Morningstar Yield
A Better Way to Measure Income

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Contents

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Executive Summary

Morningstar's trailing 12-month yield data point was revolutionary when first introduced many years ago because it provided an estimate tailored to each share class that accounted for fees and capital gains distributions. While it remains useful today as a screening tool to compare one-year fund yields, the estimate has shortcomings. It doesn't always convey an actual investor's experience over the past year of holding a security, especially if a security makes an unusually large or small distribution, and the 12-month time frame is inflexible.

The new Morningstar Yield data point overcomes all these shortcomings and more. It taps Morningstar's granular distribution data to provide detailed income characteristics over any period. Morningstar Yield represents a more accurate look at an investor's actual experience by using an investment's net asset value on a theoretical purchase date rather than its most recent month-end price. It also shows income volatility and the tax efficiency of managed products, which are important but unanalyzed characteristics for investors looking for income.

Morningstar Yield is dependable because it effectively isolates an investment's income characteristics. It assumes the reinvestment of capital gains distributions so as not to eat into principal, but also that income is received in cash and presumably used for living expenses. Morningstar Yield is not intended to act as a recommendation for a similar reinvestment strategy, and investors looking for superior total returns that include income reinvestment should refer to Morningstar Medalist Ratings.

Key Takeaways

- Despite its initial strengths and continuing usefulness as a screening tool, Morningstar's trailing 12-month yield estimate is inflexible, sometimes misleads, and does not illustrate an investor's experience holding a security as return metrics do.
- The Morningstar Yield data point is an improvement that draws on Morningstar distribution data to offer a clear picture of how much actual income a product generated for an investor over any period.
- Because dividends tend to rise consistently, looking at longer past time frames better predicts future equity income, something a single-year estimate struggles to capture.
- Adjusted for income volatility, equity income is still sometimes superior to Treasuries for income.
- Exchange-traded funds are a superior income option to open-end mutual funds due to their lack of capital gains distributions and typically lower fees.

Introduction
A portfolio's ability to generate income is an important consideration for investors. As Morningstar's own Christine Benz wrote in 2016, "The best answer for most investors is to give due consideration to securities' income-generating potential…within a total-return framework. Blending the two approaches allows investors to benefit from the stability that income-producing securities bring to the table without sacrificing diversification or chasing securities that, in hindsight, turn out to be yield traps."

Investors reluctant to dip into their retirement principal can find peace of mind with a reliable stream of income from their investments. Meeting regular spending needs through investment income also reduces the chance investors outlive their savings, a growing probability as life expectancy rises. To that end, many investors look to equity income or fixed-income managed products to supplement their income over long time periods. Equity income has become increasingly popular as longer-term Treasury yields remain near historic lows, despite their rise over the first half of 2022.

Exhibit 1 30 Years of the 30-Year Treasury Yield

Source: Morningstar Direct Data as of July 31, 2022.

Equity income may continue to grow in popularity in coming years if fixed-income yields remain low, especially on an inflation-adjusted basis. That said, those who invest exclusively in equities over bonds and live off their income must be prepared for significant share price volatility along the way, something only the most risk-tolerant investors should consider.

Incorporating income into a total return strategy is not always straightforward, however. The factors that drive price return and volatility may differ from those that drive income and income volatility. Understanding the relationship between the components of total return—capital appreciation and income generation—is an important input into the investment process.

This paper presents a new method of evaluating the income-generating potential of managed investment products, including the riskiness of the income streams distributed by those products. The "Morningstar Yield" data point aims to provide a more accurate, nuanced evaluation tool for investors seeking reliable income in their portfolios.

Income vs. Distribution: A Refresher

Income and capital gains distributions represent two different concepts, and it's important to distinguish between them. Since mutual funds and ETFs are considered pass-through entities, any capital gains or income (dividends or coupon payments) generated by their holdings are distributed to investors as if they earned the money directly.[1] That distribution can be broken down into three components in the United States (other markets may operate differently):

- Income: Dividend or coupon payments (the focus of this methodology)
  - Income could be taxed at the investor's marginal income tax rate, or at a much lower rate depending on the source of the income (municipal bond coupon payments and qualified dividends are taxes less).[2]
- Capital Gains: Realized growth in principal
  - The capital gains tax rate depends on the period over which the fund held the security and, in some cases, how long the investor held the fund.
- Return of Capital
  - Not taxed.

Thus, income (the focus of this methodology) is a subset of a fund's overall distribution. Investors can choose whether they wish to reinvest each individual component of the distribution, but that decision will not have any tax consequences.

Crafting Conservative Income Investing Assumptions

Conservative assumptions provide the most suitable environment to analyze income when keeping in mind retirees who want to live off their income generation:

- Income investors want the freedom to spend any income earned, so income is not reinvested.
  - Total return metrics and yield to maturity both assume reinvestment of income and thus aren't suitable metrics under this assumption.
- Investors are averse to big drops in income.
  - Volatility in an income stream should be penalized.
- Given equal income streams (after fees and taxes), the source of income is irrelevant.

1 Mutual funds deduct their fees from the income portion of the distribution before delivering it, leading to different share classes of the same strategy having dramatically different income characteristics. Here, oldest share class is used to simplify matters.

2 Individuals who are in the highest income tax brackets must pay an additional 3.8% Net Investment Income Tax, or NIIT. This tax is not considered in future examples in this methodology.

  - ► This allows for comparison between Treasuries, credit, equity income, or any other income-generating investment. This methodology focuses on open-end mutual funds and ETFs in the U.S. market.
- ► All capital gains are reinvested, with the corresponding taxes paid with cash on hand.[3]
- ► Return of capital (an extremely rare occurrence in the observed set of funds) is also reinvested.

