Bond Market Strategies for a Rising Rate Environment

By Annette Thau

At the end of 2003, interest rates had fallen to historical lows. Virtually every pundit predicted that interest rates had nowhere to go but up, partly because existing levels were so low; but also because the Federal Reserve Bank (the Fed for short) was widely expected to raise rates. Since any rise in interest rates causes bond prices to fall, investors were advised to sell bonds.

By the spring of 2004, the predicted rise appeared to be on track. But instead of continuing to rise, the yield on the Treasury's 10-year bond reversed course. Long-term bonds rallied and at the end of December, the yield of the 10-year Treasury remains around 4.2%, about what it was a year earlier before the Fed began raising rates. Rates on long-term bonds in other sectors of the bond market (municipals, for example) also rallied.

As of this writing (mid-January), the consensus is that the Fed will continue to increase the federal funds rate (overnight rates on reserves traded between banks). If that turns out to be the case, other short-term rates (those on bonds maturing in two years or less) are bound to rise as well.

But that leaves many questions open:

- How many more times will the Fed increase short-term rates?
- How will longer-term rates be affected?
- More importantly, what, if anything, should you do about any of this? If you did not sell bonds during the past year, should you do so now, or would you be well advised to ignore the pundits? And if so, what strategies might serve you better?

This article will address these issues. For some perspective, you may need to review a number of basics, including how rising interest rates affect both individual bonds and bond funds and how compounding works (see the box on the next page), and the shape of the yield curve (see the box on page 7).

Defensive Strategies

Financial advice often starts with a statement such as: "If you think interest rates are going to go up, then you should do x." Frankly, I do not like that approach. Why? Because your chances of accurately predicting what the market is going to do at any time over the short term are poor.

To my mind, a better approach would be to ask yourself: "If interest rates do go up, how would that affect me and my chances of reaching my financial objectives?" Different objectives require different approaches. My basic premise is that since you cannot predict what interest rates are going to do, you should position your portfolio so that, no matter what happens, you will be protected.

Any investment in bonds involves trade-offs, whether interest rates are rising or falling. Assuming a normal, upwardly sloping yield curve, if you buy bonds with longer

How a Rise in Interest Rates Affects Bond Holdings

Here's a brief review of how a rise in interest rates would affect your bond holdings.

First, note that rising interest rates are good news for some holders of fixed-income securities. When the Federal Reserve raises the discount rate, the federal funds rate, or both, yields of money market funds (whose portfolios are made up primarily of three- and six-month Treasury bills and other debt instruments with very short-term maturities) typically rise to equal the level of these Treasury bills. That translates into higher interest income. Moreover, because money market funds have a constant $1.00/share price, that extra income is earned with no risk to principal.

At the present time, money market yields have risen from less than 1% a year ago to about 2%. If the Federal Reserve continues to increase the federal funds rate, money market fund yields will continue to rise. However, it usually takes two or three months for yields of money market funds to catch up with rising Treasury bill rates. If the federal funds rate rises to somewhere between 3% and 4% (the current consensus estimate), you can expect that yields of taxable money funds will approach those levels. Note also that, typically, when yields of money market funds rise, banks generally raise rates of CDs.

Now the bad news. For longer-term bonds—that is, any bond whose maturity exceeds one year—the basic relationship to remember is this: Any rise in interest rates causes the market value (that is, the price at which bonds sell in the secondary market), to fall. A market with rising interest rates is a weak bond market. But rising interest rates do not affect all bonds equally. The difference is tied to maturity length. When interest rates go up, bonds with very short maturities (say two years or less) decline the least. Bonds with long maturities (10 years or more) decline the most. For example, if interest rates rise from 4% to 5%, the value of a two-year bond might decline by 1%; that of a 10-year bond might decline by somewhere around 7%; and that of a 20-year bond, by 12 to 15%. (Exact numbers vary with the coupon of a bond.) That means that if you need to sell a bond before it matures, you will do so at a loss in a rising rate environment.

Keep in mind, however, that if you own individual bonds and hold them until they mature, you can expect to redeem them at par (that is, face value) regardless of what has happened to interest rates since the bonds were issued. Moreover, as bonds approach maturity, their price gradually approaches par—again, regardless of what is happening to interest rates.

The important distinction however, is that this is not true of bond funds. Because bond funds have a constant maturity, the market value of a bond fund (and therefore, its share price, or net asset value) is tied to interest rate levels. You can never be sure what the value of a long-term bond fund will be at any future date because its net asset value rises and falls as interest rates change.

