



Questions & Answers | Morningstar's Fixed Income Analytics Program

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Questions & Answers | Introduction

What is Morningstar's enhanced fixed income capabilities initiative?

In 2016, Morningstar launched a global fixed-income initiative to bring enhanced analytics, capabilities and data to our clients through the acquisition of a provider of sophisticated fixed income analytics- InvestSoft LLC, and the signing of significant third-party global fixed income data licenses. With these investments, Morningstar put in place the components needed to begin building enhanced capabilities. Traditionally Morningstar has relied on information sourced directly from asset managers or their agents and applicable only to the managed investments. The fixed income capabilities enhancement initiative will instead produce fixed income calculations directly using portfolio holdings data collected from asset managers as the initial deliverable. By producing calculated analytics Morningstar can better provide transparency, consistency, and comparability for our clients. Over time Morningstar will build out enhancements to fixed income analytics, expand coverage beyond the managed investment universe, and improve product functionality in an effort to continually improve the solutions provided to help investors better achieve their goals and objectives related to fixed income.

What types of supporting documents and materials related to this initiative will Morningstar be providing and how can they be found?

Morningstar will publish a number of documents related to the release of fixed income analytics. For the initial release presentation, FAQ document and methodology documentation materials will be available. As new capabilities are developed and released there will be corresponding updates to the documentation.

What exactly is changing?

We will begin producing calculated fixed income analytics for funds that meet specific criteria and threshold levels. At this time, we are not replacing the current self-reported values, but rather running in parallel so that both the self-reported and calculated values are available for the following data points: credit rating breakdown, effective duration, modified duration, effective maturity, and yield to maturity. Analytics will only be surfaced at the fund level, as they are today.

How will Morningstar roll out calculated fixed income analytics?

The first release will provide calculated portfolio analytics in addition to their respective self-reported values. The calculated values will not replace any of the currently self-reported values on key Morningstar reports or main displays. Once a sufficient level of coverage has been reached the plan is to transition from self-reported values to calculated analytics. At that point, the inputs and methodology to generate the Fixed Income Style Box will also change to reflect the calculated values. The Fixed Income Style Box will not be changed in the first release.

When will calculated fixed income data be released in Morningstar's products?

Calculated data will be available in Morningstar Direct on May 26, 2017. To receive release timeline for other Morningstar products, please reach out to your client support specialist.

Which products will be impacted by this first release?

New fields will be added in Morningstar products in order to view the self-reported and calculated values side-by-side. Key reports and fact sheets will not be impacted in the first release—the values displayed will continue to be sourced from the self-reported data. Different products will release phase 1 calculations at different times.

What are the new calculated data points being released?

The initial release of calculated data points replicate those currently produced from the Fixed Income Survey: Average Modified Duration (Calculated)/ Average Effective Maturity (Calculated)/ Average Yield to Maturity (Calculated)/ Credit Rating Breakdown (Calculated)/ Average Effective Duration (Calculated). The new data points have been named to clearly differentiate them from the legacy data points. Additionally, Morningstar is providing a new data point - Percentage Calculated, which will show how much of the applicable fixed income asset value is included in the calculated data points.

What input data sources will Morningstar use to support fixed income calculations?

Morningstar fixed income calculations rely on three components of input data. First is the data collected from asset managers related to their portfolios and holdings. Second are credit ratings which are sourced directly from Credit Rating Agencies. Third are the "terms and conditions" data elements which support the proper calculation of cash flows, primarily interest and principal, which are created from a combination of data collected by Morningstar and sourced from third party vendors.

When does Morningstar intend to make additional enhancements available after the first release?

While there is not a specific date set for the release of new enhancements, Morningstar is committed to providing enhancements as quickly as possible.

How were the methodologies used in the fixed income calculations chosen?

Morningstar strives to be transparent in the way our analytics and calculations are produced. Methodology documentation and a definition glossary will be available across fixed-income newly calculated analytics. It is our goal to help investors make better decisions and we believe strongly that there is value in providing an independent view and methodology that allows for an apples-to-apples comparison of funds. These methodologies have been internally and externally vetted by the industry.

