Morningstar Fixed Income Style Box™ Methodology

Morningstar Methodology Paper
31 October 2008

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Introduction

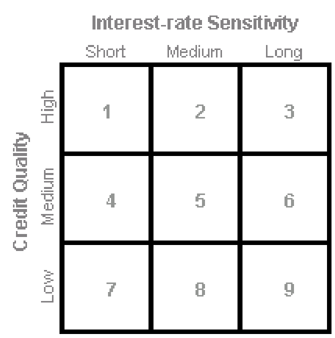
The Morningstar Style Box™ was introduced in 1992 to help investors and advisors determine the investment style of a fund. Different investment styles often have different levels of risk and lead to differences in returns. Therefore, it is crucial that investors understand style and have a tool to measure their style exposure. The Morningstar Style Box provides an intuitive visual representation of style that helps investors build better portfolios and monitor them more precisely.

Morningstar classifies funds as being long-term, intermediate, or short-term based on the average effective duration of the fund's bond holdings; and as high quality, medium quality, or low quality based on the credit quality orientation of the bond holdings. The nine possible combinations of these characteristics correspond to the nine squares of the Morningstar Style Box—quality is displayed along the vertical axis and duration is displayed along the horizontal axis.

Fixed Income Style Box

Overview

The model for the fixed income style box is based on the two pillars of fixed-income performance: interest-rate sensitivity and credit quality. As depicted in the image below, the three duration groups are short, intermediate, and long-term, and the three credit quality groups are high, medium, and low quality. These groupings display a portfolio's effective duration and credit quality to provide an overall representation of the fund's risk, given the length and quality of bonds in its portfolio.



Horizontal Axis: Interest-rate Sensitivity

The horizontal axis focuses on interest-rate sensitivity, as measured by the bond's portfolio effective duration.

Prior to October 2008, US taxable-bond funds with durations of 3.5 years or less were considered short-term; more than 3.5 years and less than six years, intermediate term; and more than six years, long term. In October 2008, Morningstar moved from static breakpoints to flexible breakpoints. On a monthly basis Morningstar calculates duration breakpoints based around the 3 year effective duration of the Morningstar Core Bond Index (MCBI).

Short-Term: 25% to 75% of MCBI
Intermediate: 75% to 125% of MCBI
Long-Term: 125% of MCBI (no upper limit on long-term funds)

By using the MCBI as the duration benchmark, Morningstar is effectively setting the effective duration bands to move as the market moves which will minimize market-driven style box changes.

Non-US taxable-bond funds use the static duration breakpoints.

Municipal bond funds with durations of 4.5 years or less qualify as short-term; more than 4.5 years and less than seven years, intermediate term; and more than seven years, long term.

Vertical Axis: Credit Quality
The vertical access focuses on average credit quality, as derived from fund company surveys. Fund companies send the credit quality breakdown, which is translated into average credit quality using a simple formula.

Funds that have an average credit rating of AAA and AA are categorized as high quality, less than AA but greater than or equal to BBB are medium quality, and below BBB are categorized as low quality. For the purposes of Morningstar's calculations, U.S. government securities are considered AAA bonds, non-rated municipal bonds are classified as BB, and all other non-rated bonds are labeled B.

The fund provides % in each credit quality level. Morningstar then does a weighted average based on scores provided. The average credit quality (letters) is based on weighted average score.

- High Quality = low risk
- Low Quality = "junk bonds" or high risk

	Score	**Fund %**	**Rating**	**Avg Score**	**Style Box position**
Cr Qual % AAA	2	65%	AAA	0 - 2.5	High Quality
Cr Qual % AA	3	14%	AA	2.5 - 3.5	High Quality
Cr Qual % A	4	10%	A	3.5 - 4.5	Medium Quality
Cr Qual % BBB	5	11%	BBB	4.5 - 5.5	Medium Quality
Cr Qual % BB	6	0%	BB	5.5 - 6.5	Low Quality
Cr Qual % B	7	0%	B	6.5 - 7.5	Low Quality
Cr Qual % Below B	8	0%	Below B	>7.5	Low Quality
Cr Qual % Not Rated	7	0%			
		100%			
Weighted Average		**2.670%**			
Average Credit Quality		**AA**			

AAA includes US Government

Not rated if no survey provided

Fixed Income Survey

The data which drives the fixed income 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 or allocation funds.

Credit Quality Breakdown
Each fixed income security and cash instrument in a fund is assigned to one of the following eight categories for the credit quality calculation. The percentages represent the assets in that rating level as a percent 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

Ratings data provided to Morningstar in one of the first seven categories (AAA through Below B) only reflects ratings assigned by one of the Nationally Recognized Statistical Rating Organizations (NRSRO). So-called internal, or manager-derived, credit ratings are not to be included in those categories; rather, bonds not rated by an NRSRO are included in the not rated (NR) category.

Morningstar is sensitive to the reality that some vendors use Moody's Investor Service ratings rather than or in addition to S&P ratings classifications. Below is a chart showing the equivalent Moody's rating class for each S&P rating tier.

Standard & Poor's	AAA	AA	A	BBB	BB	B	Below B
Moody's	Aaa	Aa2	A2	Baa2	Ba2	B2	Below B2

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 or allocation funds. We ask for effective duration because the measure gives better estimates of how the prices 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 prepayments or the likelihood that embedded call 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 simulations, as well as interest-rate scenario testing. Morningstar requests that the fund only report data in this field that has been specifically labeled effective or option-adjusted duration, or that you are certain has 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 accepts surveys returned with modified duration (and no effective duration provided) for funds in the municipal and high yield categories. Surveys for all other bond categories that lack a submission for effective duration will not be accepted.