The Effects of Compounding

There is a second side to this coin, however, and that is your investment horizon. There is no question that over short-term investment periods, say a few months to two years, a steep rise in long-term rates results in losses in the market value of any bond portfolio. But over very long periods—for example, if your bond holdings are a percentage of a tax-deferred account for a future retirement, say, 15 or 20 years down the line—rising rates ultimately translate into higher returns. That is due to the effect of compounding.

Again, let's return to basics. Returns from investing in bonds derive from three cash flows:

- The difference between the price at which you buy a bond (or a bond fund), and the price at which you redeem or sell it, which may result in a gain or in a loss;
- The interest income from the bond's coupons;
- The additional interest income you earn by reinvesting dividends, referred to as interest-on-interest.

The important point to remember is that over very long-term investment periods, measured in decades, 60% to 80% of the total amount earned from bond investments derives from interest-on-interest. Over a very long time period, reinvesting at higher rates multiplies the compounding effect. Initial yields, and short-term fluctuations in the value of your portfolio, play a much more minor role.

maturities, interest income is higher; but interest rate risk is also higher. If interest rates rise, your portfolio may very well incur losses for several years. If you invest in bonds (or bond funds) with short maturities, interest rate risk is a lot lower, but so is interest income. Money market funds (and short CDs) provide the highest short-term safety of principal, but throw off the lowest interest income.

Positioning a bond portfolio, whether rates are rising or falling, always involves balancing short-term risks and long-term risks. You need to be

The Yield Curve Revisited

The course of interest rates during 2004 neatly illustrates two basic truths about the bond market:

- All interest rates do not move in lockstep, and
- Any time there is widespread consensus about where interest rates are likely to go, that consensus is often wrong.

Some of the confusion concerning interest rates is due to the use of the catch-all term "interest rates" without distinguishing between long-term rates and short-term rates. Also, you need to be aware that the Federal Reserve has direct control of only two key interest rates: the discount rate, and the federal funds rate. Both of these are overnight rates, and therefore, they are the very shortest interest rates. Sometimes, changes in the level of these rates do affect longer-term rates, but not always. It is not unusual for short-term rates and long-term rates to move in opposite directions.

A good illustration of this phenomenon is provided by the yield curve. The yield curve is a graph of current interest rates at several key maturities. You are probably familiar with the Treasury yield curve because it appears daily in the financial press. Its current shape is one that is considered "normal": that is, it is upward sloping, which means that as maturity length increases, so does yield.

The yield curve, however, can assume other shapes. For example, it can be flat. At such times, there is little difference between long- and short-term rates: rates on six-month Treasury bills and on 10-year bonds are virtually the same.

Occasionally, the yield curve is actually "inverted." At such times, rates on three-month and six-month Treasury bills are actually higher than those on 10- or 30-year bonds. Inverted yield curves typically occur toward the end of a series of rate increases by the Federal Reserve. Why? Because successive rate increases create the expectation that the economy will slow, and that future inflation will be low. Inverted yield curves are said to predict recessions.

The whole point here is that when the Fed raises short-term rates, it does not always follow that rates on long-term bonds will rise in sync, or that they will rise at all. That is what happened in 2004. During 2004, as the Federal Reserve raised the Federal Funds rate, long-term bonds rallied. At the end of the year, the yield curve was flatter as compared to a year earlier, but still upward-sloping, with 30-year Treasuries exceeding shorter-term rates by less than 200 basis points.

Where will long-term rates go in 2005?

The answer is that no one knows. The yield curve could continue to flatten—that is, short-term rates could rise while long-term rates remain the same. Or long-term rates might rise, but much more slowly than short-term rates. Another possibility is that the yield curve might invert somewhere down the line, if the economy were to turn sluggish again. But that is not a prediction. Many factors could cause long rates to climb, among them, a soaring deficit, a weaker dollar, another spike in oil prices, a booming economy, inflation, or any of a bunch of unforeseen events.

clear about your goals. If you are using bonds (or bond funds) as part of a long-term portfolio designed to provide a nest egg for long-term objectives (any goal 20 or 30 years out), then buying only bonds with short maturities is risky because compounding is very low.

On the other hand, if you are saving for a short-term goal (putting a down payment on a house, for example), or if you have a small portfolio and cannot afford any loss of principal, then you need to choose options that keep principal absolutely safe.

I will briefly describe a number of defensive strategies whose objective is to strike a balance between the competing objectives of safety of principal versus interest income.

