
Fixed-Income Survey Guidelines

Morningstar Research
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Source of Data

The data that drive the fixed-income Morningstar Style Box is surveyed from fund companies. Morningstar asks fund companies to send the following information on a monthly or quarterly basis for each of their fixed-income and allocation funds.

Morningstar recognizes that some fixed-income and allocation funds are managed as funds of funds. In cases where the entire portfolio is managed in a fund-of-fund approach, if underlying funds representing more than 50% of the assets have provided fixed-income surveys, Morningstar will aggregate the underlying fixed-income survey data to generate statistics. In cases where the fund manages some assets but has other assets managed through funds, Morningstar requests that these hybrid funds provide the asset-weighted aggregation of the requested survey data.

Credit Quality

Each fixed-income security and cash instrument in a fund is assigned to one of the following eight categories for credit-quality calculations. The percentages for assets in that letter-rating level are a percentage of all fixed-income and cash assets.

AAA	AA	A	BBB	BB	B	Below B	Not Rated	Total
71.72	3.91	7.08	9.49	1.44	0.98	0.00	5.38	100.00

Morningstar accepts credit ratings reported by fund companies that have been issued by all Nationally Recognized Statistical Rating Organizations.¹ Additionally, Morningstar accepts foreign credit ratings from widely recognized or registered rating agencies. So-called internal, or manager-derived, alphanumeric credit ratings are not to be included in those categories; bonds not rated by an NRSRO (or equivalent foreign rating agency) are included in the not rated, or NR, category.

Morningstar requests that ratings provided be mapped to the S&P letter-rating classification. The attached appendix includes rating mappings of both long-term and short-term securities for a number of rating agencies.

Morningstar instructs funds to classify bonds according to the Barclays Capital Family of Indices ratings rules when ratings are available from multiple rating agencies. If more than two ratings are available

¹ Commission orders granting NRSRO registration: <http://www.sec.gov/divisions/marketreg/ratingagency.htm>

and a median exists, the median should be used. If more than two ratings exist without a median, the lower of the two middle ratings should be used. If only two ratings are available, the lower rating should be used. If only one agency rates a security, that rating can be used. If there is a security with no rating, it is considered NR.

Here are some additional details about the calculation for credit-quality breakdown:

- ▶ Fixed-income securities and cash should be included in the credit-quality calculations.
- ▶ The holdings used for calculation should be a trade-dated list that includes the impact of pending trades.
- ▶ Accrued income should be included in the credit-quality calculation as part of the total market value exposure of each security.
- ▶ Morningstar categorizes any fixed-income instrument with less than 92 days to maturity as a cash equivalent. Cash equivalents should be included in the overall calculation of credit quality.
- ▶ Cash and bank deposits that have a traditional letter rating can be included in the appropriate credit-quality category. Cash and bank deposits that do not have traditional letter ratings can be included in the AAA credit-quality category for purposes of this survey.
- ▶ If a fund holds futures, or other derivative tools such as swaps or options, that have fixed-income securities as the underlying asset or if it holds other fixed-income funds as assets, the credit quality that is calculated should include the weighted impact of the underlying assets.
- ▶ Funds may report negative values in credit-quality breakdown.
- ▶ Convertible bonds should be included in the calculation.
- ▶ Preferred stock should not be included in the calculation of credit quality.

Average Effective Duration

Morningstar asks fund companies to calculate and send average effective duration (also known as option-adjusted duration) for each of their fixed-income and allocation funds. We ask for effective duration because the measure gives a better estimate of how the price of bonds with embedded options, which are common in many mutual funds, will change as a result of changes in interest rates.

Effective duration takes into account expected mortgage prepayment or the likelihood that embedded options will be exercised if a fund holds futures, other derivative securities, or other funds as assets; the aggregate effective duration should include the weighted impact of those exposures. Standard practice for calculating this data point requires determination of a security's option-adjusted spread, including the use of option models or Monte Carlo simulation, as well as interest-rate scenario testing. Morningstar requests that the fund only report data in this field that have been specifically labeled as effective or option-adjusted duration, or data that fund is certain have been calculated in the fashion described.

Morningstar categorizes any fixed instrument with less than one year to maturity as cash for the purposes of calculating a fund's asset-allocation breakdown. These short-term fixed securities and other cash instruments are included in the calculation of effective duration.

Morningstar will accept surveys returned with modified duration (and no effective duration provided) only for funds in the municipal and high-yield categories. Surveys for all other categories that lack a submission for effective duration will not be accepted.

