Rising rates: A case for active bond investing?

Vanguard research | August 2011

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Executive summary. Although the success of active management in fixed income has not been stellar—Vanguard research has found, for example, that over the 15 years ended December 31, 2010, more than 85% of actively managed bond funds failed to beat their benchmarks (Philips, 2011)—still there are distinct periods in which investors may prefer active management. For instance, during a rising interest rate environment, it is often supposed that active fixed income managers will outperform their benchmark, given that active managers can shorten a portfolio's duration, thus mitigating the risk of rising interest rates. According to a recent survey of institutional investors by Janus Capital Management (Inklebarger, 2011), 91% of respondents preferred active fixed income strategies in a rising-rate environment.

This paper tests this assumption by reviewing the historical track record of active bond managers in Morningstar's mutual fund database during periods of rising interest rates since 1981. We evaluated four categories of funds—short-term corporate, short-term government, intermediate-term corporate, and intermediate-term government—and compared their

performance against a relevant benchmark. We excluded long-term government and long-term corporate funds from this analysis owing to small sample sizes and persistent duration mismatches between most funds and their benchmark.[1] We found that in a majority of rising-rate periods, active managers, on average, failed to outperform a relevant benchmark. The implication of this finding is that investors should not assume that an active manager will automatically transform an opportunity to outperform into actual outperformance.

Short-term bond funds and rising rates

When examining short-term bond funds, we used the historical yield of the 2-year U.S. Treasury bond as a proxy for determining rising-rate periods. Figure 1 highlights seven periods beginning in 1981 that had rising interest rates. We started our analysis with the year 1981 because of the limited availability of mutual fund data before the 1980s. We determined the end dates for each period as the peak in rates following the respective increase. Determining a starting point was a bit more nuanced, since we were primarily interested in the periods of greatest increase. So, for example, although September 1992 actually represented the trough in rates for the fifth period in Figure 1, we elected to start our analysis one year later, in August 1993. Note that changing the start dates did not meaningfully affect the results. For our analysis, we eliminated the first three rising-rate periods from consideration because of the small number of funds available in the Morningstar database.

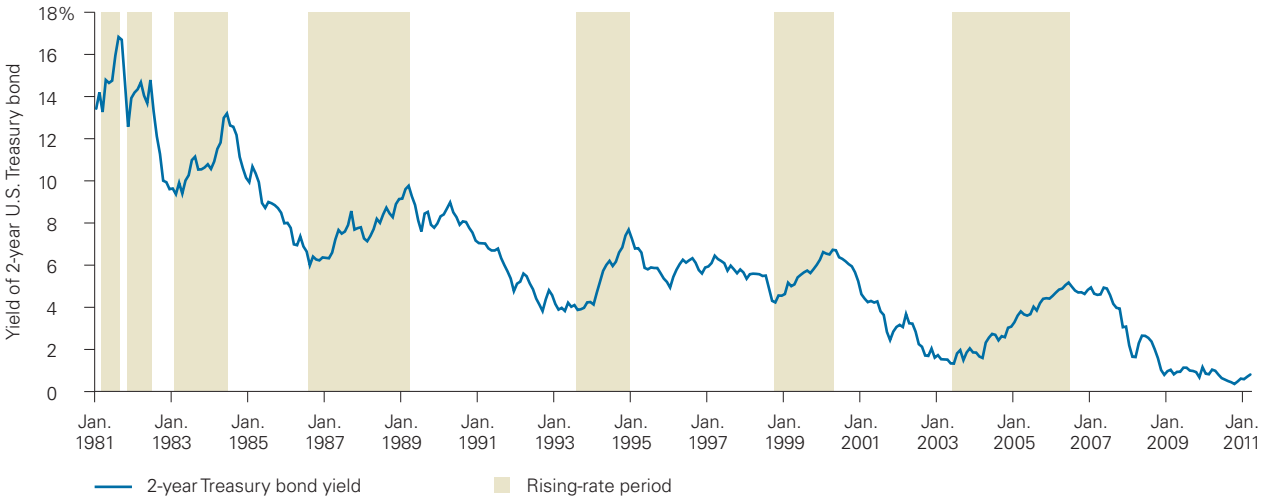
Figure 2 shows the results of our analysis of these four periods. As the figure makes clear, a majority of both short-term U.S. government and short-term corporate funds underperformed their benchmark and generated negative excess relative returns in most of the time periods. The one exception occurred during the period from October 1998 through April 2000, when less than half of the actively managed short corporate funds underperformed (see Figure 2a).[2]