Income Seekers' Status Quo

As investors have few tools at their disposal to evaluate the income potential of a managed product, they frequently defer to Morningstar's trailing 12-month yield estimate.

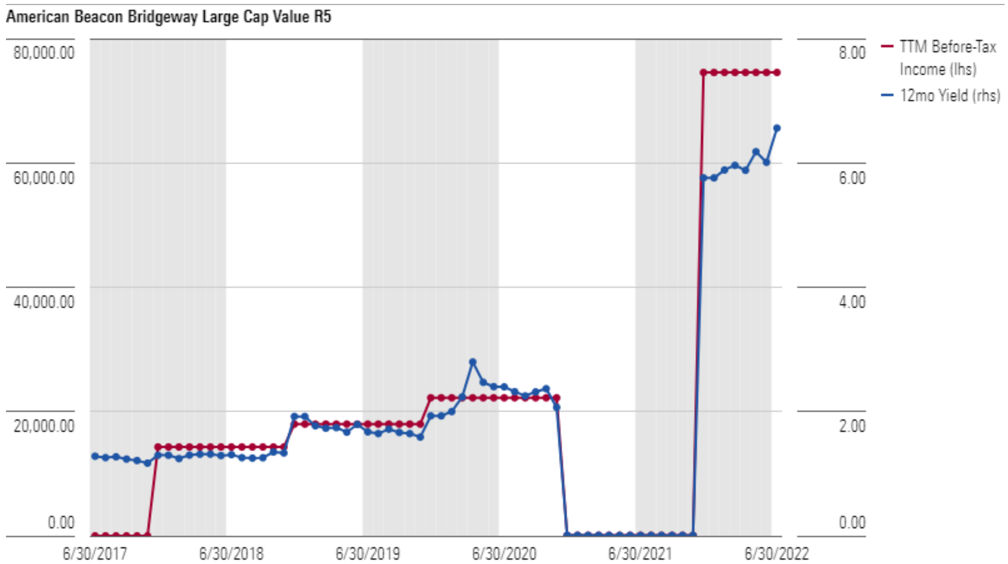
$$12MonthYield_t = \frac{TTM\ Income_{t-12:t}}{NAV_t + TTM\ Cap\ Gains_{t-12:t}}$$

Where $TTM\ Income_{t-12:t}$ is the sum of income distributed over the trailing 12-month (TTM) period, that is, from time t-12 to time t; $TTM\ Cap\ Gains_{t-12:t}$ is the TTM distribution of capital gains from time t-12 to t, and NAV_t is the net asset value of the product at time t. This metric has merits—it incorporates fees into its estimate, allows for comparison across asset classes, and differentiates capital gains from income. Its shortcomings are significant, however. First, the metric itself tells us nothing about the volatility of the income distributed. Put differently, it is difficult for an investor to discern what component(s) of 12-month yield caused the 12-month yield to change over a given period. While the underlying distribution data that goes into 12-month yield is publicly available for each product, it is published on a per-share basis, creating friction for investors looking to evaluate long-term total income history with their preferred tax and reinvestment assumptions.

Furthermore, large recent distributions or a sudden market swing can distort a strategy's 12-month yield, misleading investors looking for a consistent source of income over a longer period. For the 12-month period ended on Feb. 28, 2009, for example, Morningstar's trailing 12-month yield data point estimates that Vanguard 500 Index Admiral's VFIAX 12-month yield was then 3.81%, when it actually paid anyone who invested at the start of the period a total of 2.11%. More recently, the strategy depicted in the accompanying exhibit, American Beacon Bridgeway Large Cap Value R5 AADEX, had a 12-month yield of about 6% in mid-2022, but investors would be unwise to expect payments of that magnitude each year going forward:

3 Not reinvesting capital gains distributions would drawdown investment principal, violating the first assumption. Most advisors recommend paying capital gains taxes with cash on hand to avoid potentially triggering further taxable events.

Exhibit 2 12-Month Yield Can Mislead



Source: Morningstar Direct. Data as of June 30, 2022.

A New Approach

To assess a fund's income over a certain period, assume a $1 million investment in the fund at the start of the period and calculate shares owned using the prior day's NAV. Morningstar's distribution data allows differentiation between income, capital gains, and return of capital distributed per share, as well as the application of the appropriate tax rate to the different types of income (qualified vs. unqualified dividends, tax-exempt vs. taxable coupons) and capital gains (short- vs. long-term).[4] Note that return of capital is not a taxable event. Capital gains are then reinvested at the ex-distribution date's NAV, and future distributions are considered with the new share count after that reinvestment.

While different share classes can have varied income characteristics due to fee differences, the trend of income for a given strategy should linearly translate across each share class, as both fees and income are applied on a per-share basis;[5] including all of them would be redundant. As such, the oldest USD-denominated share class is used. U.S.-based large value and large blend funds are analyzed for equity income—per our assumptions, the conservative investor may not want the currency exposure brought on by non-U.S. income streams.[6]

Income Can Come Without Sacrificing Performance

Provided investors do not reinvest their income (in accordance with our assumptions), there could be a trade-off between principal growth and total income paid over time—higher uninvested income payouts could lead to lower principal. However, in the five years ended June 30, 2022, funds with the same level