Will there be a period of time when both the self-reported and calculated data will be available?

Yes, we are not overriding the current self-reported data in our products. We want to give our clients and data providers time to assess the data and to get comfortable with our calculated methodologies. Because we are focused on quality, comparability, and transparency, we have determined that parallel support is ideal for this first release but over time, we will transition away from using self-reported values.

Tell me more about the fixed income calculation engine used?

In 2016 Morningstar acquired Investsoft LLC, a provider of fixed income calculation software. The primary calculation product offered by Investsoft was "BondPro", a sophisticated fixed income instrument cash flow calculation library. BondPro has the unique capability to be able to flexibly and accurately model cash flows for fixed income instruments when provided appropriate input data. Given Morningstar's requirement to calculate fixed income analytics for securities globally, the integration of BondPro is a cornerstone upon which fixed income capabilities enhancements will be built.

What is meant by "retiring" the Fixed Income Survey?

Once Morningstar has sufficient coverage of our calculated portfolio level fixed income analytics, we will retire the fixed income survey from public display. We will give sufficient notice to the market of this retirement date and will be working closely with asset management firms to apprise them of our calculated values.

What is changing with the initial release of Morningstar calculated fixed income analytics?

We will begin producing calculated fixed income analytics for funds that meet specific criteria and threshold levels. At this time, we are not replacing the current self-reported values, but rather running in parallel so that both the self-reported and calculated values are available for the following data points: credit rating breakdown, effective duration, modified duration, effective maturity, and yield to maturity. Analytics will only be surfaced at the fund level, as they are today.

Will funds lose their self-reported data or the Fixed Income Style Box?

Neither the collection or the display of fixed income data points will change with the initial release of calculated analytics. Because the Fixed Income Survey data points are the inputs to the Style Box there will also be no change to display or coverage for the foreseeable future.

What are some reasons why the new Fixed Income calculations may show different values than the ones we survey from fund companies?

Below are a few key reasons why these values may differ:

1. Fund company has a different methodology than Morningstar
Our methodology is generally thought of as an industry standard, while individual fund companies may have their own methodologies.
2. Unreported Holdings and/or partial surveys
Some fund companies may decide not to report certain positions to us for various reasons. They may also send us partial fixed income surveys.
3. Outdated survey
Surveyed fixed income analytics will be displayed in Morningstar Direct for up to 9 months after their effective date, whereas our calculated fixed income analytics will be updated each time a portfolio is received. We tend to receive fixed income surveys at a lower frequency than portfolio holdings (for example quarterly when holdings are updated every month). The fixed income analytics that we are starting to calculate in this release will be based on the latest holdings available.
4. Security type that we are unable to calculate at this time
In this first release, we will only calculate analytics for fixed-rate bonds, adjustable-rate mortgages, and pass-through MBS. This leaves a fairly large number of positions out of scope. Additional types of fixed income and derivatives holdings will gradually be added over time during future releases.
5. Short positions
In this release, we are only calculating fixed income analytics for long positions.
6. Funds of funds
We currently do not support a look-through to incorporate a fund's underlying holdings' fixed income statistics into our calculation of the overall portfolio. Funds of funds are generally not part of this release.
7. Unmatched holdings
Fund companies do not always use standard identifiers such as CUSIP or ISIN when reporting their fixed income holdings. As a result, there may be holdings that we are not able to match to our reference database and sources. No analytics can be calculated on unmatched holdings.

Questions & Answers | Methodology

Traditionally Morningstar has treated bonds with short terms to maturity, less than 1 year, as a cash equivalent, will these holdings be included in the calculation of fixed income analytics such as duration or credit?

Morningstar classifies certain short term fixed income holdings as asset class "Cash" rather than "Bond". Prior to October 2016 the term of the security was less than one year, but it was changed to less than 92 days at that time. Regardless of their asset classification, holdings that are fixed income will be included in Morningstar fixed income calculations.

How and when will derivatives be incorporated into Morningstar fixed income analytics?