Notes on risk: All investments are subject to risk. Investments in bond funds are subject to interest rate, credit, and inflation risk. Although U.S. Treasury or government-agency securities provide substantial protection against credit risk, they do not protect investors against price changes due to changing interest rates. Unlike stocks and bonds, U.S. Treasury bills are guaranteed as to the timely payment of principal and interest. There is no guarantee that any particular asset allocation or mix of funds will meet your investment objectives or provide you with a given level of income. Past performance is not a guarantee of future results. Results will vary over other time periods. Index performance is not illustrative of any particular investment because you cannot invest in an index.

1 Because duration is the dominant return factor (Litterman and Scheinkman, 1991), persistent differences in duration between a fund (or group of funds) and an index can lead to persistent performance differentials independent of cost or manager action.

2 Our analysis compared active funds from the Morningstar U.S. Short Government category with the Barclays Capital U.S. 1–5 Year Government Bond Index. Although most of the funds in the Morningstar category are benchmarked to Barclays indexes that do not contain mortgages, some funds in the Morningstar government category do include mortgage-backed securities. A customized index consisting of 50% 1–5 Year Government and 50% Mortgage-Backed Securities is available via Barclays Capital. However, just as the Barclays government index represents an underweighting to mortgages compared with the Morningstar category, the customized index represents a relative overweighting to mortgages. That said, we conducted the same analysis using the customized benchmark, with results slightly more in favor of active management: 32% of active funds underperformed the benchmark from 8/31/1993 through 12/31/1994, with a median excess return of 1.15%; 53% underperformed from 10/31/1998 through 4/30/2000 (0.24% excess return); and 98% underperformed from 6/30/2003 through 6/30/2006 (–3.62% excess return). Because the customized benchmark had a later inception date, we were unable to evaluate the period from 10/31/1987 through 3/31/1989.

Figure 1. Historical yield of 2-year U.S. Treasury bond as proxy for rising-rate periods: 1981–March 2011

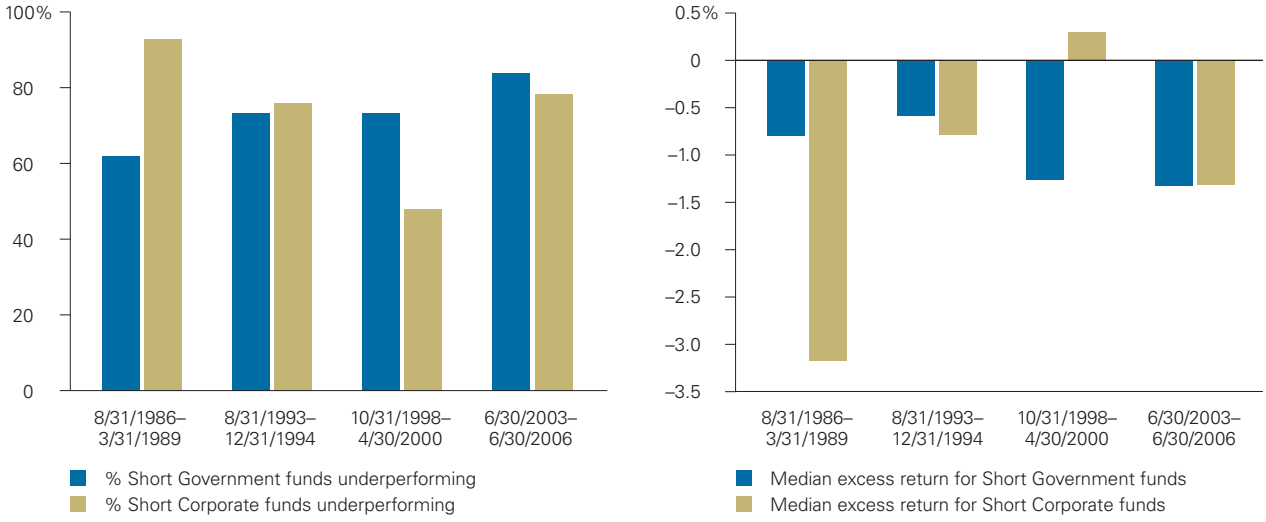


Sources: Vanguard, based on data from Barclays Capital.