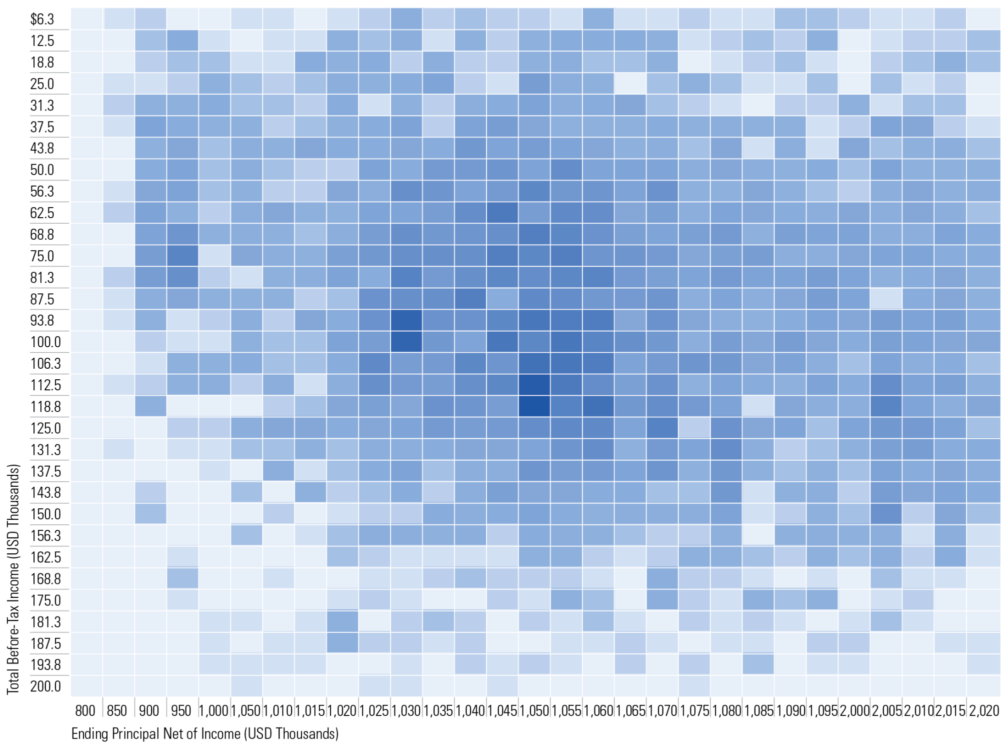
4 Examples use top marginal tax rates for a Chicago resident. In the case of tax-exempt income, this methodology assumes that state and local taxes still apply, which may not always be the case. Since effective tax rates vary for each investor, the examples should be considered general estimates.

5 This takes place until income in the coming distribution reaches zero, at which point NAV is reduced to compensate the asset manager.

6 Properly accounting for the currency volatility of non-USD income streams is outside the initial scope of this methodology.

of income had enormous variance in ending principal (and vice versa), and historical data also shows no strong connection between ending principal and ending total income. In the figure below, the darker colors signify more observations, and the lighter colors mean fewer. A negative correlation between the two variables would be depicted as an upward-sloping set of dark observations.

Exhibit 3 More Income Doesn't Imply Less Ending Principal[7]

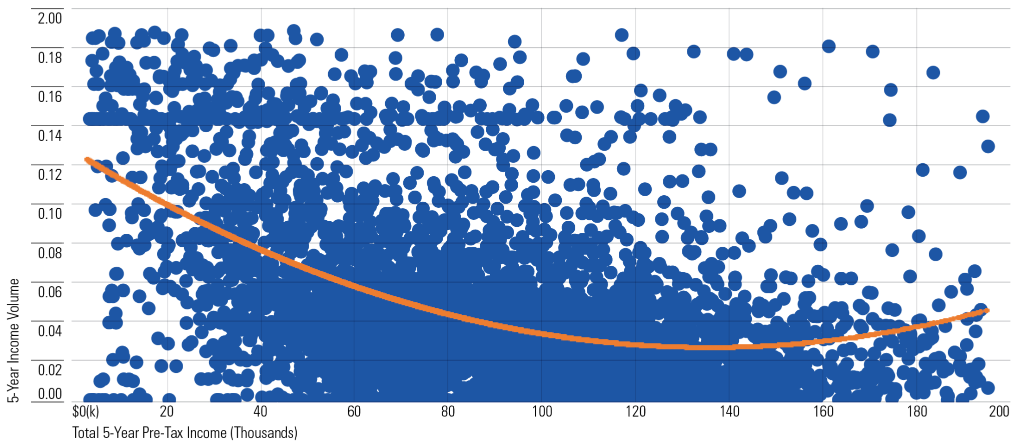


Since there is no rigid trade-off between performance and income, it should be possible to add value by pointing investors to the right funds for income, just as our ratings point them in the right direction for total returns. This approach isolates the income-generation of an investment. It isn't meant to replace forward-looking, total return-focused Morningstar Medalist Ratings but rather complements them.

Given the inherent trade-offs between total return and the volatility of that return, one might suspect a similar trade-off between total income and the volatility thereof. However, that hasn't been the case over the past 15 years measured in five-year increments; five-year before-tax income has not been meaningfully correlated with the volatility of that income.

7 Assuming a $1 million initial investment, looking at annual rolling five-year periods from June 2007 through June 2017 in the large-blend and large-value Morningstar categories.