Because of the potential impact of derivatives, a critical goal for Morningstar is to integrate derivatives into fixed income calculations as quickly as possible. While there is not currently a timeline to share, the development work to incorporate derivatives has already started. As data is generally more easily collected for exchange traded derivatives, these are planned to be integrated first. Over the counter derivative calculations are dependent on Morningstar being able to successfully transfer the majority of holding collections to the Advanced Portfolio Template (APT).

To what types of fund legal structures, such as open or closed end funds, will fixed income calculations apply?

The ability to produce analytics for related funds or portfolios is dependent on having the necessary identifiers to map relationships between them. As long as the data is available, and there are no limitations on publishing the analytics, Morningstar intends to do so.

What type of specific analytic measures would be included in Morningstar analytic categories Cash Flow Analytics, Credit Analytics, and Exposure Analytics?

The three categories of analytics that Morningstar is developing are intended to address the primary risks facing fixed income investors and to promote accurate and precise

measurement of sources of return. Conceptually all holdings contain a number of attributes which reflect exposures to a variety of risk types and return influences. "Cash Flow Analytics" involve the measurement of risks and return affecting the accrual and payment of interest and principal based on expected interest rate conditions. For the initial release these are yield and duration measures. "Credit Analytics" are concerned with the risk influencing the probability that cash flow payments will be made on a timely basis given the ability and willingness of the obligated entity. Initially these will be presented as credit rating based measures. "Exposure Analytics" is a general term that represents those factors which are not specifically contained in Cash Flow and Credit measures and are the bridge that supports multi-asset analytics. Examples include geographic attributes, industry classification, tax treatment, currency, and regulatory/ political factors.

Because there is so much subjectivity in the fixed income space, what process did Morningstar go through to determine the methodology behind the security level calculations and fund level aggregations produced?

Morningstar strives to be transparent in the way our analytics and calculations are produced. Methodology documentation and a definition glossary will be available across fixed-income newly calculated analytics. It is our goal to help investors make better decisions and we believe there is value in providing an independent view and methodology that allows for an apples-to-apples comparison of funds. These methodologies have been internally and externally vetted by the industry.

How will Fixed Income Style Boxes be calculated?

The Fixed Income Style Box is not changing in the first release. The FI Style Box will continue to be generated using the self-reported survey data provided to Morningstar from asset managers. However, over time and once a sufficient level of coverage has been reached, we plan to use Morningstar's calculated results as inputs into the Style Box.

What does the future state look like for FI analytics and calculations?

Our program team views the release of calculated analytics as an arc with data points and coverage rolled out across releases that allow us to evolve our data and capabilities. In future releases, we plan to produce additional analytics, a new calculated credit methodology, as well as a fixed-income style box fueled with calculated analytics. The release planning for these elements will dovetail with the sun-setting of self-reported data support.

What duration will be used?

In this first release, we will produce both calculated average modified duration and average effective duration values. This means that you will be able to view the self-reported duration values (if provided) alongside of Morningstar's calculated duration values (if the fund meets the required duration thresholds). The self-reported effective duration value will continue to be used as the duration input into the Fixed Income Style Box.

What will happen to Credit Rating Breakdown?

In the first phase, we will release a calculated credit rating breakdown. We are naming this as "rating" rather than "quality" to better reflect the analytic inputs. The survey based analytic name and inputs will not change. You will be able to view the self-reported breakdown values (if provided) alongside of Morningstar's calculated breakdown (if the fund meets the required threshold).

Will Morningstar be revising and improving sector classifications?

For the initial release, Morningstar is not making any changes to classification information. We intend to improve our classification in future releases.

Will Morningstar incorporate classification related to credit such as High Yield and Investment Grade?

For the initial release, Morningstar classification will not change to incorporate credit rating information which will be presented in the Credit Rating Breakdown instead. Over time Morningstar intends to support alternative perspectives of classification such as incorporation of credit quality, economic and geographic dimensions

The current FI style box is driven by the collected data from fund provider, but what is the case when the provider does not provide the data? Will this change in this release?