Figure 2. Managers of short-term funds have underperformed their style benchmark historically

a. Percentage of active managers underperforming index during periods with rising rates

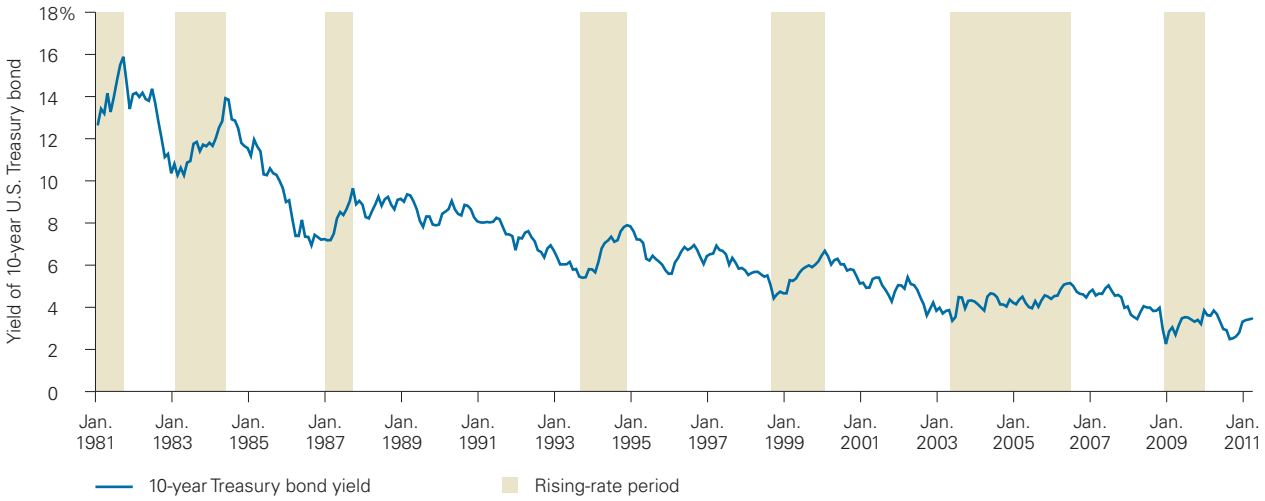
b. Median excess return versus index during periods with rising rates



Note: Less than five funds were alive during the first three interest rate cycles identified in Figure 1, so we eliminated those cycles from consideration in our analysis.

Sources: Vanguard, based on fund returns from Morningstar, Inc., and index returns from Barclays Capital. Funds—from Morningstar's Short Government and Short Term Bond categories—include those that liquidated or merged during the identified time periods. Government funds were compared with the Barclays Capital U.S. 1–5 Year Government Bond Index (see footnote 2, in the text), while corporate funds were compared with the Barclays Capital U.S. 1–5 Year Credit Bond Index.

Figure 3. Historical yield of 10-year U.S. Treasury bond as proxy for rising-rate periods: 1981–March 2011



Sources: Vanguard, based on data from Barclays Capital.

Intermediate-term bond funds and rising rates

When analyzing intermediate-term bond funds, we turned to the yield of the 10-year Treasury bond to identify periods of rising rates. Using an approach similar to that in Figure 1, **Figure 3** highlights seven rising-rate periods.