Exhibit 4 No Trade-Off Between Income and Income Volatility[8]



Morningstar Yield

In place of the 12-month yield estimate, Morningstar Yield considers the NAV at the time of investment to measure the actual experience of an investor (again, assuming reinvestment of capital gains and return of capital but not income at the ex-date's NAV[9]) and leverages Morningstar's distribution data to allow insights into any period:

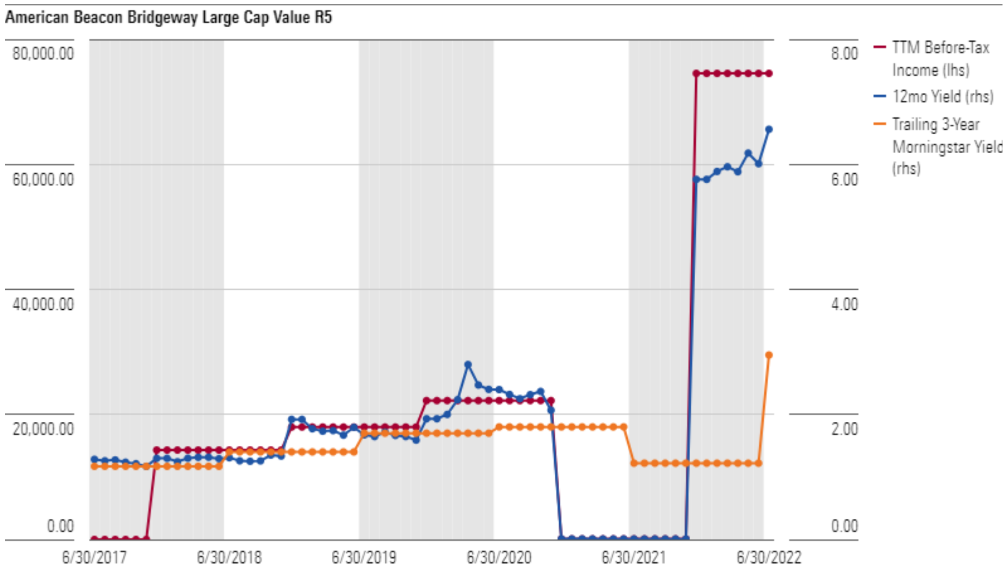
$$K\ Year\ Morningstar\ Yield_{MP} = \frac{1}{K}\ \frac{(Total\ Income\ Distributed\ Over\ Past\ K\ Years)_{MP}}{(Starting\ NAV)}$$

As an example, three-year Morningstar Yield (calculated annually below) provides a smoother look at the strategy's income stream and a better insight into what holders of the strategy should expect over longer holding periods, compared with the 12-month yield.

8 Five-year windows for large-value and large-blend starting in June 2007, assuming a $1 million investment.

9 The first business day after a distribution, when a fund's NAV drops by the amount of the distribution paid to investors holding the strategy the trading day before the ex-date (not including adjustments for market fluctuations).

Exhibit 5 Morningstar Yield Offers a Steadier Measuring Stick



Source: Morningstar Direct Data as of June 30, 2022.

Tax Adjustments

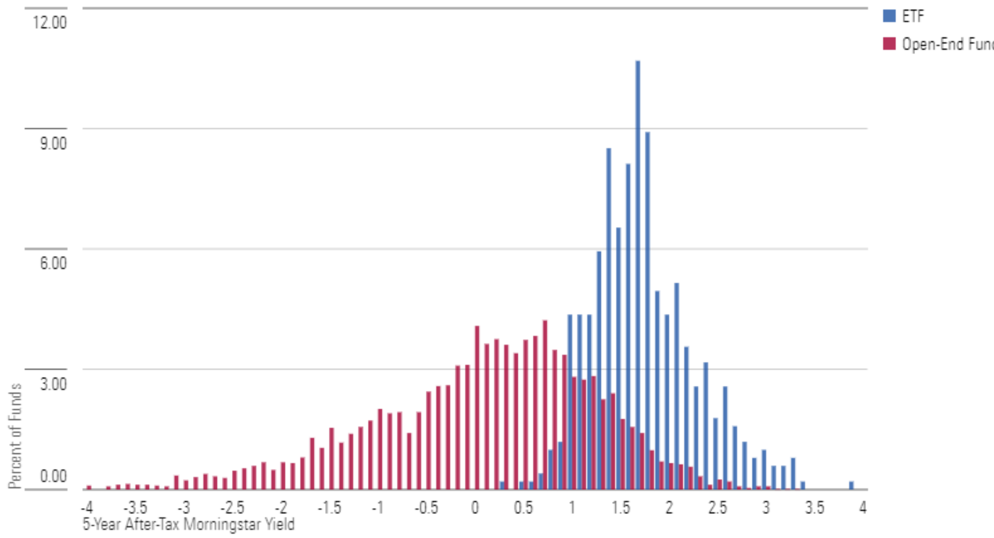
By breaking a fund's distribution into granular categories, such as qualified versus unqualified dividend or taxable versus tax-exempt coupon payment, appropriate taxes can be applied to view aftertax income over a given period.

$$K\ Year\ AfterTax\ Morningstar\ Yield = \frac{1}{K}\ \frac{(K\ Year\ Total\ Income\ Distributed - Total\ Taxes\ Paid\ on\ all\ Distributions\ )}{(Starting\ Investment)}$$

In a taxable account, open-end funds that lack an ETF share class, as many Vanguard index funds do, should not be relied upon as a source of income due to the large capital gains distributions they make as investors liquidate shares of the fund or managers sell profitable holdings to reinvest in more-attractive opportunities. Since this methodology assumes that all capital gains are reinvested to avoid eating into principal, capital gains tax bills must be paid with cash on hand and thus function as negative income to the end investor. Meanwhile, due to the mechanisms of ETF share creation and in-kind redemption, equity ETFs rarely distribute capital gains, leading to much better aftertax income in taxable accounts.

