Rain Dog® FINANCIAL

Investment Thesis

Replacing Constant-Horizon Bond Funds with Target-Maturity Bond Funds

SUMMARY

A bond strategy built from target-maturity funds (bullet funds) offers investors several ways to control the performance of the fixed income part of their portfolios in contrast with traditional constant-horizon bond funds, which leave investors observing key aspects of their investments rather than controlling them.

The use of bullet funds supports these control options:

- Structure a fixed-income portfolio to have lower initial sensitivity to interest-rate fluctuations, with sensitivity that can further decline over time.
- Design a positive return floor over a specified horizon.
- Hold through a severe rate shock and recover toward par over a known and relatively short horizon.
- Reduce switching costs and retain greater optionality if investor circumstances or the rate environment change.
- Maintain more confident knowledge of terminal value and/or return for a specified horizon.

Bullet funds provide these additional control options while still providing steady-state returns that can be comparable to a traditional diversified fixed-income portfolio.

Rain Dog calls our implementation of this strategy the *Bullet Portfolio* strategy.

1. Characteristics of bullet funds vs. constant-horizon bond funds

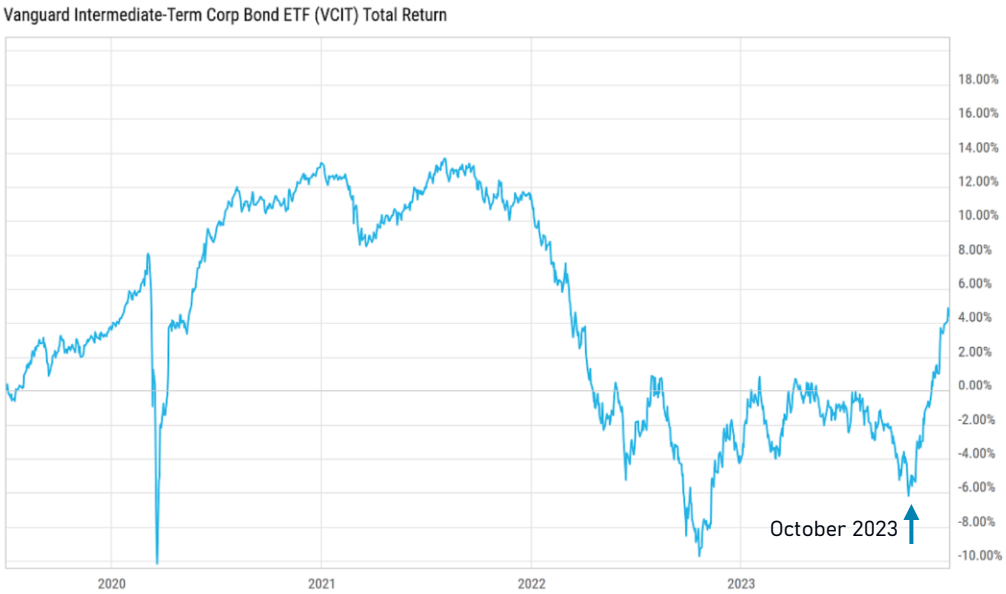
The defining characteristic of how traditional constant-horizon bond funds are constructed is that the funds maintain a near-constant time-to-maturity for bonds in the funds. In Vanguard's intermediate-

term corporate bond fund (VCIT), for example, the fund maintains an effective maturity of 7.6 years.[1] As bonds age, bonds with less time to maturity are sold, and bonds with more time to maturity are purchased.

For bullet funds, the defining characteristic in their construction is that the fund is designed around bonds that mature in the fund's target year. In Invesco's 2031 Corporate bond fund (BSCV), for example, the bonds in the fund mature in 2031. In contrast with the constant-horizon fund, the fund is not designed to sell these bonds as they age; the fund's design is to hold them until they mature in 2031.

The defining difference in the performance of these two kinds of funds is that bullet funds will substantially pull to par as they approach maturity. No matter how much a fund's NAV fluctuates in the years preceding its maturity date, as the bonds reach maturity they will pay off their par values, and the fund will reach an endpoint that can be largely known in advance—with the end date set by the investor.

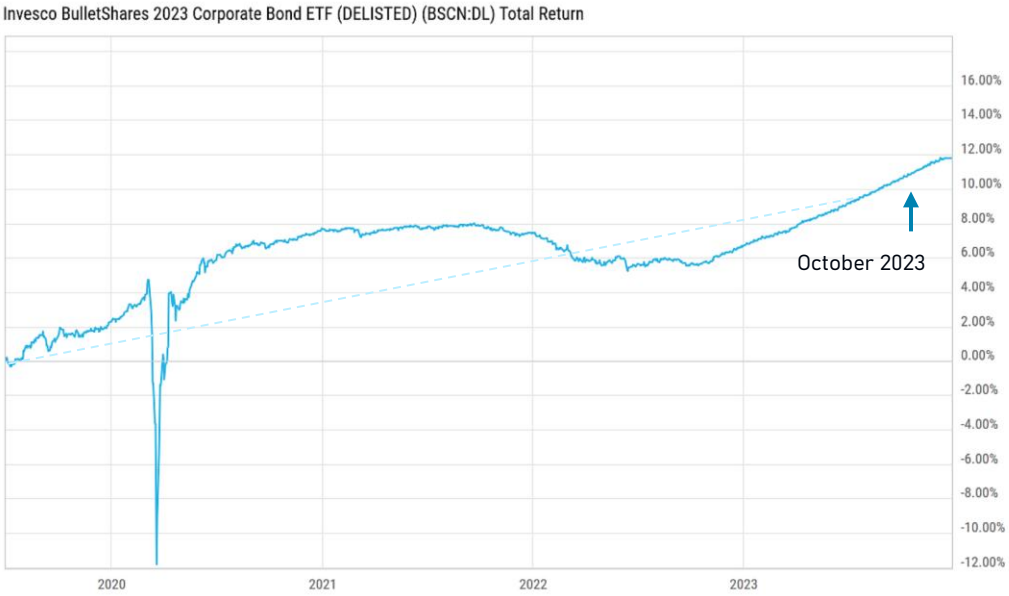
Suppose an investor had invested July 1, 2019 in VCIT with a goal of having a predictable amount of money in October 2023. As the chart below shows,[2] VCIT dropped significantly in late 2022 (as did the rest of the bond market) and had not recovered by October 2023. The investor would have less money than they started with.



