company. We typically consider compensation plans and the board's oversight of compensation practices in terms of their potential impact on management's policies and actions. Plans that reward management and employees for building long-term value in the company would likely be viewed positively from a management quality perspective.

In some circumstances, we also consider the interests, track record and resources of large shareholders to anticipate how they might behave in the normal course of events and in times of stress. The potentially conflicting interests of shareholders, creditors and counterparties are also typically considered when considering how the board and management team balance these demands. More generally, ESG considerations may also affect investment returns or the fixed income fund's reputation.

ESG issues typically have disproportionate downside risk. However, ESG considerations are not always negative, and they can be a source of credit strength in rare instances. For example, a company that has outstandingly strong governance is more likely to have a management culture of full-degree risk assessment and informed decision-making with a view toward long-term sustainability.

### **Portfolio Diversification**

A diversified investment portfolio typically leads to a more stable risk profile compared to a concentrated one, thereby resulting in a steadier rating. We may adjust the fund's rating to account for this volatility risk in funds that are highly concentrated or extremely diversified when compared with other funds within the same category.

### **Investment Policy and Objectives**

We might adjust ratings if: a) future changes in investment policy and objectives are anticipated, b) flexible investment policies could cause future volatility in the risk profile of the fund, or c) there are inconsistencies between documented policies and actual investments, affecting the fund's risk profile.

### **Other**

In assessing fixed income funds in Peru, we may incorporate other considerations that are material in the case of a particular fixed income fund, including considerations that may not be common in the sector.

We recognize the possibility that an unexpected event (event risk) could cause a sudden and sharp decline in a fixed income fund's performance. Event risks — which are varied and tend to have low probability and high impact — can overwhelm even a stable, high quality asset manager relative to those at firms with a similar investment strategy. Some types of event risks may include litigation, pandemics, significant cyber-crime events and shareholder distributions, if applicable.

## **Sensitivity analysis**

Moody's Local Peru will carry out scenarios to raise awareness of the main quantitative and qualitative variables that could affect the ratings of investment funds in order to incorporate high sensitivities and minimize volatility in the ratings granted. To this end, Moody's Local Peru may carry out rating impact scenarios with at least two assumed portfolios that are considered viable, one positive, where increases in the ratings of the main investments will be assumed and another negative, where potential downgrades of the main investments in the portfolio will be assumed. In addition, in cases where it is considered that it could generate a relevant effect on the rating, we could perform sensitivity analyses of other qualitative and quantitative variables.

## Assigning Market Risk Assessments

For mutual funds, to assign an MRA, we compare the fund's historical daily net asset value (NAV) volatility with the NAV volatility quartile ranges of the debt fund universe in Peru for which Moody's Local Peru has available information. The quartile ranges correspond to the historical volatility of this universe of debt funds.

We take into account other quantitative and qualitative considerations, such as peer-to-peer comparisons, the average duration of a fund, asset risk characteristics, the availability of historical NAV volatility information, asset liquidity, and the probability of loss, among others. We assign the MRA based on the fund's classification according to quartiles and these other considerations.

In cases where the real NAV of the fund is not available (due to lack of liquidity of the investment assets, for example) we could assign a MRA based on the investment characteristics.

### **MRA Monitoring**

MRAs are used to monitor the activities and volatility of debt funds. In our monitoring of MRAs, we use public information or information provided by the qualified debt fund.

## General Limitations of the Methodology

This methodology does not include an exhaustive description of all factors that we may consider in assigning fixed income fund ratings. The investment holdings of funds in the sector may be subject to new risks or new combinations of risks, and fixed income funds may develop new strategies to mitigate risk. We seek to incorporate all material credit considerations in fixed income fund ratings and to take the most forward-looking perspective that visibility into these risks and mitigants permits.

Fixed income fund ratings may incorporate expectations for future changes in the portfolio composition (see the "Other Considerations" section). In some cases, our expectations for future composition may be informed by confidential information. In other cases, we estimate future composition based on past management actions, trends across the peer group or other considerations. In any case, predicting the future is subject to substantial uncertainty.

The information used in assessing the factors and sub-factors is based on information provided by the fund, financial statement disclosures and publicly available data such as disclosures by regulators. We may also incorporate non-public information.

Our forward-looking opinions are based on assumptions that may prove, in hindsight, to have been different. 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. In any case, predicting the future is subject to substantial uncertainty.

## Appendix A: Moody's Local Peru Rating Scale

### FIXED INCOME FUND RATINGS

Fixed Income Fund Ratings are primarily opinions of the weighted-average credit quality of investments within mutual funds and similar investment vehicles that principally invest in fixed income obligations, but they also reflect the weighted average life of the fund relative to peers and other risks that could affect the credit quality of the fund.