Exhibit 6 Equity ETFs Superior for Aftertax Equity Income

Large-Blend and Large-Value Equity Funds



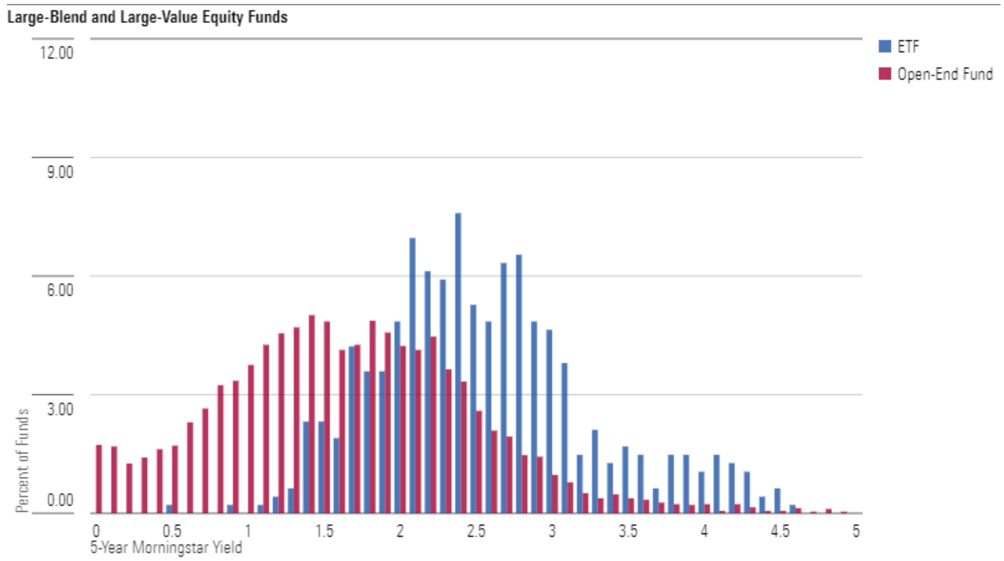
Source: Morningstar Direct, Author's Calculations Data as of June 30, 2022.

*Data is for five-year periods from June 2007 through June 2022 for large-blend and large-value funds.

A negative aftertax Morningstar Yield implies that the capital gains tax bills over the period exceeded the aftertax income distributed to the investor—functionally, the investor's income from owning the product over the period was negative.

Recent years were in some ways a perfect storm for large capital gains distributions and thus high capital gains tax payments, combining rocketing equity markets with outflows from the active management universe to trigger the realization of those large capital gains. Still, ETFs also distributed more income on a pretax basis in the given period, helped in part by lower fees.

Exhibit 7 Equity ETFs Provide More Pretax Income



Source: Morningstar Direct, Author's Calculations Data as of June 30, 2022.

Income Volatility

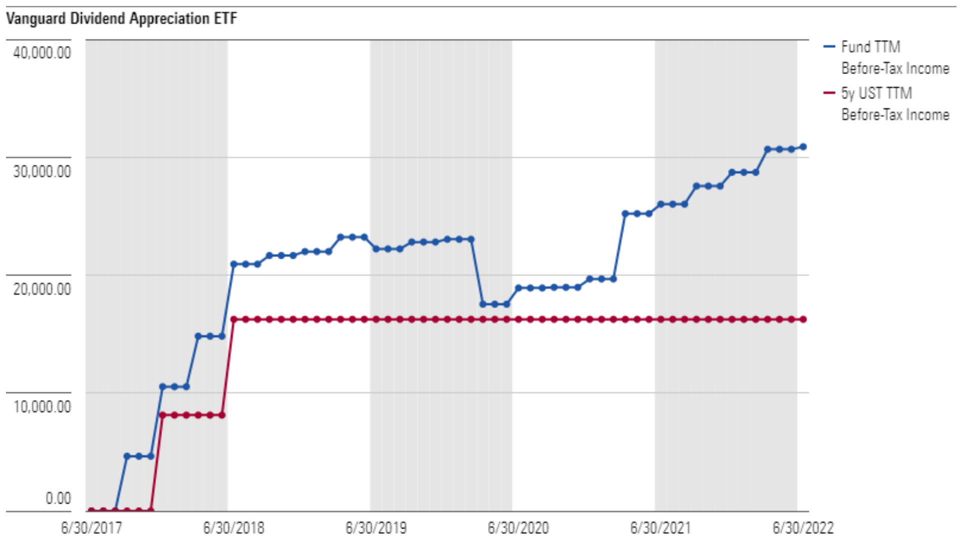
To assess income volatility, we look at a monthly time series of trailing 12-month payments and calculate the downside deviation of that time series over a given period.

$$Income\ Vol = \sqrt{\frac{1}{N}\sum_{i=1}^{N}\left(Min(0, X_i)\right)^2}$$

Where X_i is the monthly percentage increase in the trailing 12-month income. This measure doesn't punish funds for owning stocks with steadily rising dividends and for consistently paying those to investors, but it does punish the funds that sometimes go a year without distributing any income at all or decreasing their income payments.

In the example below, Vanguard Dividend Appreciation ETF's downside deviation is calculated over a turbulent 2020 (though, note that its 12-month distributed income never fell lower than that of a five-year Treasury note).

Exhibit 8 Vanguard Dividend Appreciation ETF Income History



Source: Morningstar Direct Data as of June 30, 2022.