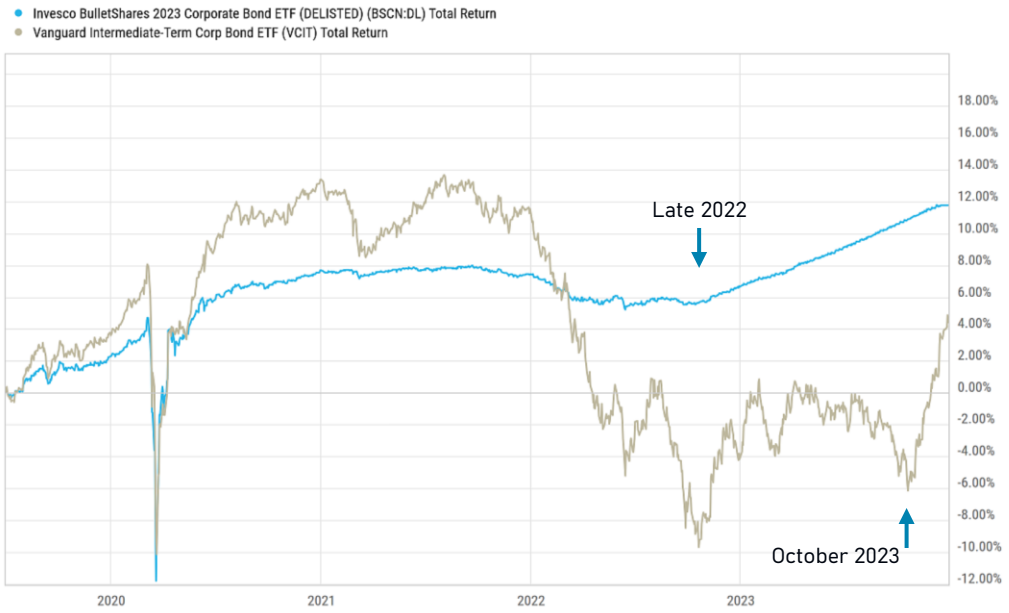
If, instead, the investor had invested in BSCN, an investment grade bullet fund that matured in 2023, it would have been a different story. As the chart shows below, in BSCN's maturity year, time to maturity approached zero, rate-sensitivity decreased to virtually zero, and the underlying bonds pulled to par. The result is very little volatility from late 2022 until the fund terminated at the end of 2023. The

[1] Retrieved from Vanguard's website on 9/24/2026.
[2] This series of charts is from YCharts, retrieved 9/24/2026.

investor made a return that, while not guaranteed, was largely predictable from the moment the investor bought the fund in July 2019.

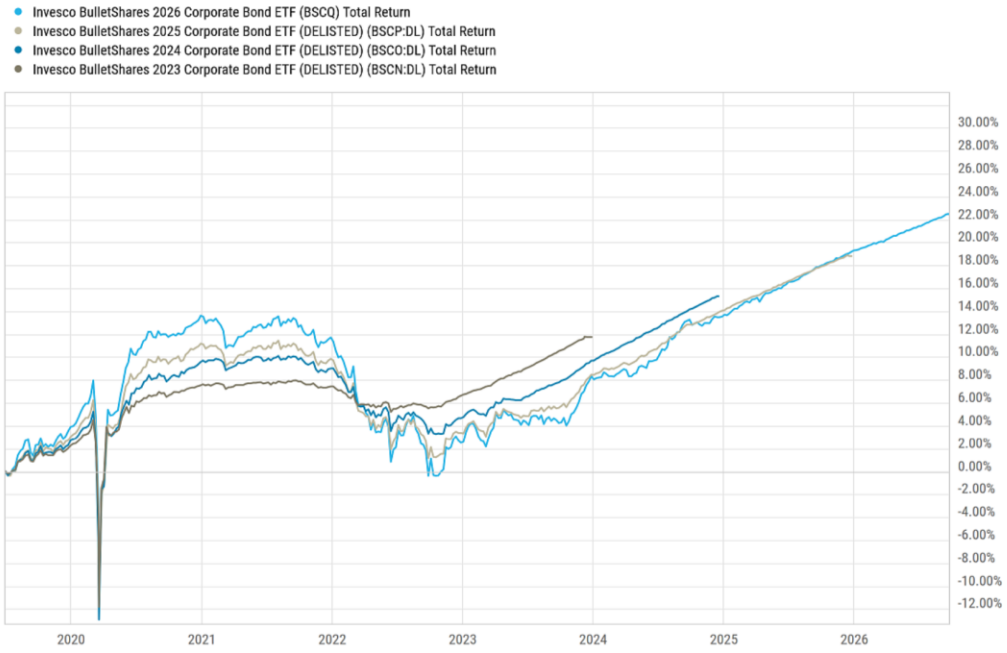


The chart below shows the comparison between the two investment approaches. The investment in the bullet fund is not immune to interim volatility, as the chart shows. However, for an investor who has no intent to sell until October 2023, that volatility is not relevant because there is a timeline at which the volatility will decrease and then disappear. As the graph below shows, this was true even during 2022's severe drop in the bond market. Compare the performance of BSCN in late 2022 to Vanguard's total bond market fund (BND), which lost 18.6% of its value, long-term corporate bond fund (VCLT) which lost 34.3% of its value, and long-term government bond fund (VGLT) which lost 46.2% of its value.



For the investor who invested in the constant-horizon fund, the volatility never disappears because the fund continually refreshes its exposure to maintain a constant maturity; the fund never offers the investor the decision to let the fund mature to a value that can be largely known in advance.

This is not to say that the bullet fund will always outperform the constant-horizon fund—the graph above makes it clear that there are periods during which VCIT would have outperformed BSCN. The bullet fund's benefit is that the investor can decide at any time to hold the bullet fund and let it mature to termination—an option that the constant-horizon fund does not offer. This is a general attribute of bullet funds, especially investment grade bullet funds. As the chart below shows, whatever volatility other funds are incurring, volatility diminishes for each bullet fund as it approaches its maturity date.



Summary of bullet fund differentiators

A constant-horizon bond fund maintains approximately the same maturity indefinitely. A fund managed to a 5-year maturity is still approximately a 5-year-maturity fund several years later.

A bullet fund's maturity naturally declines as it approaches its termination year. A 2029 bullet might move from approximately 2.8 years of maturity in mid-2026 to 1.8 in mid-2027, then 0.8 in mid-2028, and then effectively zero.

This means that merely by holding a position in a bullet fund, rate sensitivity declines and the distance to par realization shortens over time.

A portfolio of short-, intermediate-, and long-maturity constant-horizon funds does not reproduce this property. That creates a distribution of maturities, but no portion of the portfolio converges toward a specific realization date.

Because of bullet funds' distinctive properties compared to constant-horizon funds, designing a portfolio with bullet funds offers several capabilities that cannot be accomplished with constant-horizon funds:

- A portfolio can be designed to provide high confidence in terminal value and returns over time,
- A portfolio can be designed to maintain a positive return floor over a specified horizon,
- A portfolio can be held through a severe rate shock and recover over a known and relatively short horizon, and
- A portfolio can be transitioned with comparatively low switching costs if client circumstances or the rate environment change.

2. What are bonds for?

Rain Dog's *Bullet Portfolio* is motivated by a fundamental rethinking of the purpose of bonds in an investor's portfolio. We are most concerned with the benefits that bonds provide to the investor.

We believe that the bond portion of a portfolio is intended to serve two investor purposes:

- **Provide stability in a portion of the investor's portfolio.** For investors to feel secure in the volatile equity portion of their portfolio, some investors need a portion that is stable or comparatively more stable. Traditional bond funds that lost from 5.7% to 46.2% of their value in 2022 have not served this purpose.
- **Provide confidence in the ability to support future spending.** Investors want to know that they will be able to meet their spending needs in retirement, have emergency reserves, and fund specific future purchases. Bond funds that lose significant value and then take many years to regain their earlier value do not serve this purpose.

> Rain Dog believes that the purpose of the bond portion of an investor's portfolio is to convert some portion of future wealth into a more controllable and predictable state, while still earning an acceptable return.

Traditional constant-horizon bond funds, no matter how diversified, do not accomplish this objective.