If they do not provide a survey, the FI style box is blank. It will remain blank in this release because we are not changing FI style box in Release 1.

To what types of fund categories, such as allocation or target date funds, will fixed income calculations apply?

We are not using Morningstar Category to determine a fund's eligibility to receive fixed income calculations. Our minimum requirement to be eligible for fixed income calculations is that the fund have a portfolio as of Jan 31, 2017 or more recent and have at least 20% bond asset allocation.

When are more complex securities, such as derivatives, variable rate bonds, loans, and structured debt, likely to be included in fixed income calculations?

Given their impact on fixed income risk and return exposures, the incorporation of more complex securities is a high priority. While there is not a definitive timeline, Morningstar is committed to incorporating these types of holding into analytics as rapidly as possible, which will be determined primarily by availability of data needed to support calculations.

How will holding weighted exposure characteristics be used in fixed income calculations?

Morningstar's goal is to build analytics that measure the contributory exposures to sources of risk and return in a portfolio. This will be accomplished through calculation of holding weighted exposures. The initial release of calculations addresses the primary elements to fixed income investors- interest rate risk, credit risk, and expected return. As capabilities continue to be enhanced other types of exposures will be incorporated including elements which support multi-asset perspectives.

How will individual bond level analytics be supported in Direct?

The initial release of fixed income calculations will not result in any new individual bond level analytics. However, Morningstar is committed to expanding the breadth and depth of bond level analytics in Direct as part of the capabilities enhancements being planned.

Will Morningstar be changing any methodology related to the calculation of average credit quality and how it used in the Fixed-Income Style Box?

For the initial release both the methodology and the process of calculating Average Credit Quality and how it used in the Fixed Income Style Box will not change save for the fact that portfolio credit rating breakdown will now be calculated. Average credit quality will not be calculated at this time but will continue to be based off self- reported Credit Rating Breakdown input data. Morningstar intends to release a calculated version of average credit quality in a future phase.

Will Morningstar incorporate classifications related to geography and economy such as Emerging Markets?

For the initial release Morningstar classification will not change to incorporate geographic and economic information. Over time Morningstar intends to support alternative perspectives of classification such as incorporation of credit quality, economic and geographic dimensions.

What duration measures will be used?

In this first release, we will produce both calculated average modified duration and average effective duration values. Please note that Option Adjusted Spread (OAS) calculations will not be available in the first release therefore effective duration and modified duration calculations will produce the same output for holdings without optionality. For holdings that contain options, effective duration will not be calculated at this time. The self-reported effective duration value will continue to be used as the duration input into the Fixed Income Style Box.

How will effective duration be calculated?

Morningstar will use commonly accepted definitions and standards when calculating fixed income analytics. In cases where modeling assumptions must be employed they will be disclosed. Calculation of effective duration requires that a range of possible calculation results be considered dependent upon the effect of redemption optionality, employing techniques based on calculation of "option adjusted spread", or "OAS". For the initial release of fixed income analytics Morningstar will not calculate OAS holdings and effective duration values will not be produced. Implementation of an OAS library into the BondPro calculation library will be accomplished for future release. Therefore, in the first release effective duration and modified duration calculations will produce the same output for those instruments for which OAS is not relevant.

What credit ratings are used in calculated Credit Rating Breakdowns?

We receive instrument level credit ratings data from S&P, Moody's, and DBRS. These ratings are applied to portfolio holdings on a weighted basis and then aggregated into a fund level breakdown. Additionally, Morningstar will apply ratings for issuers or guarantors when they are clearly identifiable when an instrument rating is not available.

Questions & Answers | Calculation Process

Will Morningstar replace the data from the Fixed Income Survey currently showing in fund reports with calculated fixed income analytics such as duration and credit quality?

For the initial release the information showing in reports will remain that collected through the Fixed Income Survey rather than calculated by Morningstar. The information will eventually be transitioned to calculated analytics but a timeline has not yet been determined.

What is the plan for calculation of analytics for different countries or geographic regions?

Morningstar's plan is to calculate fixed income analytics globally, to the extent possible, based on sufficient input data.