Exhibit 9 Income Vol Calculation Example

Income Vol Calculation Example

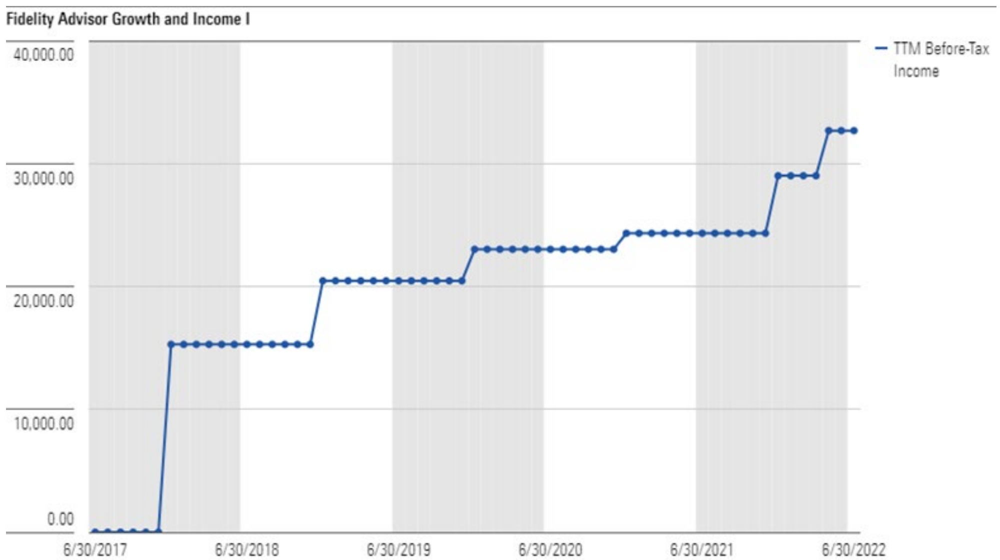
Date	TTM Before-Tax Income	% Change in TTM Before-Tax Income	Downside Change	Downside Change Squared
12/31/2019	23036.81			
1/31/2020	23036.81	0.00%	0.00%	0
2/29/2020	23036.81	0.00%	0.00%	0
3/31/2020	17534.28	-23.89%	-23.89%	0.057053
4/30/2020	17534.28	0.00%	0.00%	0
5/31/2020	17534.28	0.00%	0.00%	0
6/30/2020	18907.48	7.83%	0.00%	0
7/31/2020	18907.48	0.00%	0.00%	0
8/31/2020	18907.48	0.00%	0.00%	0
9/30/2020	18963.62	0.30%	0.00%	0
10/31/2020	18963.62	0.00%	0.00%	0
11/30/2020	18963.62	0.00%	0.00%	0
12/31/2020	19675.05	3.75%	0.00%	0

Source: Morningstar Direct Data as of June 30, 2022.

Averaging the squared downside change in rolling 12-month income produces a downside variance of 0.0048. The square root of downside variance, 0.069, is the downside deviation, referred to as income volatility.

Despite a turbulent 2020, many equity funds were able to continue to offer consistent and growing income payments. Investors would do well to consider such options as these as an income source in a low-income environment, as Morningstar Yield suggests they may be superior income opportunities over a given period compared with Treasuries maturing after a comparable period, as in Exhibit 8. Note that after only five years, the income produced by an investment in Fidelity Advisor Growth & Income I shares more than doubled.

Exhibit 10 A Stable Income Stream



Source: Morningstar Direct. Data as of June 30, 2022.

On the other hand, income investors probably wish to avoid inconsistent or volatile income streams such as that shown below, as they likely would do better pursuing traditional fixed-income products (Treasuries, high-grade credit) than risk such dips in income, assuming the investor is trying to live off the income without eating into their principal.

Exhibit 11 A Volatile Income Stream

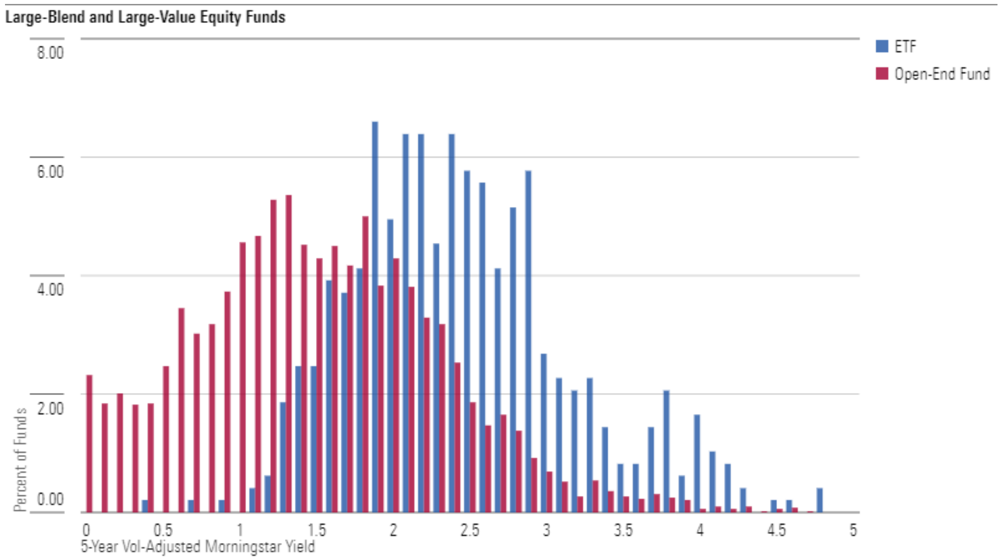
Source: Morningstar Direct Data as of June 30, 2022.