Nearly all commentary about bonds conflates individual bonds with traditional, constant-horizon bond funds. Individual bonds and these bond funds do not have the same properties, and the writing about the benefits of "bonds" (really bond funds) tends to confuse means and ends, as far as the bond portion of a portfolio is concerned.

Some examples:

- "Bonds provide capital preservation." Except for the very shortest-term bonds, bonds do not provide capital preservation. In 2022, Vanguard's total bond market ETF (BND) lost 18.6% of its value.[3] The category that is supposedly most stable (short-term government bonds, VGSH), lost 5.7%. A middle category that offers higher returns, intermediate corporate bonds (VCIT), lost 20.6%. The categories with the highest historical returns (long-term bonds), lost 46.2% in government bonds (VGLT) and 34.3% in corporate bonds (VCLT). In contrast, the S&P 500 (VOO) lost 19.6% over the same period. Bond funds *do not* provide capital preservation and indeed some bond funds performed that function worse in 2022 than equities did.
- "Bonds are negatively correlated with equities." That might have been true at one time, but it is no longer the case. In the correlation data used by Rain Dog's Investment Forecast Model (which captures nearly all meaningful segments of equity and bond markets), the correlation between the S&P 500 and US government bonds ranges from 0.13 to 0.36, depending on the type of bond. Corporate bonds have correlations to the S&P 500 ranging from 0.42 to 0.69. Municipal bonds' correlations range from 0.13 to 0.55. Foreign bonds' correlations range from 0.29 to 0.45. Bonds are *not* negatively correlated with equities.
- "Bonds improve portfolio metrics." Other arguments in favor of traditional bond funds is that they improve diversification, reduce the portfolio's overall standard deviation, improve Sharpe ratio, improve Sortino ratio, and similar arguments. These are all portfolio metrics rather than investor objectives. They are heuristics that tend to suggest better portfolio performance, but none of them offer investors more control over their investments.

3. General Strategy

The *Bullet Portfolio* strategy uses these levers:

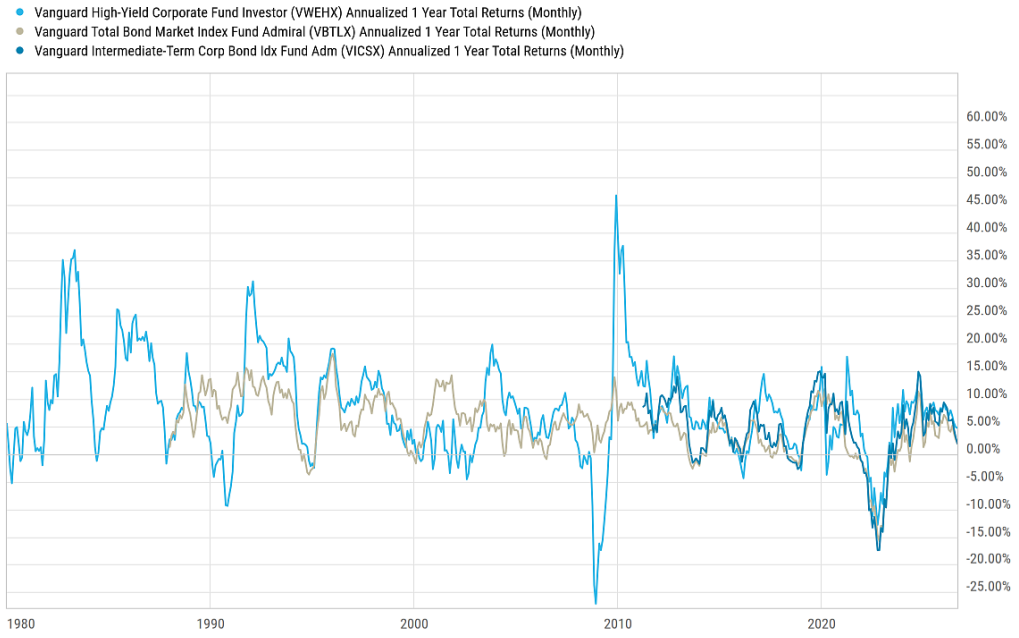
- **Maturity.** Bullet funds are selected based on investor's prioritization of timing objectives vs. maximizing returns.
- **Credit.** Investment-grade and high-yield bullet funds are selected based on the investor's prioritization of maximizing returns vs. knowing returns and terminal values with certainty.
- **Active management of maturity and credit.** The *Bullet Portfolio* strategy is not a buy-and-hold strategy. It involves reviewing and possibly refreshing the portfolio on at least an annual basis or when circumstances change.

[3] Performance data is from YCharts, retrieved on 9/24/2026.

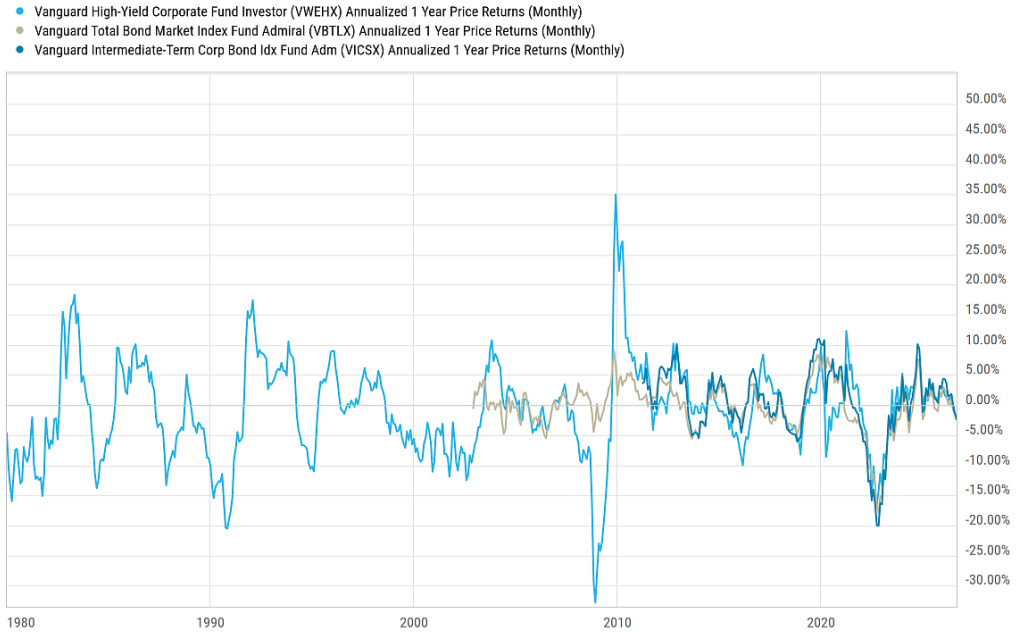
Separating yield from NAV

Bond returns are a combination of yield (coupon payments) and price returns (change in price). Unlike stocks, price returns for bonds are a function of interest rates, and because bonds are issued in $1000 denominations and ultimately pull to par at $1000, bond prices are a zero-sum game in the long run. What falling interest give in price, rising interest rates will later take away.

When bond returns are viewed as a combination of yield and price returns (total returns), bond returns look volatile, as shown in the chart below.