Strategies When Buying Individual Bonds

If you are buying individual bonds, there are a number of strategies you can adopt to achieve an appropriate balance between short-term and long-term risk. These include:

- ***Buy bonds in the intermediate range.*** For Treasuries, those would be bonds maturing in two to five years. For municipal bonds, because they typically have a more steeply upward sloping yield, you should buy municipals maturing in seven to 15 years. The main reason this strategy is effective is that bonds in the intermediate maturity range typically earn anywhere from 80% to 90% of the yield of longer-term bonds, but with far less interest rate risk. Moreover, buying intermediate-term bonds enables most investors to hold on to the bonds until they mature. Even if you have to sell bonds before they mature, however, losses to the market value of the intermediate bonds are lower than they would be on longer-term bonds.

- ***Ladder.*** This is appropriate for individuals with a fairly large portfolio of individual bonds. Ladders are sometimes presented as if they

A Long-Term Perspective on Long-Term Yields

For some perspective on long-term rates, let's look at a chart of interest rates for the 10-year bond over the past 45 years (see Figure 1).

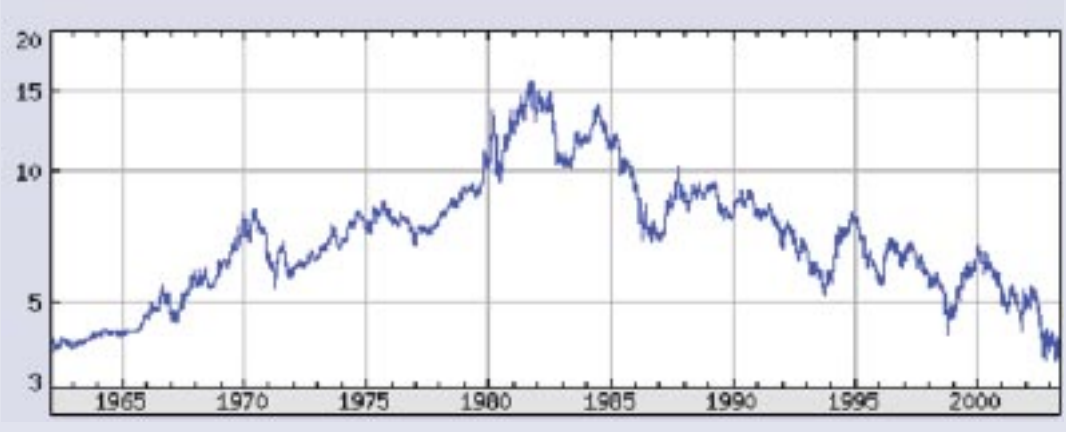
The chart is striking because it is almost symmetrical. In the early 1960s, the yield of the 10-year bond was close to where it is now, around 4%. The yield rose to a high of 15% around 1984, only to come back down to 4%. The first 25 years on this chart, from 1965 to 1984, and from 4% to 15%, represent an almost continuous bear market in bonds. The last 20 years, with rates coming down from 15% to 4%, are just the opposite—a gigantic bull market in bonds.

Where will the 10-year yield be over the next decade?

Your guess is as good as mine—or anyone else's, for that matter. Don't let the symmetry of the chart lead you to believe that interest rates are fated to go back up to 15%. The high rates between 1965 and 1984 are actually an aberration compared to the earlier part of the century. Between 1930 and 1965, rates on the 10-year bond stayed between the range of 3% and 4%.

One thing is clear, however, and that is that returns from most sectors of the bond market during the coming decade will be much more modest than those of the last 10 years. That is due, first of all, to the fact the interest income is significantly lower, and so are reinvestment rates. Secondly, any rise in interest rates would initially lower total returns.

Figure 1. 10-Year Treasury Yield: 1965 to 2005



Source: Yahoo! Finance.

are arcane and complex, but they are not. When you ladder, you divide your portfolio among several maturities: For example, you buy bonds maturing in one year, three years, and five years. At the end of year one, the one-year bond will have matured, and the other bonds will have maturities of two years, and four years. You replace the one-year matured bond with another five-year bond. The average maturity of your portfolio is virtually unchanged. This is a very conservative strategy, designed to preserve capital. It works because you redeem bonds as they mature, and therefore, do not lose principal. And in a rising interest rate environment, you would be replacing lower-yielding bonds with higher-yielding bonds.

There is no pre-set formula for laddering. You can build your ladder with different numbers of rungs, based on the size of your portfolio. The general guidelines are to construct a ladder so that the average maturity of the ladder remains short to intermediate.

- ***Match the bond maturity to your financial horizon***. This is called "maturity matching," a fancy term for a simple concept. One example would be putting aside money for a grandson's college education. Say he is five years old and will be entering college in 13 years. You buy a bond maturing in 13 years. When the grandson enters college, you redeem the matured bond at par. (If you buy a municipal zero, you don't need to worry about reinvesting dividends, or federal taxes.) If you want to put some money aside every year, you can buy bonds annually that will mature freshman year, sophomore year, and so on. Another example would be saving to buy a house in two years. To earn somewhat more than a money market rate, buy bonds maturing in two years.