How will the new Morningstar holdings collection template, the Advanced Portfolio Template (APT), benefit fixed income calculated analytics?

A primary goal of the new Advanced Portfolio Template (APT) is to support higher level analytics through the collection of a significantly greater amount of security level data. The fixed income calculations are holding based so the primary requirement is the receipt of a fund's holdings. Certain additional data is required to derive analytic value. The APT has been designed to collect the additional data needed for better analytics as well as increase coverage of over the counter securities such as derivatives and money market instruments.

Will Morningstar be providing historical fixed income calculations?

At this time Morningstar does not intend to produce historical back calculations of fixed income analytics.

Will Morningstar support the ability of a user to upload a portfolio of holdings to generate fixed income calculations?

The initial release of fixed income analytics will apply only to managed investment portfolios which are generated by a standard process in which holdings are submitted to Morningstar rather than uploaded by a user.

Will individual bond or holding calculations be available?

There will not be individual security level analytics included in the initial release, however Morningstar does intend to produce these analytics in the future.

Which Morningstar products will contain calculated fixed income analytics and is there a timeline for when they will be available?

Morningstar offers a wide number of products and incorporation of calculated fixed income analytics will be determined on a product by product basis for the initial release. Longer term it is Morningstar's intention to transition all products from survey to calculated fixed income analytics.

How does Morningstar support holdings based calculations, specifically what is required of fund companies to submit their holdings?

The fixed income calculations are holding based, so the primary requirement is the receipt of a fund's holdings in one of the standard formats. A primary goal of the new Advanced Portfolio Template (APT) is to support higher level analytics through the collection of a significantly greater amount of security level data. The adoption of the APT is not required, but it will enhance quality and coverage.

How will the timing of the collection of holdings from fund companies be reflected in calculated fixed income analytics, specifically how often are holdings collected and how will a user know when the holdings were collected?

Collection of portfolio holdings from specific submitters generally occurs on a monthly or quarterly cycle although some are collected daily. It is Morningstar standard practice to display in products the information associated with the most recently collected and processed portfolio.

When is the retirement of the Fixed Income Survey planned?

By calculating fixed income analytics Morningstar intends to retire the fixed income survey at some point in the future, however a retirement date has not been determined. The decision will be made based on the sufficiency of calculated analytics and the requirement to support investors best interests in making fixed income related decisions.

How often are calculations run?

Calculations will continue to run and update each time a new portfolio is submitted to Morningstar. For example, if a fund company submits their portfolios monthly and their funds meet the thresholds, their funds will receive the calculated values each month at the time the portfolio is received. If there is an error and a portfolio is re-submitted, the statistics will be recalculated and updated in products accordingly at that time.

Is there a period of time when both the self- reported and calculated data will be available?

Yes, we are not overriding the current self- reported data in our products. We want to give our clients and data providers time to assess the data and to get comfortable with our calculated methodologies. Because we are focused on quality, comparability, and transparency, we have determined that parallel support is ideal for this first release but over time, we will transition away from using self- reported values.

What criteria must a fund meet in order to receive calculated analytics?

In our initial release, we will only calculate these data points for managed investments – we will not be calculating for category averages or indexes. Because fund level averages and breakdowns are an aggregate of the underlying values, the fund needs to meet a required coverage threshold in order to receive a calculated output. Morningstar will surface the four calculated average cash flow calculations for a fund if 75% of the fund's fixed income holdings, by weight, received the calculations. Morningstar will surface a fund's credit rating breakdown if we could assign a rating to 75% or more of the fund's fixed income holdings, by weight.

What do you mean by retiring the Fixed Income Survey?

Once Morningstar has sufficient coverage of our calculated portfolio level fixed income analytics, we will retire the fixed income survey from public display. We will give sufficient notice to the market of this retirement date and will be working closely with asset management firms to apprise them of our calculated values.

Where do you source the Fixed Income data used in the credit rating breakdowns from?

We receive instrument level credit ratings data from S&P, Moody's, and DBRS. The ratings are then aggregated into a fund level breakdown, which will be available in products.