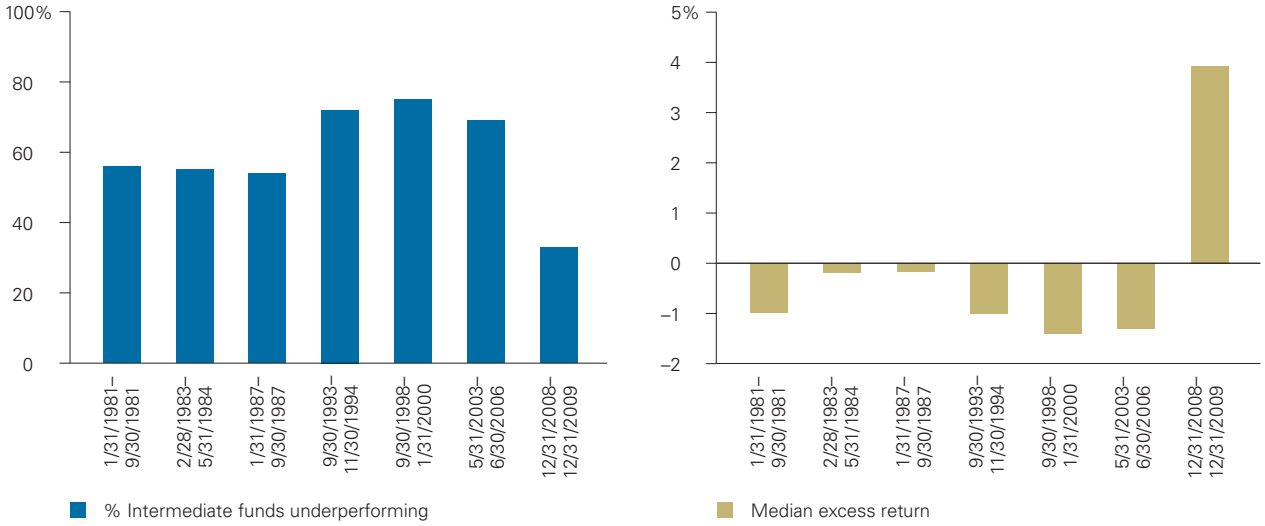
We first evaluated intermediate-term funds against the broad bond market. This is because "the market" index is often viewed as the default benchmark for intermediate-term U.S. bond investors or investment strategies. **Figure 4** thus shows how intermediate funds performed against the Barclays Capital U.S. Aggregate Bond Index during the seven rising-rate periods. In six of the seven periods, a majority of active managers underperformed the market, while the median fund's excess return was negative. We also noted that active intermediate managers, on average, outperformed the broad bond market in 2009. However, as we discuss next, when examined more closely, this outperformance can be attributed to inappropriate benchmark selection.

Figure 5 takes the analysis further by highlighting the importance of using an appropriate benchmark. This more detailed breakdown, similar to what was done in Figure 2, compares the intermediate funds to either a government/mortgage or corporate benchmark, revealing important performance differences by sector. First, as Figure 5 shows, the percentage of funds that underperformed generally increased in each period. And, second, the outperformance noted in 2009 in Figure 4 disappeared in Figure 5 for corporate funds and was significantly reduced for government funds. Another key point is that, according to Morningstar, Inc., during the period of outperformance for government funds, the average exposure to corporate bonds peaked at 8% in June 2009 (not shown in the figure). Although this exposure may be considered marginal, for investors interested in U.S. government funds, any allocation to corporate bonds may be unexpected. Of course, such an overweighting to corporate bonds in 2009 would have proved fortuitous, given that corporate bonds significantly outperformed government bonds (+18.56% for the Barclays Capital U.S. Intermediate Corporate Bond Index versus –0.32% for the Barclays Capital U.S. Intermediate Government Bond Index).

Figure 4. Active managers of intermediate-term funds have underperformed the broad U.S. market historically

a. Percentage of active managers underperforming broad bond market during periods with rising rates