- ***Explore the use of bond swaps.*** If higher interest rates have resulted in significant losses in principal value for any of your holdings, either individual bonds or bond funds, you can salvage some of these losses by swapping bonds in order to generate a tax loss. Be aware, however, that this is not a free lunch. Swaps can be costly, and the exact cost of a swap is difficult to calculate because of hidden commission costs. Also, you need to be aware of IRS rules (for wash sales, for example) which can invalidate your swap. Within the confines of this article, there is not the space to discuss swaps. If you have a large portfolio, consult an accountant.

Strategies When Buying Bond Funds

If you invest in long-term bond funds, rather than individual bonds, a steep rise in long-term rates can result in losses as high as 10% to 20% of net asset value over a period of a year or less. These kinds of losses occurred in 1994 and in 1999, when interest rates on 10-year Treasuries climbed more than 2% (200 basis points). Current interest rate levels, moreover, are too low to offset such losses.

If interest rates rise steeply, total returns of most *long-term* bond funds will turn negative, and the losses could last for a few years. If you invest in municipal bond funds, you should be aware that most municipal bond funds are long-term funds, whether or not the label "long term" occurs in the name of the fund. Even if your fund invests in high-quality bonds or insured bonds, it will incur a loss if interest rates climb.

You might object that the distinction between the way rising rates affect bond funds and individual bonds is artificial because the market value of all bonds declines when interest rates rise.

Trade-Offs: Short-Term "Safety" vs. Higher Yields

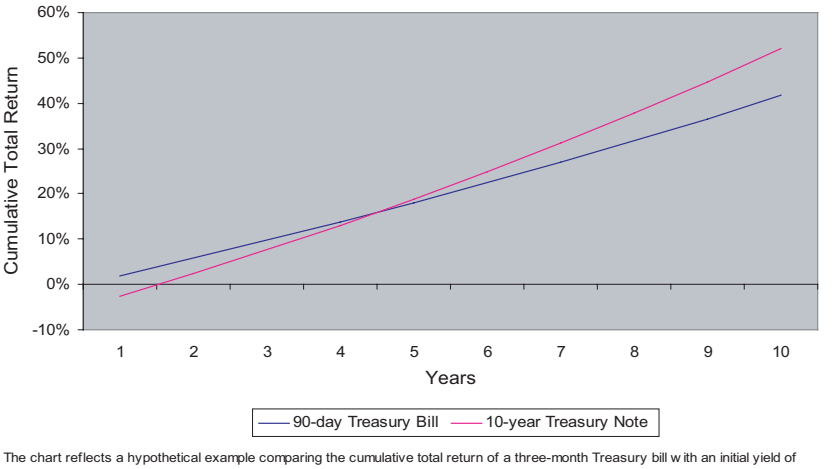
This graph below, published in a recent T. Rowe Price newsletter, illustrates some of the trade-offs involved in buying short-term, safer T-bills compared to "riskier," but higher yielding, longer-term bonds.

Note, first of all, that the total returns illustrated in this graph occur only under a very specific scenario: that yields on 90-day Treasury bills (a proxy for short-term yields and therefore, by inference, those of money market funds) will rise two percentage points (200 basis points), from 1.72% to 3.72% over the next 12 months; and that the yield on the 10-year Treasury (a proxy for long-term yields) will rise from 4.06% to 5.06%. However, after these rises, both the short-term and long-term yields are assumed to stay at those levels for the next nine years.

Under these assumptions, total returns from investing in the 10-year Treasury are lower for the first three or four years than the total returns for the lower-yielding three-month Treasury bills because of a decline in the market value of the 10-year bond. The crossover point occurs roughly around year five. After that point, total returns are higher for the 10-year bond because reinvestment rates are higher than during the initial period.

The precise numbers should be taken as illustrations, not as projections. Note also that the projected rise in long-term rates is very modest, and occurs only at the beginning of the 10-year period. Needless to say, there is no way to project actual rises in rates. For comparison, between October 1993 and November 1994, the yield of the 10-year Treasury bond rose from 5.43% to 7.90%, a rise of almost 2½%; and between September 1998 and January 2000, rates rose from 4.42% to 6.67%, a rise of 2¼%. Increases of that magnitude would result in more substantial losses from long-term bonds than those illustrated by this example, as would a series of rate increases.

Again, these are not predictions. But such rises have occurred in the past, and might again.