Morningstar Yield can be adjusted with income vol to get a sense of volatility-adjusted income. Note that this metric applied to a Treasury would continue to just be its current yield, since a Treasury's income vol would be zero:

$$K\ Year\ VolAdjusted\ Morningstar\ Yield_{MP} = K\ Year\ Morningstar\ Yield\ (1\ - Income\ Vol)^2$$

As with tax considerations, volatility considerations also suggest that investors would do well to look to ETFs for income as opposed to open-end mutual funds.

Exhibit 12 ETFs Provide Better Vol-Adjusted Income as Well

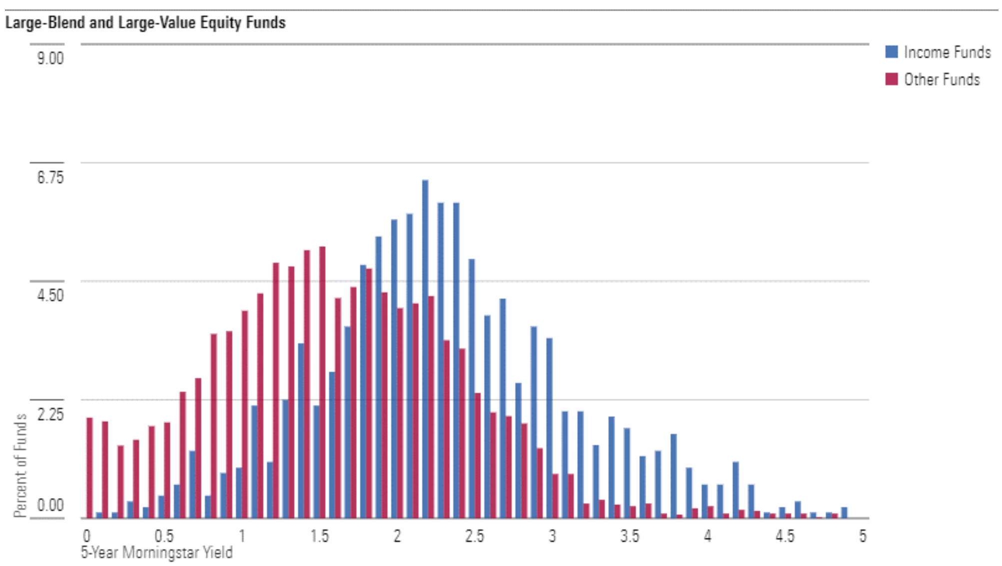


Source: Morningstar Direct, Author's Calculations Data as of June 30, 2022.

Income Funds Generally Do Their Job

Using Morningstar Yield as an improved measuring tool, equity funds that have "income" or "dividend" in their names generally distributed more income than funds without that designation in recent years.

Exhibit 13 Income Funds Do Tend to Distribute More Income



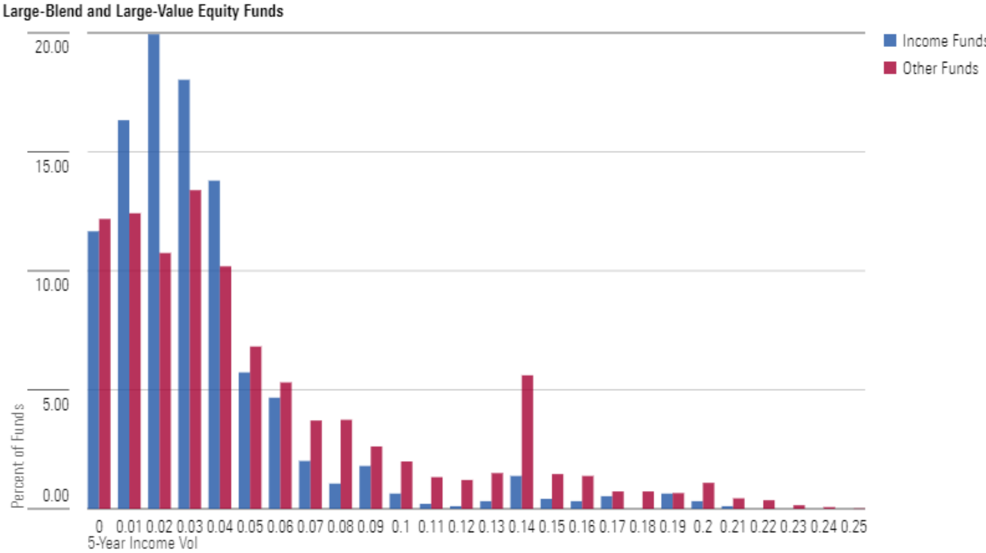
Source: Morningstar Direct, Author's Calculations. Annual Rolling 5-Year Periods from June 2007 through June 2017.

Data as of June 30, 2022.

Furthermore, since these income funds are much more likely to distribute income monthly rather than annually, skipping a distribution or two doesn't mean rolling 12-month income drops to zero. Instead, they frequently provide more durable income, with income volatility tending to be lower than funds that don't have specific income designations:

Exhibit 14 Income Funds Tend to Have Lower Vol

Large-Blend and Large-Value Equity Funds



Source: Morningstar Direct, Author's Calculations. Annual Rolling 5-Year Periods from June 2007 through June 2017.

Data as of June 30, 2022.

Predictive Power

Not only does Morningstar Yield and its variants provide a better insight into investors' actual experiences in a product, but a three-year measure consistently offers better insight into what equity investors can expect in terms of income over the next five years due to the typical consistency of dividend raises.