Average Effective Maturity

Morningstar asks fund companies to calculate and send average effective maturity for each of their fixed-income or allocation funds on a monthly or quarterly basis. Average effective maturity is defined as a weighted average of the maturities of the bonds in a portfolio, taking into account all expected mortgage prepayments, puts, and adjustable coupons. Maturity is defined as the length of time in years until a debt becomes due for payment.

If a fund holds futures, other derivatives, or other funds as assets, the average effective maturity should include the weighted impact of the underlying assets. Any fixed instrument with less than one year to maturity should be included in the calculation of average effective maturity.

Morningstar asks fund companies to not send average nominal maturity, defined as a measure of a bond's maturity that, unlike average effective maturity, does not take into account expected mortgage prepayments, puts, or adjustable coupons.

Shorts and Derivatives

Morningstar asks companies to calculate and include the effective economic exposures of fixed-income derivatives within the fixed-income survey. Interest-rate derivatives should be included in the estimation of average effective duration.

Alternative Minimum Tax Exposure

Morningstar asks fund companies to calculate the percentage of each U.S. municipal-bond portfolio's bonds whose income distributions are subject to the AMT. So-called private-activity municipal bonds are subject to the AMT.

Yield to Maturity

Morningstar asks fund companies to calculate an average yield to maturity for the portfolio. The calculation of yield to maturity should take into account the market prices as of the date of the portfolio, par value, coupon interest rate, and time to maturity. All coupons are assumed to be reinvested at the same rate.

All Prerefunded

Morningstar asks fund companies to calculate the percentage of each U.S. municipal-bond portfolio's bonds that are prerefunded. Prerefunded bonds are bonds that may have originally been issued as revenue or general-obligation bonds but are now secured until the call date or maturity in an escrow account consisting entirely of U.S. government obligations that are sufficient for paying the bondholders.

Currency Exposure

Morningstar asks fund companies to provide information about how each taxable fund's fixed-income and cash assets are distributed among currencies. (Morningstar calculates in-house how each fund's fixed-income and cash assets are distributed among countries.)

For example, a world-bond fund with broad exposure might show 10 different country exposures. If that fund did no currency hedging whatsoever, its currency exposure would mirror its country exposure. If, however, the same portfolio were fully hedged to the U.S. dollar, the fund's country exposure would remain the same while its U.S. dollar exposure would equal 100%.

Funds with partial hedges or active currency bets would likely have multiple listings for currency exposure, and the currency exposure may appear to have no correlation to the country exposure. Funds may report negative values in currency breakdown.

Appendix

Exhibit 1 Selected NRSRO Ratings Mapped to Morningstar

Morningstar	S&P	Moody's	Fitch	Egan Jones
AAA	AAA	Aaa	AAA	AAA
AA	AA+	Aa1	AA+	AA+
	AA	Aa2	AA	AA
	AA-	Aa3	AA-	AA-
A	A+	A1	A+	A+
	A	A2	A	A
	A-	A3	A-	A-
BBB	BBB+	Baa1	BBB+	BBB+
	BBB	Baa2	BBB	BBB
	BBB-	Baa3	BBB-	BBB-
BB	BB+	Ba1	BB+	BB+
	BB	Ba2	BB	BB
	BB-	Ba3	BB-	BB-
B	B+	B1	B+	B+
	B	B2	B	B
	B-	B3	B-	B-
Below B	CCC+	Caa1		CCC+
	CCC	Caa2	CCC	CCC
	CCC- / CC	Caa3		CCC-
	CC / C	Ca	DDD/DD/D	CC /C/D

Source: Morningstar.

Exhibit 2 Selected NRSRO Short-Term Issue Credit Ratings Mapped to Morningstar

Morningstar	S&P	Moody's	Fitch	Egan Jones
AAA	A-1+	Prime-1	MIG1	F1+
AA	A-1	—	MIG2	F1
A	A-2	—	MIG3	F2
BBB	—	Prime-2	—	—
	A-3	Prime-3	MIG4	F3
BB	B-1	—	—	—
B	B-2	Not Prime	SG	B
Below B	B-3	—	—	—
	C	—	C	C
	D	—	D	D

Source: Morningstar.

Recent Changes

Effective Date: 10/31/2016

Change Cash & Cash Equivalents definition from "Less than one year to maturity" to "less than 92 days to maturity". ■■