The chart reflects a hypothetical example comparing the cumulative total return of a three-month Treasury bill with an initial yield of 1.72% and a 10-year Treasury note with a yield of 4.06%. The example assumes long-term rates rise a full percentage point over the next 12 months, Treasury bill yields rise two percentage points over that time (in equal quarterly increments), and rates remain at those levels after that. Initially, the rise in rates results in loss of principal value and negative returns for the Treasury note, while the Treasury bill provides modest but positive returns. Over time, however, the higher yields enable the note to outperform.

Source: T. Rowe Price Associates, Inc.

That is true. But if you own individual bonds and hold them to maturity, you will be able to redeem them at par. If you own a bond fund, that possibility is not available to you because a bond fund never matures.

If you invest in bond funds, you should first get an idea of how rising rates could affect your funds.

To do that, you need to determine your degree of risk. One indicator is the average weighted maturity of the bond funds you own. The longer the average maturity, the greater your risk. An even better guide is to find out the fund's duration. Duration is a measure of the fund's sensitivity to changes in interest rates. A general rule of thumb is that for every rise of 100 basis points (1%—for example, a rise in rates from 4% to 5%), a fund could decline by the amount of its duration. Morningstar publishes duration numbers for most bond funds, but you can also just call the toll-free number of your fund family, and ask for the duration of your fund. The mutual fund family can also provide information on the average maturity of the fund.

What to do?

If you are holding bond funds for the long term, you may decide to do nothing. In the very long run, higher reinvestment rates should benefit bond funds. Indeed, as rates rise, you would be reinvesting at lower prices, a form of dollar cost averaging.

If your horizon is shorter term, you would want to hedge your bets by diversifying your long-term bond holding. For instance, you could:

- Switch some money into short-term or intermediate-term bond funds.
- Shift some money into one or more bond funds that are diversified. Why? Just as bonds with different maturities do not always move in sync, bonds in different sectors of the bond market do not move in lockstep. You might, for example, invest in a bond index fund, which by definition holds different maturities; or you might shift some assets into a bond fund diversified among different sectors, including, for example, international bonds or corporate bonds.
- You can also do a version of maturity matching using so-called "target" funds, which are bond funds that are made up primarily of zero-coupon bonds and have a definite maturity date.
- If you cannot afford any short-term loss in the value of your bonds, then you need to put that money into cash or cash equivalents, such as money market funds, CDs or very short-term bonds. This could include short-term individual bonds. Even if you have never bought individual bonds, there are a number of very attractive and uncomplicated alternatives that are extremely safe. For example, to earn yields that are higher than money market yields, you can buy individual Treasury bonds maturing in two to three years through the Treasury Direct program [see Annette Thau's column "Investing in U.S. Treasuries and the Treasury Direct Program," in the April 2002 *AAII Journal*; available at AAII.com]. Note that while these are subject to federal taxes, they are not subject to state taxes, which boosts the yields somewhat.
- If you plan to keep a significant sum in money funds for an extended period, one strategy for boosting returns is to invest interest income in higher yielding longer-term bond funds. Your principal remains absolutely safe in the money market fund but you are raising reinvestment rates. (I recently saw just the opposite strategy advocated in a highly respected financial publication—namely, to invest the principal in a long-term fund but invest income in a money market fund. That strategy makes no sense. It puts principal at risk while maintaining reinvestment rates at the lowest levels available in the credit markets.)

The worst thing you can do is to panic sell (this usually occurs at a market bottom, after you have suffered a large loss), or modify your portfolio based on someone's assessment of where interest rates are going.

Conclusion

You can neither control nor predict the direction of interest rates. But you can control the amount of risk your portfolio incurs. If you are concerned about rising interest rates, then you should follow these basic rules for reducing risk when investing in fixed income:

- For money that you need to keep absolutely safe, stay in cash or cash equivalents such as money market funds, CDs, or very short-term individual bonds (maturities under two years).
- If you buy individual bonds, and if you have a longer-term investment horizon, then you can use defensive strategies such as laddering or maturity matching, which offer higher than money market rates but enable you to keep principal safe.
- If you buy bond funds, then you may want to diversify your portfolio by putting part of it in cash or cash equivalents, or in bond funds with shorter maturities, or in diversified bond funds. ▲

Annette Thau, Ph.D., is author of "The Bond Book: Everything Investors Need to Know About Treasuries, Municipals, GNMAs, Corporates, Zeros, Bond Funds, Money Market Funds, and More," (copyright 2001, published by McGraw-Hill; $29.95). She has spoken to AAII chapters in different parts of the country about bonds and bond funds.

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