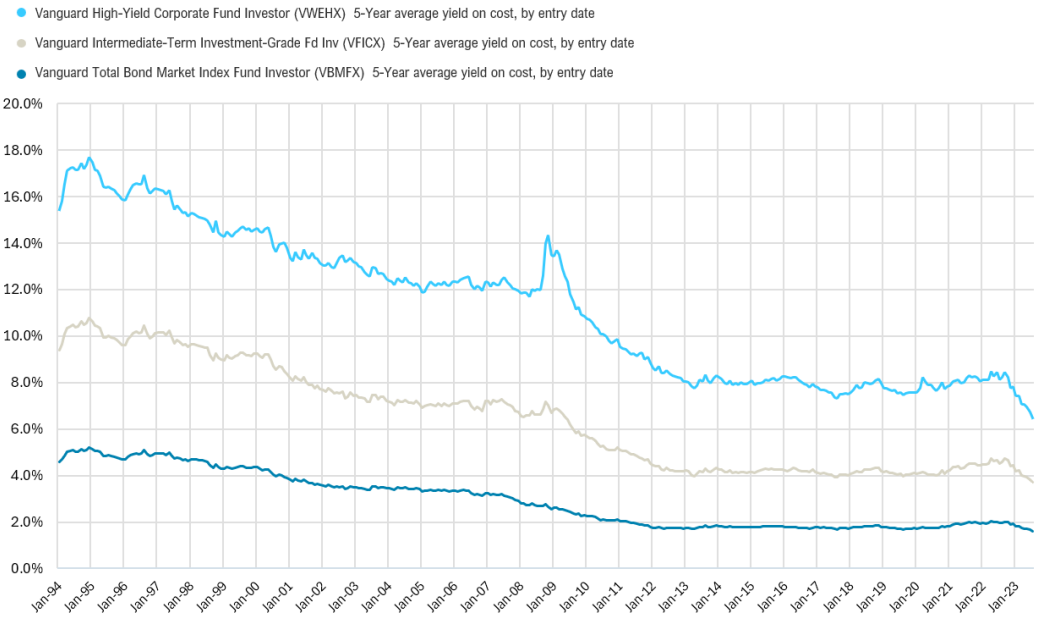


However, most of that volatility is due to price volatility, as illustrated in the next chart.



If you compare the volatility in total returns with the volatility in price, you can see that the graphs are closely parallel. Indeed, they almost appear to be the same graph.

However, when yield is viewed on its own, volatility is dramatically lower, as shown in the chart below.[4]



Important: This graph does not show that an investor could sell after the 5-year holding period and recoup their original investment, or that selling at the end of the 5-year holding period would be

[4] Data for this series of charts is from YCharts. Calculations and charts are from Rain Dog Financial.

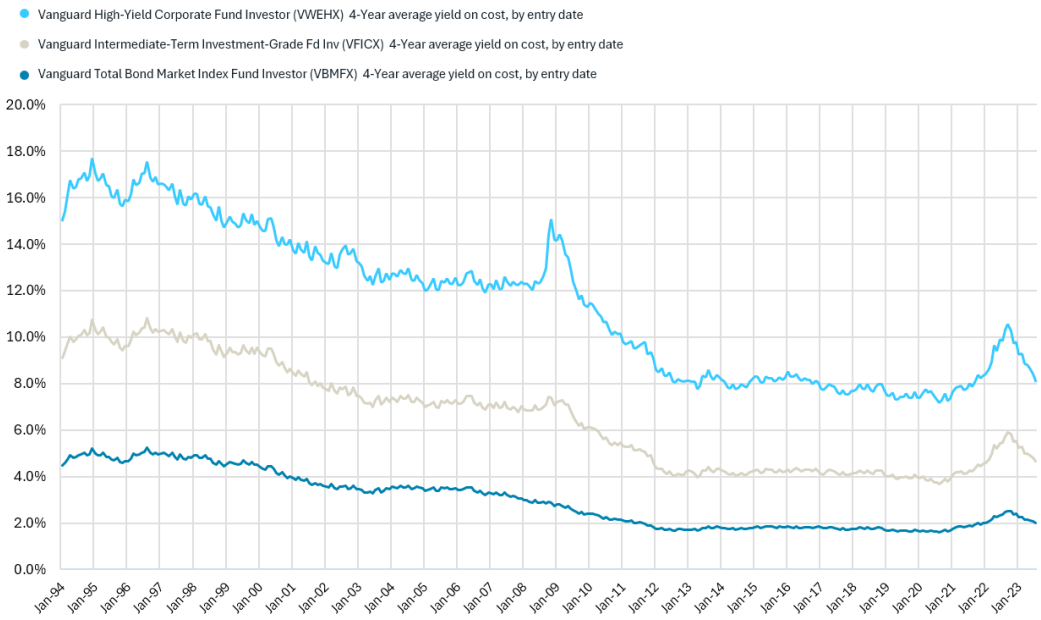
profitable overall. With the constant-horizon funds shown in the graph, it is not possible for an investor to hold to maturity. That is only possible with individual bonds or bullet funds.

When price fluctuation is removed from the equation, it's clear that yield stays fairly high over time, especially for high-yield bonds.

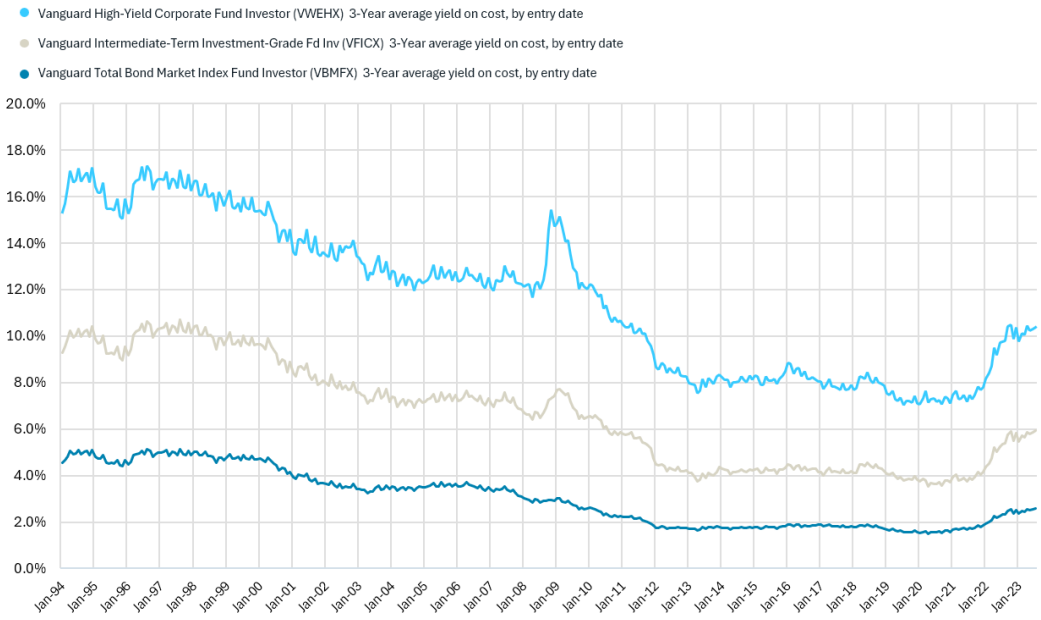
With constant-horizon bond funds, price and yield can never be separated, and volatility therefore remains. With bullet funds, yield is largely known at time of purchase, and rate-driven price fluctuations become less significant, and ultimately insignificant, as the bullet approaches maturity.