**FIGURE 1** Fixed Income Fund Rating Scale

RATING	DESCRIPTION
AAAf.pe	Fixed Income Funds rated AAAf.pe generally hold assets that demonstrate the strongest creditworthiness relative to assets held by other domestic fixed income funds.
AAf.pe	Fixed Income Funds rated AAf.pe generally hold assets that demonstrate strong creditworthiness relative to assets held by other domestic fixed income funds.
Af.pe	Fixed Income Funds rated Af.pe generally hold assets that demonstrate above-average creditworthiness relative to assets held by other domestic fixed income funds.
BBBf.pe	Fixed Income Funds rated BBBf.pe generally hold assets that demonstrate average creditworthiness relative to assets held by other domestic fixed income funds.
BBf.pe	Fixed Income Funds rated BBf.pe generally hold assets that demonstrate below-average creditworthiness relative to assets held by other domestic fixed income funds.
Bf.pe	Fixed Income Funds rated Bf.pe generally hold assets that demonstrate weak creditworthiness relative to assets held by other domestic fixed income funds and a meaningful portion of these assets may be approaching default or may be in default, with strong recovery prospects.
CCCf.pe	Fixed Income Funds rated CCCf.pe generally hold assets that demonstrate very weak creditworthiness relative to assets held by other domestic fixed income funds and these assets are on average likely in or near default, typically with moderate recovery prospects.
CCf.pe	Fixed Income Funds rated in CCf.pe generally hold assets with extremely weak creditworthiness relative to assets held by other domestic fixed income funds and these assets are often in default, usually with low recovery prospects.
Cf.pe	Fixed-Income Funds rated Cf.pe generally hold assets that demonstrate the weakest creditworthiness relative to assets held by other domestic fixed income funds and these assets are typically in default, with very poor recovery prospects.
Ef.pe	Fixed-income funds classified in Ef.pe do not have updated information to determine the credit quality of their assets.

Note: Moody's Local Peru appends the modifiers + and - to each generic rating classification from AA through CCC. The modifier + indicates that the fund ranks in the higher end of its generic category; no modifier indicates mid-range ranking; and the modifier - indicates a ranking in the lower end of that generic rating category. Source: Moody's Local Peru

**MARKET RISK ASSESSMENTS**

Moody's Local Peru Market Risk Assessments (MRAs) are opinions of the relative degree of historical volatility of a rated fund's net asset value (NAV). MRAs are not intended to consider prospective performance of funds with respect to price appreciation or yield.

**FIGURE 2** Market Risk Assessment Scale

ASSESSMENT	DESCRIPTION
MRA1.pe	Funds rated MRA1.pe have had very low sensitivity to changes in interest rates and other market conditions.
MRA2.pe	Funds rated MRA2.pe have had low sensitivity to changes in interest rates and other market conditions.
MRA3.pe	Funds rated MRA3.pe have had low to moderate to changes in interest rates and other market conditions.
MRA4.pe	Funds rated MRA4.pe have had moderate sensitivity to changes in interest rates and other market conditions.
MRA5.pe	Funds rated MRA5.pe have had moderate to high sensitivity to changes in interest rates and other market conditions.
MRA6.pe	Funds rated MRA6.pe have had high sensitivity to changes in interest rates and other market conditions.

## Appendix B: Glossary

- **Duration:** The duration provides information on the average life of an investment fund's portfolio of securities. It will allow investors to know the average maturity term (in years) of the debt securities in the portfolio, for which the present value of the principal payment and the amount and frequency of payment of the interest coupons until the maturity of the securities are considered. For example, a duration of 1.5 years means that the debt securities in the portfolio are settled on average in 1 year and 6 months.
- **Modified duration:** The modified duration provides information on the risk exposure due to the variation in interest rates that the debt securities in an investment fund's portfolio may experience. For example, if an investment fund has a modified duration of 2%, this indicates that in the event of an increase in interest rates of 1%, the portion of debt securities in the portfolio could be reduced by 2% and vice versa. The duration is recommended for the analysis of small changes in interest rates.

Modified duration is a measure that estimates the percentage change in the price of a bond or bond portfolio in response to a unit change in interest rates. In other words, it indicates how much the price of a bond is expected to vary given a change in interest rates. The modified duration is calculated as a function of the time to maturity of the bond's cash flows and the bond's coupon rate. The longer the modified duration of a bond or portfolio, the greater its sensitivity to changes in interest rates. Portfolio managers can use modified duration to effectively manage interest risk by adjusting their portfolio duration based on their investment objectives and risk tolerance.