Exhibit 15 Morningstar Yield Has Some Predictive Power for Equity Income[10]

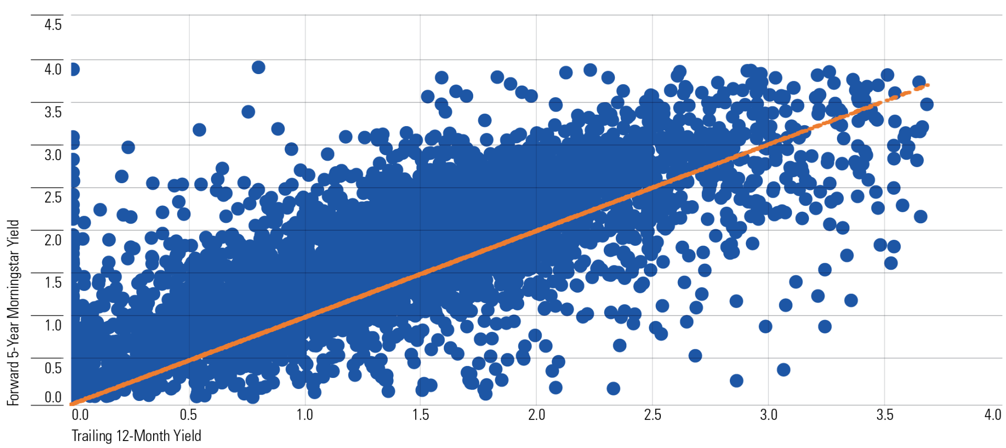
Predicting Forward 5-Year Income

Metric	R-Squared	Mean Absolute Error	Mean Downside Error	Standard Deviation	Downside Deviation
12-Month Yield	0.27	0.5	0.42	0.54	0.41
Trailing 2-Year Morningstar Yield	0.3	0.45	0.38	0.52	0.42
Trailing 3-Year Morningstar Yield	0.41	0.42	0.32	0.54	0.41
Trailing 5-Year Morningstar Yield	0.38	0.54	0.26	0.67	0.42

Source: Morningstar Direct, Author's Calculations Data as of June 30, 2022.

As shown below, unadjusted trailing 12-month yield consistently underestimates long-term equity income due to its inability to incorporate dividend increases, offering an R^2 of only 0.27 when attempting to forecast forward five-year income.

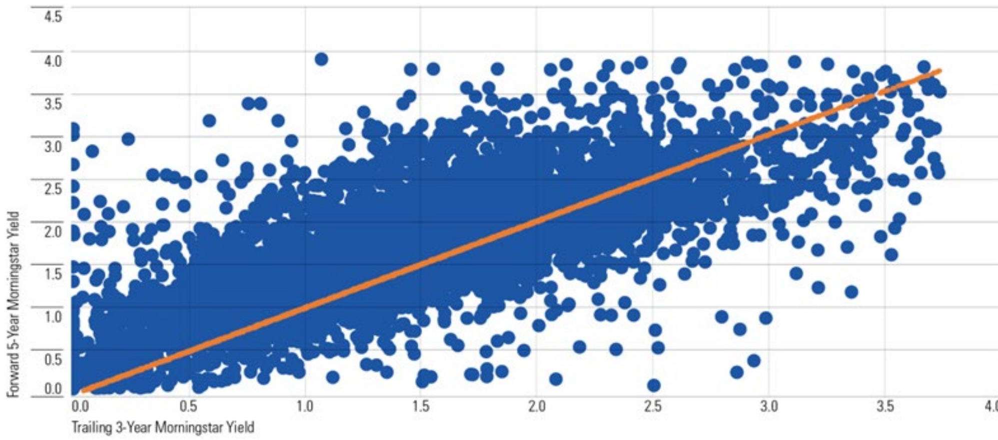
Exhibit 16 Trailing 12-Month Yield Underestimates Equity Income



However, because Morningstar Yield incorporates dividend increases, a three-year Morningstar Yield offers an R^2 of 0.41 when predicting forward five-year income.

10 Exhibits 15, 16, and 17 look at five-year windows for large value and large blend starting in June 2007, assuming a $1 million investment.

Exhibit 17 Trailing 3-Year Morningstar Yield a Better Predictor



A Better Measuring Stick

Morningstar's trailing 12-month yield estimate, the long-preferred tool for assessing an investment's income potential, underestimates long-term equity income generation by not accounting for dividend increases over time, which tend to be both large and consistent. Its rigid one-year window doesn't allow investors to get a longer-term view of an investment's history, and its use of the most recent NAV means that it doesn't always paint an accurate picture of an investor's experience holding the security over a prior period.

Morningstar Yield leverages Morningstar's data to offer a better way to look at a product's income history and can easily be adjusted for taxes and/or income volatility to allow comparison across asset classes, or to show that investors should likely look to ETFs for their equity income instead of open-end mutual funds due to their lower income volatility and superior tax efficiency. Morningstar Yield's flexible time frame allows for more bespoke comparisons, and its use of NAV on the day of the investment instead of the most recent NAV allows it to show investors' actual experiences owning different securities.

In addition to being a better measuring stick of past income characteristics, before-tax Morningstar Yield has the added benefit of being a better predictive tool for future equity income, even if variants of Morningstar Yield don't have the same predictive capabilities.

About Morningstar® Quantitative Research

Morningstar Quantitative Research is dedicated to developing innovative statistical models and data points, including the Morningstar Quantitative Rating, the Quantitative Equity Ratings and the Global Risk Model.

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