Which funds are impacted and in which regions?

Any fund that meets the established criteria qualifies for calculated values. The calculations are not dependent on region or fund type.

Why isn't there any calculated data available for my funds or the funds I'm interested in?

If a calculated value is blank, the fund hasn't met the specified threshold or criteria for the calculation. This will likely be due to a significant number of holdings in more complex bonds or derivatives, or geographically in an area where our coverage is not as high. It is possible that a fund will display a calculated value for one analytic but not another (ex: calculated credit rating breakdown is available but calculated duration is not) as the thresholds are independent.

Will it be possible to replicate the calculation and evaluate bond funds' ratings and style boxes using the new methodology?

We will only surface portfolio level analytics and not individual bond calculations in the first release. We are committed to providing transparency into our calculations. To supplement the first release, methodology documentation will be available prior to release in products to explain how we aggregate the underlying data into fund level averages and breakdowns.

Will some funds lose their Fixed Income Style Box?

No, we are not changing the inputs to the FI style box at this time; as long as the required input data is provided by the asset manager, the fund will continue to receive the FI style box.

What quality assurance processes will Morningstar use for the fixed income calculations?

Morningstar is building a quality assurance process specifically for the rollout of fixed income analytics. Among the elements employed will be sampling analysis, variance analysis to Fixed Income Survey results and incorporation of third party benchmarks.

It seems that portfolio holdings data from the APT is important to consistently calculate analytics across firms that use more complex instruments. What is your plan of action for firms that do not participate in providing the APT?

APT data is critical for collecting terms and conditions data for over-the-counter derivatives. In order to accurately capture derivatives and their impact on a fund's interest rate and credit risk, we need the supplemental terms and conditions data for those OTC derivatives. Providing Morningstar with OTC data will become increasingly important and allow us to calculate a greater number of funds globally which will enhance your ability to compare one fund to another. Without that data, it is likely that the threshold needed for calculations would not be met for portfolios with a significant component of more complex instruments.

Will Morningstar calculate fixed income analytics for benchmark indices and if so which ones?

At this time calculation of fixed income analytics for index benchmarks is not planned, however the possibility has been identified as a possible future deliverable.

Will Morningstar calculate fixed income calculations on index constituents?

Calculation of analytics for index constituents is not planned currently, however it has been identified as a possible capability enhancement for consideration in the future. Given that Morningstar fixed income portfolio analytics are based on holding level calculations any index level analytics would need to be derived from constituent level calculations.

How will Morningstar product users be able to distinguish between the same analytic measure when it is available from both the Fixed Income Survey and calculated?

The new calculated analytic data points will be clearly labeled in order to distinguish from the legacy self-reported data points.

How will Morningstar handle relationships between funds such as a master fund to feeder fund, or different share classes?

The ability to produce analytics for related funds or portfolios is dependent on having the necessary identifiers to map relationships between them. As long as the data is available, and there are no limitations on publishing the analytics, Morningstar intends to do so.

When will the Morningstar Fixed Income Style Box be calculated?

Currently Fixed Income Style Box is calculated from survey inputs and this will continue for the foreseeable future. Transitioning to a calculated Style Box is expected to occur when the Fixed Income Survey is retired.

How does Morningstar ensure completeness and accuracy of the holdings data provided by asset managers?

Morningstar relies on asset managers to supply complete and accurate holdings data and has been collecting data for a number of years, allowing for the development of a mature process. The existing portfolio processes incorporate numerous quality checks which must be successfully passed before a fund portfolio can be stored in Morningstar's database and made available to our clients in products. Through the quality assurance processes already in place there is a high degree of confidence that the data is of high quality.

Since fixed income statistics for Canadian funds are already calculated, how will the new data points be differentiated?

The data points that are currently displaying Canadian-specific Fixed Income calculations will not be impacted. No data will be overwritten. In fact, for this first release, no new fixed income data will be available for Canadian funds; there will be no change in Canada at this

stage. We will communicate when an upcoming release may impact this market in due course.