> A goal of the *Bullet Portfolio* strategy is to remove bond fund price from the investment equation as much as possible so that bond fund yield can be accessed with less confounding influence from price.

The graph above shows average annual yields for a 5-year holding period. With the *Bullet Portfolio* strategy, typical holding periods are 3, 4, and 5 years. Volatility in the yields increases slightly with shorter holding periods. Here are the historical yields for 4-year holding periods:



And here are the historical yields for 3-year holding periods:

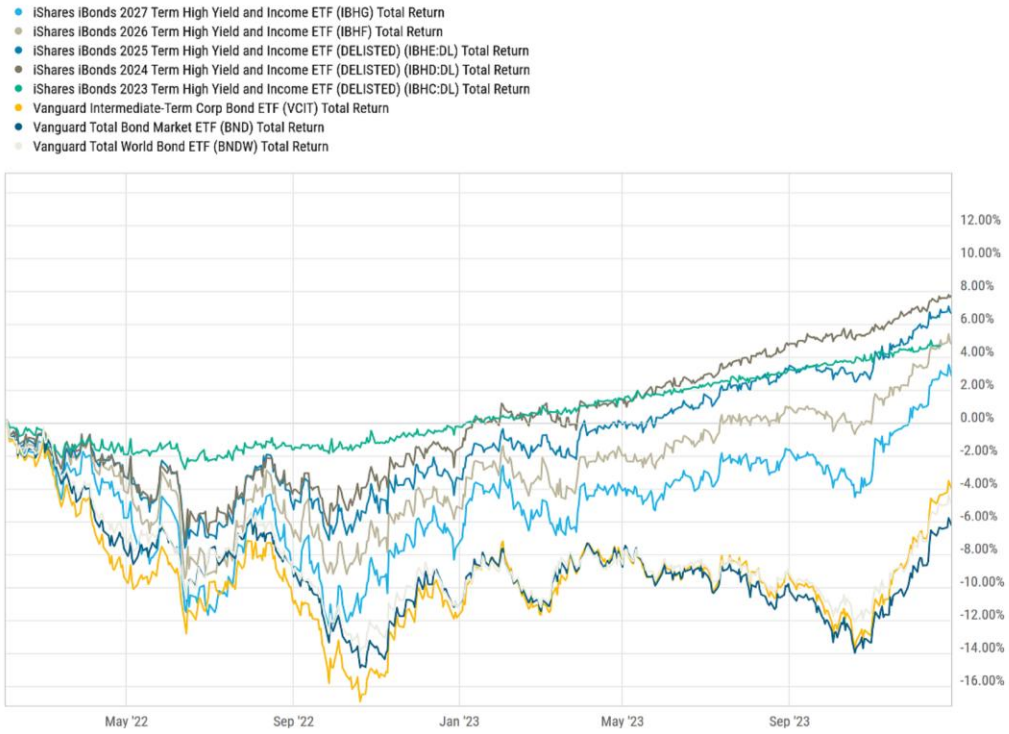


Regardless of whether the holding period is 3, 4, or 5 years, fluctuation in yield over the holding period is significantly lower than fluctuation in total returns would be.

Rejection of credit risk as a dominant consideration

Rain Dog's position is that interest-rate sensitivity poses more near-term and mid-term risk than credit does, even for high yield bonds—when they are structured in *Bullet Portfolio*s. A strategy that biases toward short duration gains more from reduced price volatility than a strategy that biases toward high-yield credit loses in defaults.

The graph below compares performance of high yield bullet funds in the vintages that would have been in use in the *Bullet Portfolio* strategy, buying into the bond market just before the 2022 crash. This compares to several diversified bond funds: Vanguard's total US bond market fund (BND), total worldwide bond market fund (BNDW), and intermediate-term corporate bond market fund (VCIT).

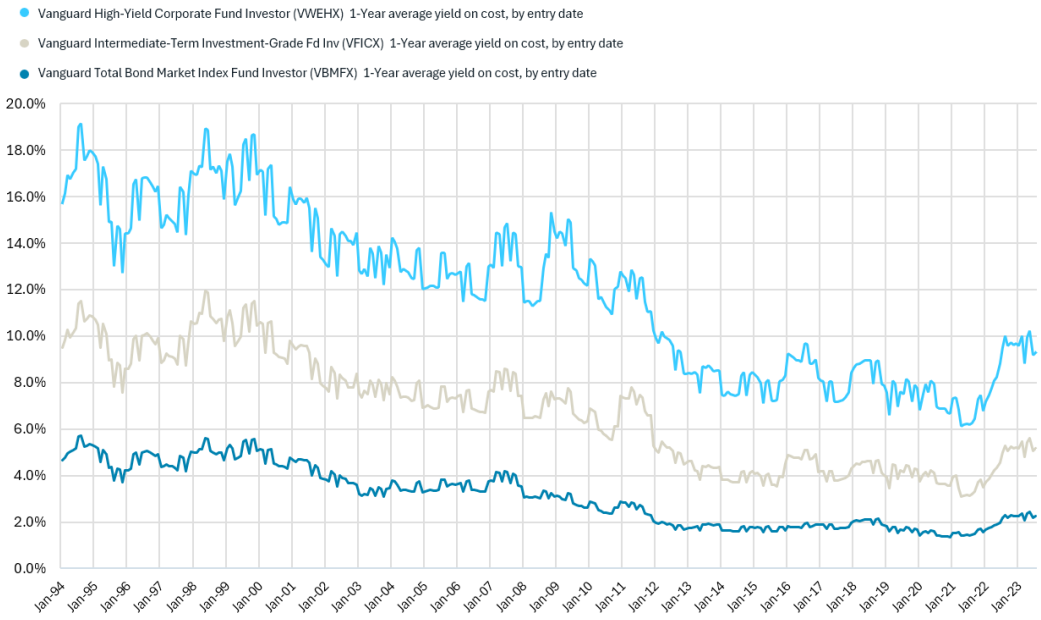


All of the high yield bullet funds were slower to fall and faster to recover than all of the general purpose diversified funds, despite the fact that the diversified funds hold higher credit-rating bonds—only investment grade and government.

The difference is that the diversified funds maintain an average time to maturity of approximately 7.5-8.5 years, whereas the longest maturity of any of the high-yield bullet funds at that time of purchase in January 2022 would have been approximately 5.5 years.

By the end of 2023, none of the diversified bond funds had recovered its initial value, whereas all of the high-yield bullet funds were in positive territory. An investor in a constant-horizon bond fund in 2022 could not know when their investment would recover (and some have still not recovered). An investor in high-yield bullet funds in 2022 could have high confidence that their investment would recover no later than the target maturity year.

This is not an anomaly. In terms of yield, high-yield bonds have outperformed intermediate corporate bonds and the general bond market for every 1, 2, 3, 4, and 5-year holding period since January 1994. The one-year holding period, which is the most volatile, is shown below.



Again, realizing the superior yield of high-yield bonds, independent of price fluctuations, requires holding the bonds to maturity, which can be done in bullet funds but not in constant-horizon bond funds.

Selection of specific bullet funds

Target-maturity ETFs are not interchangeable merely because they have the same maturity dates. Rain Dog currently screens individual vintages for:

- SEC yield or YTM
- Option-adjusted spread
- Rating mix, especially CCC exposure
- Maturity mix, especially bonds that do not mature in the fund's stated target year
- Fund AUM

Fund size is relevant because very small target-maturity funds can have less representative credit composition. Trading friction can also become more material for larger client positions.