b. Median excess return versus broad bond index during periods with rising rates

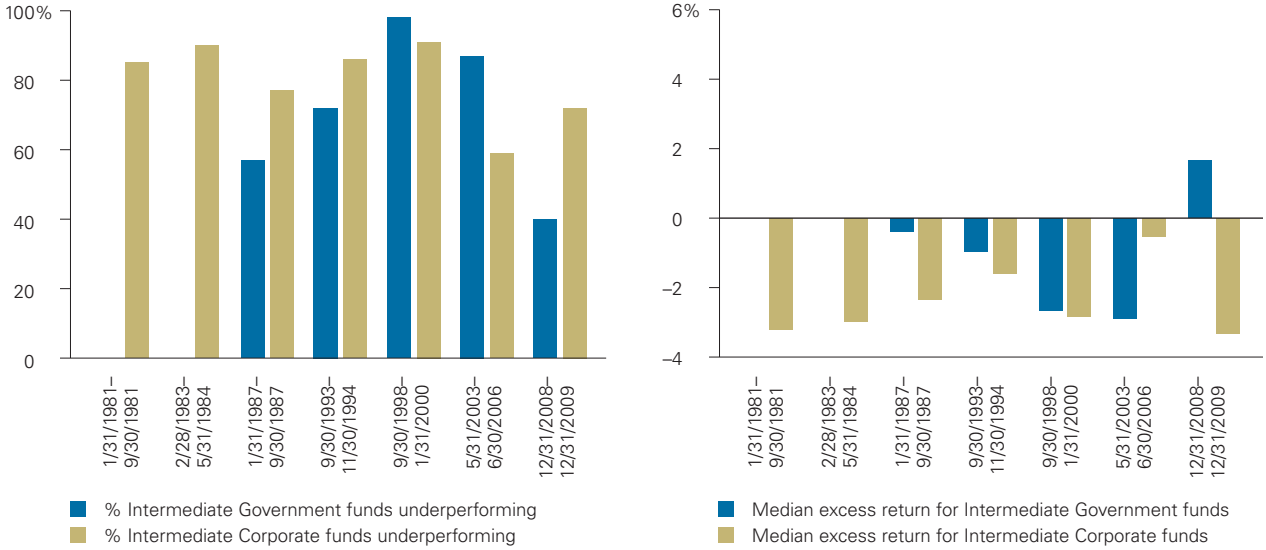


Sources: Vanguard, based on fund returns from Morningstar, Inc., and index returns from Barclays Capital. Funds, from Morningstar's Intermediate Government and Intermediate-Term Bond categories, include those that liquidated or merged during the identified time periods. Market is represented by the Barclays Capital U.S. Aggregate Bond Index.

Figure 5. Active managers of intermediate-term funds have underperformed their style benchmark historically

a. Percentage of active managers underperforming index during periods with rising rates

b. Median excess return versus index during periods with rising rates



Note: Intermediate U.S. government funds are not shown for first two rising-rate periods because of insufficient fund data.

Sources: Vanguard, based on fund returns from Morningstar, Inc., and index returns from Barclays Capital. Funds include those that liquidated or merged during the identified time periods. Corporate funds are compared with the Barclays Capital U.S. Intermediate Credit Bond Index. Government funds are compared with a customized spliced benchmark that blends the Barclays Capital U.S. Government Bond Index and the Barclays Capital U.S. Mortgage-Backed Securities Index from 1987 through March 31, 1995, and thereafter blends the Barclays Capital U.S. Intermediate Government Bond Index and Barclays Capital U.S. Mortgage-Backed Securities Index. We used a benchmark that includes mortgages because a significant majority of the funds in the government category were either focused on mortgages or contained significant exposure to mortgages. Excluding mortgages from the benchmark would therefore be as misleading as comparing these funds to the broad-market benchmark.

Figure 6. Cost hurdle for actively managed bond funds: As of December 31, 2010

	Actively managed funds
U.S. corporate bond funds	56 bps
U.S. government bond funds	54 bps

Notes: bps = basis points. Expense ratios are asset-weighted.

Sources: Vanguard and Morningstar, Inc.

Difficulty of active management

Given active managers' ability to position their portfolios according to market conditions, why has outperformance during rising-rate periods been so fleeting? There are two likely reasons: first, the effect on the market of the zero-sum game; and, second, the difficulty of predicting (and therefore capitalizing on) interest rate movements.

Effect of zero-sum game

The concept of a zero-sum game in investing starts with the understanding that at any given point in time, the holdings of all investors in a particular market, such as the U.S. bond market, aggregate to form that market (Sharpe, 1991). Because all investors' holdings are represented, if one investor's dollars outperform the aggregate market over a particular time period, another investor's dollars must underperform, such that the dollar-weighted performance of all investors sums to equal the performance of the market.

In reality, investors are exposed to costs such as commissions, management fees, bid-ask spreads, administrative costs, market impact, and, where applicable, taxes—all of which combine to reduce realized returns over time. As a result, after costs are considered, investors' dollar-weighted underperformance exceeds investors' dollar-weighted outperformance. By extension, a majority of investor dollars also therefore underperforms the market index.[3] As shown in **Figure 6**, the average dollar invested in actively managed bond funds was charged 54 basis points for government funds and 56 basis points for corporate funds, amounts that constitute significant hurdles for those funds to overcome to outperform a benchmark.[4]

Forecasting interest rate movements

As stated, we also want to emphasize how hard it is to correctly predict interest rate movements (and, for corporate bonds, credit spreads and sector performance) consistently over time. This reality is demonstrated in **Figure 7**. As observed in previous Vanguard research by Davis et al. (2010), the forward yield curve of the Treasury market reflects the aggregate perspective of investment managers on future interest rates. Note that forward rates do not represent any individual's or organization's views about future interest rates. Instead, the forward curve represents the aggregate expectations of all Treasury bond-market participants regarding future interest rates. For example, if we look at the market's expectations for Treasury yields as of March 31, 2011, the market, as represented by all market participants, believes that both the federal funds rate and the yield on the 10-year Treasury bond will increase (the federal funds rate is a reliable proxy for yields on Treasury bills).