## **Client Services Contact Information**

Moody's Local PE Clasificadora de Riesgo S.A.

Calle Las Camelias 256, Piso 6

San Isidro, Lima 15046

Perú

+51-1-616-0400

© 2024 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S CREDIT RATINGS AFFILIATES ARE THEIR CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MATERIALS, PRODUCTS, SERVICES AND INFORMATION PUBLISHED OR OTHERWISE MADE AVAILABLE BY MOODY'S (COLLECTIVELY, "MATERIALS") MAY INCLUDE SUCH CURRENT OPINIONS. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT OR IMPAIRMENT. SEE APPLICABLE MOODY'S RATING SYMBOLS AND DEFINITIONS PUBLICATION FOR INFORMATION ON THE TYPES OF CONTRACTUAL FINANCIAL OBLIGATIONS ADDRESSED BY MOODY'S CREDIT RATINGS. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS, NON-CREDIT ASSESSMENTS ("ASSESSMENTS"), AND OTHER OPINIONS INCLUDED IN MOODY'S MATERIALS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S MATERIALS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. AND/OR ITS AFFILIATES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND MATERIALS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND MATERIALS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND MATERIALS DO NOT COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS, ASSESSMENTS AND OTHER OPINIONS AND PUBLISHES OR OTHERWISE MAKES AVAILABLE ITS MATERIALS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS, AND MATERIALS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS OR MATERIALS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT. FOR CLARITY, NO INFORMATION CONTAINED HEREIN MAY BE USED TO DEVELOP, IMPROVE, TRAIN OR RETRAIN ANY SOFTWARE PROGRAM OR DATABASE, INCLUDING, BUT NOT LIMITED TO, FOR ANY ARTIFICIAL INTELLIGENCE, MACHINE LEARNING OR NATURAL LANGUAGE PROCESSING SOFTWARE, ALGORITHM, METHODOLOGY AND/OR MODEL.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND MATERIALS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the credit rating process or in preparing its Materials.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY CREDIT RATING, ASSESSMENT, OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any credit rating, agreed to pay to Moody's Investors Service, Inc. for credit ratings opinions and services rendered by it. MCO and Moody's Investors Service also maintain policies and procedures to address the independence of Moody's Investors Service credit ratings and credit rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold credit ratings from Moody's Investors Service, Inc. and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at [www.moody's.com](http://www.moody's.com) under the heading "Investor Relations — Corporate Governance — Charter Documents - Director and Shareholder Affiliation Policy."

Moody's SF Japan K.K., Moody's Local AR Agente de Calificación de Riesgo S.A., Moody's Local BR Agência de Classificação de Risco LTDA, Moody's Local MX S.A. de C.V. I.C.V., Moody's Local PE Clasificadora de Riesgo S.A., and Moody's Local PA Clasificadora de Riesgo S.A. (collectively, the "Moody's Non-NRSRO CRAs") are all indirectly wholly-owned credit rating agency subsidiaries of MCO. None of the Moody's Non-NRSRO CRAs is a Nationally Recognized Statistical Rating Organization.

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657 AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors.

Additional terms for India only: Moody's credit ratings, Assessments, other opinions and Materials are not intended to be and shall not be relied upon or used by any users located in India in relation to securities listed or proposed to be listed on Indian stock exchanges.

Additional terms with respect to Second Party Opinions (as defined in Moody's Investors Service Rating Symbols and Definitions): Please note that a Second Party Opinion ("SPO") is not a "credit rating". The issuance of SPOs is not a regulated activity in many jurisdictions, including Singapore. JAPAN: In Japan, development and provision of SPOs fall under the category of "Ancillary Businesses", not "Credit Rating Business", and are not subject to the regulations applicable to "Credit Rating Business" under the Financial Instruments and Exchange Act of Japan and its relevant regulation. PRC: Any SPO: (1) does not constitute a PRC Green Bond Assessment as defined under any relevant PRC laws or regulations; (2) cannot be included in any registration statement, offering circular, prospectus or any other documents submitted to the PRC regulatory authorities or otherwise used to satisfy any PRC regulatory disclosure requirement; and (3) cannot be used within the PRC for any regulatory purpose or for any other purpose which is not permitted under relevant PRC laws or regulations. For the purposes of this disclaimer, "PRC" refers to the mainland of the People's Republic of China, excluding Hong Kong, Macau and Taiwan.