Each of these factors requires screening. For example, in fall 2026, Rain Dog has found:

- A 2028 fund that yielded less than the 2027 fund despite having substantially more CCC exposure, within the same fund family
- A 2031 fund that had greater spread and less CCC exposure than a 2032 fund, within the same fund family

- 2027 and 2028 high-yield funds with less than $5 million each in AUM
- Multiple bullet funds with bonds that did not mature in their stated target years

Active management of credit and maturity

The *Bullet Portfolio* is refreshed each year, nominally between September and early November or when the investor's circumstances change. Details depend on the specific investor's objectives, but these are the general actions:

- Roll the portfolio to longer or shorter maturity bullet funds to increase yield, based on the credit market at the time.
- Roll some or all of the portfolio to an investment grade bullet fund for the terminal year if some or all of the portfolio is being allowed to reach maturity.
- Shift composition of all or part of the portfolio if it is being used to fund a Dedicated Spending Sleeve or if new investor spending priorities have been identified.

This annual cycle amounts to scheduled re-underwriting: review the high-yield and investment-grade curves, the high-yield/investment-grade spread, cash and very-short investment-grade alternatives, available maturities, and the constant-horizon-fund alternative. This is not seen as a disadvantage, but rather as a periodic opportunity to update and refresh investors' portfolios.

4. What bonds the Bullet Portfolio replaces

The *Bullet Portfolio* is designed to replace an investor's entire diversified bond portfolio, and that is the appropriate comparison. The comparison is not *Bullet Portfolio* vs. cash, *Bullet Portfolio* vs. an all-Treasury ladder, or *Bullet Portfolio* vs. the one particular bond subtype that happens to be optimal for one objective. The comparison is whether the *Bullet Portfolio* offers advantages to a generally diversified bond portfolio against the full set of objectives that the bond portfolio is intended to support.

5. Comparing Bullet Portfolio Rate-of-Return to Other Bond Portfolios

An advantage of the *Bullet Portfolio* strategy is achieving higher yield and lower volatility at the same time it provides its other benefits.

For general purpose bond-portfolio replacement, the *Bullet Portfolio* strategy normally selects bullet funds that mature in 4-5 years. The table below shows bullet fund performance relative to the performance of constant-horizon bond funds plus a diversified comparison fund selected by Rain Dog's IFM optimizer. The table assumes funds were purchased in October 2021 and held through the end of June 2026.

The diversified comparison fund is a portfolio optimized to match the historical returns level of Vanguard's total US bond market fund but with lower volatility:

- Hedged international bonds (BNDX), 25.0%
- Intermediate-term treasuries (VGIT), 24.0%
- Intermediate-term municipal bonds (VTEB), 21.0%
- High-yield corporate bonds (VWEHX), 10.8%
- Short-term investment-grade corporate bonds (VCSH), 7.7%
- Short-term treasuries (VGSH), 6.0%
- Emerging-market debt (EMB), 5.5%

Table 1 shows performance of these funds.

Table 1 Selected fund performance from October 1, 2021 through June 30, 2026.

	2026 bullet fund	Vanguard total US bond market fund	Vanguard total world bond market fund	Vanguard high yield fund	
Metric	IBHF	BND	BNDW	VWEHX	Optimized Comparator
CAGR	4.11%	0.08%	0.30%	3.97%	0.87%
Standard deviation	5.45%	6.49%	5.84%	6.83%	5.28%
Maximum drawdown	-10.74%	-15.77%	-14.59%	-13.27%	-10.50%
Sharpe ratio	0.08	-0.54	-0.57	0.06	-0.53
Sortino ratio	0.11	-0.69	-0.73	0.08	-0.68

The bullet fund outperformed the comparison funds. The high yield fund, VWEHX, is the only fund with similar performance, but performance is worse overall, and it does not offer the option of holding until the bonds in the fund pull to par.

Because the bond market dropped significantly in 2022, comparing the results of an October 2021 purchase to an October 2022 purchase is also instructive, as shown in Table 2.

Table 2 Selected fund performance from October 1, 2022 through June 30, 2026.

	2026 bullet fund	Vanguard total US bond market fund	Vanguard total world bond market fund	Vanguard high yield fund	
Metric	IBHF	BND	BNDW	VWEHX	Optimized Comparator
CAGR	8.19%	4.38%	4.44%	8.98%	4.69%
Standard deviation	3.28%	5.88%	5.10%	4.41%	4.64%
Maximum drawdown	-1.04%	-6.02%	-3.87%	-2.05%	-3.44%
Sharpe ratio	1.04	-0.01	-0.01	0.95	0.04
Sortino ratio	2.28	-0.02	-0.02	1.86	0.05

For this time period, the constant-horizon high yield fund outperformed the bullet fund, though it had significantly worse risk metrics.

For a final comparison, compare the original purchase period of October 2021 with a sell period of June 2025.

Table 3 Selected fund performance from October 1, 2021 through June 30, 2025.

	2026 bullet fund	Vanguard total US bond market fund	Vanguard total world bond market fund	Vanguard high yield fund	
Metric	IBHF	BND	BNDW	VWEHX	Optimized Comparator
CAGR	4.15%	-0.87%	-0.42%	3.54%	0.54%
Standard deviation	6.11%	7.15%	6.40%	7.62%	5.70%
Maximum drawdown	-10.74%	-15.77%	-14.59%	-13.27%	-12.04%
Sharpe ratio	0.09	-0.62	-0.63	0.01	-0.55
Sortino ratio	0.13	-0.78	-0.80	0.01	-0.71

For this time period, the 2026 bullet fund performs best in absolute terms and on a risk-adjusted basis, despite the fact that its maturity date is still a year away.

6. Mean Variance Optimization (MVO) Analysis

Investment Forecast Model optimizer results

Rain Dog's IFM optimizer provides supporting evidence for the benefits of a *Bullet Portfolio* compared to constant-horizon bond funds.

Constructing portfolios from the fixed-income universe, IFM's optimizer was asked to maximize the worst historical three-year cumulative returns at several target return levels. The best achievable three-year floors were:

Target return	Best historical 3-year floor
6.50%	-1.6%
6.25%	-1.5%
6.00%	-0.4%
5.75%	+0.1%
4.00%	+2.4%

Bond funds could not provide true capital preservation over historical 3-year periods unless the target rate of return was dropped to 5.75% or lower. To get to a higher floor, the target rate had to be dropped

to 4.00% and required allocating 74.5% of the portfolio to money market, hedged international fixed income, and floating-rate securities. This still produced a cumulative 3-year total return of only 2.4%.

The IFM optimizer uses historical returns data from 1977–2025 and is limited to returns patterns that have occurred over the past 50 years. As such, this result is not proof that constant-horizon bond funds could not have higher floors, but the result does lend support to the rest of this paper's analysis.

7. Bullet Portfolio Applications

Bullet Portfolios serve at least four distinct purposes.

Four general applications

The strategy currently has four design tiers.

General bond-portfolio replacement

There is no anticipated spending need. The maturity structure is selected primarily for attractive fixed-income return and risk characteristics. Positions are normally rolled, but the investor retains the option to stop rolling.