Of course, history suggests that interest rates will likely evolve differently from today's expectations. Indeed, as Davis et al. (2010) also showed, the Treasury forward yield curve has been a poor predictor of actual future rates. This can be seen in the rising "hairs" extending from the actual historical yields in Figure 7. A timely example of this evolution of actual versus expected rates has transpired since interest rates bottomed in 2008. Since that point, market participants have been forecasting higher future interest rates. Yet, despite the clamor for higher rates, yields have remained low, with little upward pressure.

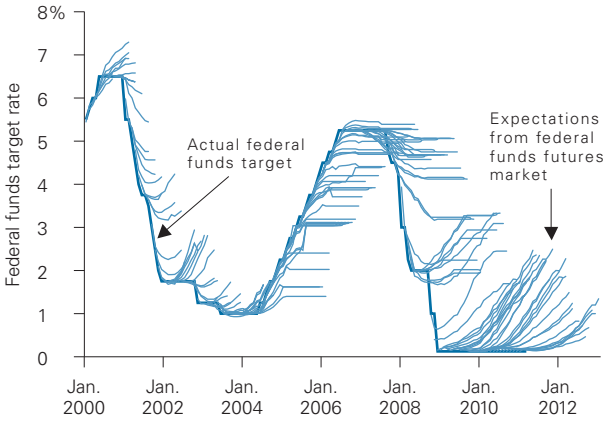
Finally, in addition to interest rates' unpredictability, it's important to consider that even if a manager makes a correct call on the direction of rates, the timing and magnitude of any change are crucial,

3 For more on the zero-sum game, see Philips (2011). It's important to note that because mutual funds represent one slice of the total bond market (the bond market also consists of direct investors, pension funds, hedge funds, sovereign wealth funds, etc.), the zero-sum game does not have to hold for mutual funds in isolation. As a result, the asset-weighted underperformance of mutual funds does not have to exactly offset the asset-weighted outperformance.

4 One basis point equals 1/100 of 1 percent.

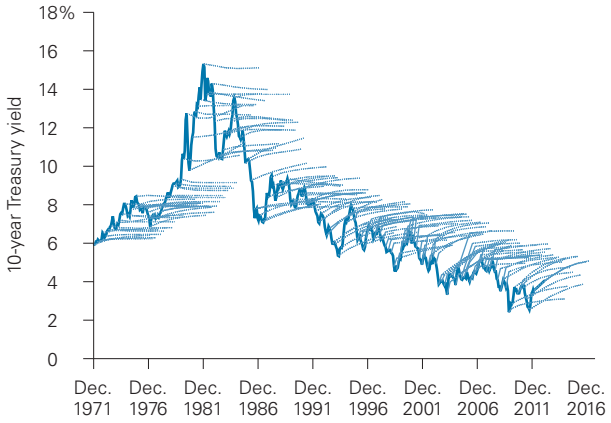
Figure 7. Predicting interest rate movements is difficult

a. Actual federal funds target rate versus market expectations



Sources: Vanguard, based on monthly Federal Reserve and Bloomberg data for the federal funds futures market since January 2000.

b. Actual 10-year Treasury yield versus implied forward rate



Sources: Vanguard, based on monthly data from Bloomberg and the Federal Reserve since December 1971.

as a short-duration strategy is a "negative carry"[5] position. In an environment characterized by a steep yield curve, this negative carry can mean a significant return forfeiture if yields do not rise as anticipated. Even then, a manager who correctly predicts a rise in interest rates could likely suffer a performance penalty if rates rise less than forecast or if the timing of the change is either too early or too late.

Conclusion

It's not uncommon to hear that if interest rates are expected to rise, then active bond management is sure to outperform. However, our historical review of the data finds evidence to the contrary. Our results show that the average actively managed bond fund underperformed its benchmark during the majority of rising-rate environments over the past 30 years. Although certain funds and strategies may outperform from time to time, our results suggest that the assumption that actively managed funds will outperform is actually much less certain.

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5 Negative carry can also be thought of as an opportunity cost of being in shorter-duration bonds, which come with a lower yield than longer-maturity bonds. For each month that interest rates do not rise, an investor in shorter-duration bonds relinquishes the yield available on higher-yielding longer-duration bonds. The longer this persists, the greater the performance drag and cost of the strategy.

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