The principal advantage compared to a constant-horizon portfolio is comparable steady-state fixed-income performance plus better future optionality.

Dedicated spending-sleeve backstop

Maturities are positioned so that, during a severe equity decline, part of the general bond allocation can become an extension of the Dedicated Spending Sleeve simply by stopping the roll. Dedicated spending sleeves are normally funded to cover 3-4 years of planned spending. The default design of the *Bullet Portfolio* which results in bond position sitting 3-4 years from maturity is naturally close to the maturity required for a future spending-sleeve rung. This does not require selling large quantities of equities in a down market.

Contingent-spending backstop

Possible but uncommitted future spending can influence the maturity schedule. The timings of potential liabilities are considered when funding different maturities in the *Bullet Portfolio*. If the contingency never occurs, the securities can simply be rolled. Hard liabilities remain in the Dedicated Spending Sleeve.

Assurance ladder

Some clients may prefer an annual cycle of bullet funds reaching maturity and having a largely-known amount of principal available even in the absence of anticipated spending needs. For those clients, the maturity distribution of the *Bullet Portfolio* becomes a planning objective. This structure deliberately gives up some yield in exchange for frequent maturity dates and the greater certainty that comes with them.

Positive floors as a design option

The target-maturity architecture allows the bullet portfolio to be configured to create a positive floor when that objective matters.

For a very short horizon, the strategy could use 100% short-maturity investment-grade credit. Investment-grade default risk is extremely low, and the limited remaining maturity sharply constrains interest-rate uncertainty.

If the investor wants a positive floor two years later, or three years later, the portfolio can be designed to support that by selecting appropriate target maturities.

With constant-horizon funds, the typical means of providing a near-term floor is to move toward bond funds with very short maturities or cash, both of which reduce expected return. The bullet structure introduces another degree of freedom: the portfolio can initially earn the return associated with a longer maturity while naturally becoming shorter and more certain as time passes.

Target maturity provides optionality

Suppose interest rates rise sharply after purchase. A conventional intermediate-term bond fund would fall substantially in price. Because the intermediate-term fund maintains a constant maturity horizon of approximately 7.5 years, the investor cannot predict when the original position's price will be restored.

With the *Bullet Portfolio*, the time at which the portfolio will mature is known, and the portfolio can be expected to converge toward the value of its maturing securities at that time. The investor can sell, same as with a constant-horizon portfolio, or the investor can hold until a known maturity date, which is an option not available with the constant horizon portfolio.

Inversion of typical investment-planning approach

The target-maturity structure permits a different approach to determining the amount of fixed income required.

Conventionally, the investor's risk tolerance is assessed and a suitable asset allocation is defined. The asset allocation is characterized by an amount of risk (standard deviation, worst 1-year returns, and other estimated downside characteristics), and the investor is asked whether that will be tolerable.

Under the target-maturity framework, definite and possible spending needs are identified, which defines one or more planning horizons. The *Bullet Portfolio* (when combined with the Dedicated Spending Sleeve) can then be sized and maturities selected to cover all definite and possible spending needs. This can stretch from 4-7 years or more.

The remainder of the investor's portfolio can be invested in equities with the confidence that all reasonably anticipated spending has been accounted for.

With constant-horizon bond funds, there is no ability to design the bond portfolio to reach any particular value at any particular date without sacrificing significant returns. There is therefore no

ability to provide the investor with confidence that any part of the portfolio—equities or bonds—will be adequate to cover future spending.

8. Sample Bullet Portfolio Designs

In the scenarios below, all the solutions are intended to be illustrative rather than definitive defaults. In practice, the fund or funds for the growth portion of the *Bullet Portfolio* are selected based on yields and credit quality of bonds in the funds at the time of the investment. For sake of illustration in the scenarios, the high yield fund that is 5 years from maturity is assumed to be the fund with the highest yield, 4 years is slightly lower, and 1-3 years are lower than 4 years.

In all scenarios, the allocations will be reviewed each year and rolled or allowed to progress toward maturity depending on the environment—or the *Bullet Portfolio* will be updated more specifically if the investor's goals, priorities, or life circumstances have changed.

Scenario 1

The investor has a $1 million bond portfolio. The investor is more than 5 years from retirement, does not have a Dedicated Spending Sleeve and does not have any near-term to mid-term cash needs on the horizon.

Solution

$1 million in a high-yield bullet fund that matures in 5 years, i.e., 100% of the *Bullet Portfolio* is allocated toward growth.

Scenario 2

The investor has a $1.5 million bond portfolio. The investor is within two years of retirement and wants assurance that ready cash will be available to fund spending and other as-yet-unspecified expenditures in the first few years of retirement. The investor's planned spending is covered by a dedicated portfolio sleeve, which is treated separately.

Solution

$375,000 is placed in a high-yield bullet fund that matures in 2 years
$375,000 is placed in a high-yield bullet fund that matures in 3 years
$375,000 is placed in a high-yield bullet fund that matures in 4 years
$375,000 is placed in a high-yield bullet fund that matures in 5 years

This investor will earn lower returns than an investor more concentrated in the 5-year vintage, but, for this investor, the bullet ladder provides greater certainty each year as a bullet fund matures.

Scenario 3

The investor has a $2.0 million bond portfolio. The investor is within two years of retirement and wants assurance that at least half the portfolio will be "above water" at the time of retirement. The remainder

should earn the highest return. The investor's planned spending is covered by a dedicated portfolio sleeve, which is treated separately.

Solution

$1,000,000 is placed in an investment-grade bullet fund that matures in 2 years
$1,000,000 is placed in a high-yield bullet fund that matures in 5 years.

Scenario 4
The investor has a $2.0 million bond portfolio. The investor has a Dedicated Spending Sleeve with 2 years remaining, which supports $300,000 per year in spending. In the event of a stock market meltdown, the investor wants to ensure the spending sleeve can be extended without selling equities in year 3.

Solution

$275,000 is placed in an investment-grade bullet fund that matures in 3 years (grows to $300K, inflation-adjusted)
$1,725,000 is placed in a high-yield bullet fund that matures in 5 years

Scenario 5
The investor has a $1.5 million bond portfolio. The investor is considering making a $500,000 down payment on a vacation property in 2-3 years.

Solution

$450,000 is placed in a high-yield bullet fund that matures in 3 years (grows to $500K, inflation-adjusted)
$1,050,000 is placed in a high-yield bullet fund that matures in 5 years

9. Objections and Limitations

Terminal values cannot be fully known
The *Bullet Portfolio* strategy aims for higher certainty of terminal values than would be available from a bond portfolio comprised of constant-horizon funds. The strategy recognizes that credit defaults, recoveries, fund expenses, calls, portfolio turnover, and other factors introduce uncertainty.

The level of certainty can be adjusted using the levers described above. For example:

- A short-maturity investment-grade sleeve can have extremely low credit-loss uncertainty and very little residual rate risk at the chosen horizon.
- A longer investment grade sleeve can trade a small amount of terminal certainty for additional yield (depending on current yield curves).

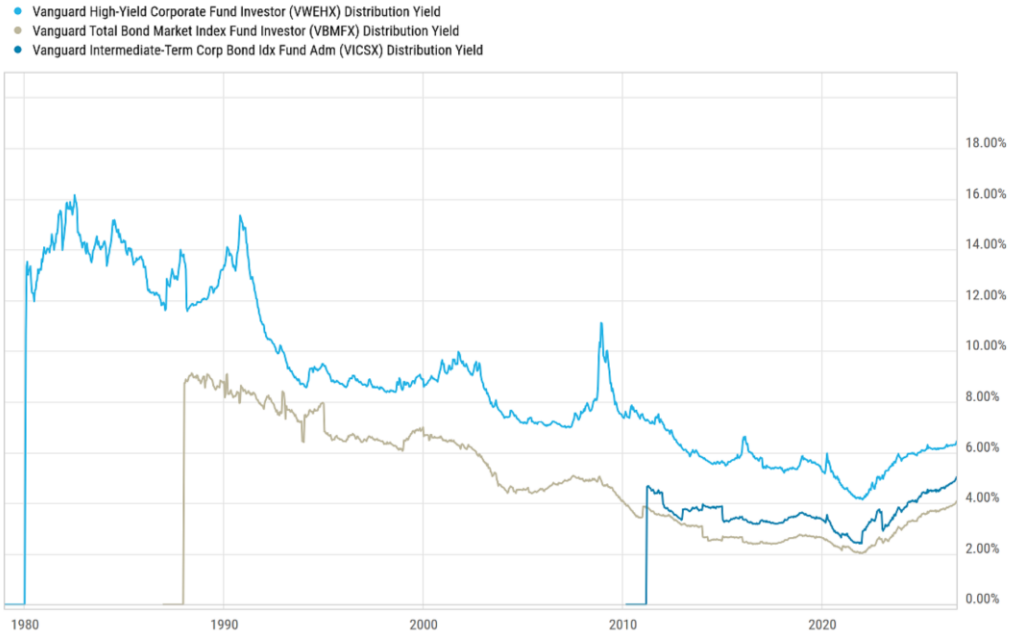
- A high-yield sleeve can provide materially higher expected returns in exchange for greater credit uncertainty.

For applications in which terminal values must be known with high certainty (such as funding retirement spending in the near term), the appropriate strategy is Rain Dog's *Dedicated Spending Sleeve* strategy rather than the *Bullet Portfolio* strategy. The *Bullet Portfolio* strategy is for more general use as a general bond portfolio replacement. Its objective is to provide meaningfully greater knowability than a constant-horizon bond portfolio while continuing to perform the broader fixed-income role.

> Disposition The limitation of terminal values being approximate is accepted. The *Bullet Portfolio* is not the best solution for every problem. Use the most appropriate portfolio for each investor.

Current yield environment is not representative

Yields for high-yield bonds are near their historical lows for the past 40 years, as shown in the chart below. The fact that this strategy is appealing in a low-yield environment suggests that it could be even more appealing if and when yields increase.



> Disposition To the degree the current yield environment is not representative, it likely understates the desirability of the *Bullet Portfolio* strategy.

No elimination of interim mark-to-market volatility

The *Bullet Portfolio* will still exhibit mark-to-market, price-return volatility until it is close to its maturity year. However, with a maximum maturity horizon of approximately 5 years, a *Bullet Portfolio* will have a shorter average duration than a diversified bond fund, and therefore will have materially lower interim volatility. For an investor who will not sell early, rate-driven interim volatility amounts to unrealized loss or gain that will be resolved at maturity.

Disposition Interim volatility is not eliminated, but it is reduced compared to constant-horizon funds and offers the option of being resolved by a known termination year.

Defaults within high-yield funds reduce returns

Holding to maturity largely resolves rate-driven terminal uncertainty, but it does not erase defaults. Realized defaults reduce return and tend to occur in the same environments that stress equities. The New York Fed's work on aggregate high-yield default rates found that defaults tend to vary with years from issuance. Rain Dog addresses this risk by nominally holding high-yield funds in vintages that have reached points of high seasoning.

Disposition High-yield default risk is addressed partially through selection of vintages that have reached a favorable point for high-yield seasoning. Remaining default risk is real and factored into expected returns.

Calls within high-yield ETFs reduce returns

Callable high-yield bonds can be redeemed early when rates fall, which will force the bullet fund to reinvest at lower yields. Rain Dog recognizes that initial high-yield fund yields are unlikely to persist for the duration of the target maturity fund. As offsetting factors, Rain Dog uses the most conservative of yield-to-worst (when available), yield-to-maturity, and 30-day SEC yield for comparison purposes. Rain Dog does not assume even the most conservative yield will persist to maturity. This is not a distinction from constant-horizon funds, which face the same issue.

Disposition Resolved by process (conservative planning basis).

Higher ETF costs

Bullet funds cost more (~10–35 bp) than broad bond index funds (~3 bp). The added cost is accepted in exchange for the defined-maturity structure.

Disposition Accepted as an implementation cost.

Loss of sector breadth

Useful target-maturity vehicles do not cover every fixed-income sector. Securitized, bank loans, floating rate, and some international exposures are not included.

Disposition Rain Dog sees sector-diversification as a means to an end, rather than the end itself, and has not identified any material benefit to the investor from the omitted sectors that outweighs the structural benefits of the *Bullet Portfolio*.

10. Conclusion

The *Bullet Portfolio* strategy is not based on the claim that bullet funds eliminate bond risk.

It is based on the fact that a constant-horizon bond portfolio deliberately prevents its bonds from aging. A target-maturity portfolio allows them to age, which gives the investor several control levers, including reducing interest-rate sensitivity for the amount of yield, choosing horizons at which terminal

values can be largely known, establishing value floors for near-term and mid-term, and setting the stage for future optionality.

In addition, if rates move against the investor, the *Bullet Portfolio* has a well-defined response that does not require predicting when rates will reverse: the investor can hold the bullet funds to maturity, allowing the portfolio to mature toward par over the selected horizon.

If life circumstances change, that same aging means the portfolio can be restructured from a shorter-maturity starting point than a conventional constant-horizon portfolio, and switching costs are likely to be lower.

> Compared to a diversified constant-horizon bond portfolio, the *Bullet Portfolio* strategy provides meaningful control over future value, downside floors, rate-shock recovery horizon, and the cost of changing course—all while providing comparable steady-state returns.

11. References

- Rain Dog Financial, IG/HY allocation in the Dedicated Spending Sleeve *Decision Brief* (credit-shock break-even analysis and HY ceiling).
- Rain Dog Financial, IG–HY ETF selection for dedicated portfolio spending sleeves *Decision Brief*.
- Rain Dog Financial, complete replacement of bond allocations with bullet funds *Decision Brief*.
- Rain Dog Financial, Investment Forecast Model documentation.
- YCharts for historical return values for Vanguard funds and charts as indicated.
- New York Fed ratings default and recovery studies.
- FRED rate and curve series.
- Vanguard, Invesco, iShares, and State Street websites for specific fund information.

12. Notes & Disclosures

Rain Dog Financial® is a trade name of Rain Dog LLC.

This document is informational and does not constitute individualized investment advice or an offer to buy or sell any security. Specific funds are named to illustrate the analysis, not as recommendations; the scenarios are illustrative and not tailored to any individual's circumstances. Investing involves risk, including possible loss of principal. The figures depend on the yield, default, and recovery assumptions used as inputs. They are estimates and structured judgments, not predictions. Past experience does not guarantee future results.

Revision history

Version	Date	Change	By
1.0	2026-09-30	First draft.	Steve McConnell, CFP®, ChFC®