INVESTMENT INSIGHTS

Analysis, Insights, and a Different Perspective

October 2023

KEY POINTS

- Interest rates and bond prices have an inverse relationship; when interest rates rise, bond prices typically fall.
- The magnitude of the relationship depends on the bond's interest rate sensitivity.
- Duration measures the interest rate risk of a bond.
- Rising interest rates introduce both risks and opportunities in the fixed income market.
- Understanding interest rate risk and bond sensitivity to rate changes is vital for navigating this environment.

RISING RATES AND FIXED INCOME INVESTING

An upward trend in interest rates characterizes the current financial climate as the Federal Reserve continues to raise interest rates to curb inflation. Bonds are sensitive to interest rate changes. Rising interest rates inherently lead to the depreciation of bond prices, underscoring the inverse relationship between the two. This dynamic not only introduces a layer of risk but also unveils opportunities for investors who can adeptly navigate through the intricacies of the market during periods of rate increases. This issue examines the interest rate risk of bond investments.

THE INVERSE RELATIONSHIP

Interest rates and bond prices share an inverse relationship. Bond prices typically fall when interest rates, or the costs of borrowing, rise. This counteractive dynamic might not be immediately intuitive. Consider an example: You own a bond (Bond A), and the market sees an increase in interest rates. New bonds issued under these heightened rates (like Bond B) will offer higher yields than Bond A, depreciating the value of Bond A in comparison. Conversely, if interest rates were to decrease, newly issued bonds would yield less, enhancing the value of bonds like Bond A and increasing their prices.

Using the same example with hypothetical numbers can help further clarify this relationship. Imagine owning Bond A with a 4% coupon or interest rate. Later, the prevailing interest rates increased such that a newly issued similar bond, Bond B, now has an interest rate of 4.5%. Since people would rather own Bond B (as it pays more), Bond A is less valuable than Bond B. Thus, the price of the bond you own decreases. Assume Bond A is a $1,000 bond with a 4% coupon that pays $40 per year ($1,000 multiplied by 4%). If interest rates increase such that a similar bond now pays 4.5% (to attract buyers), the price of Bond A must decline by $111 to make the

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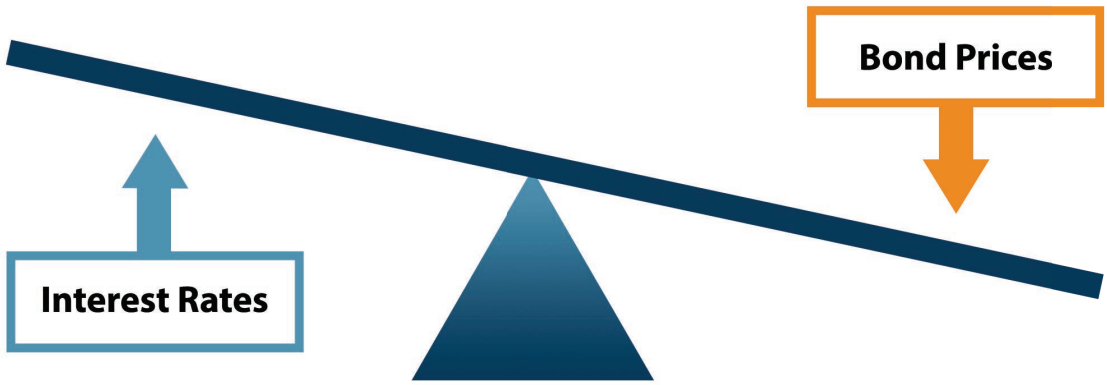
yield equal between Bond A and Bond B. After the price adjusts from $1,000 to $889 by subtracting $111, the yield of Bond A becomes 4.5% ($40 divided by $889).

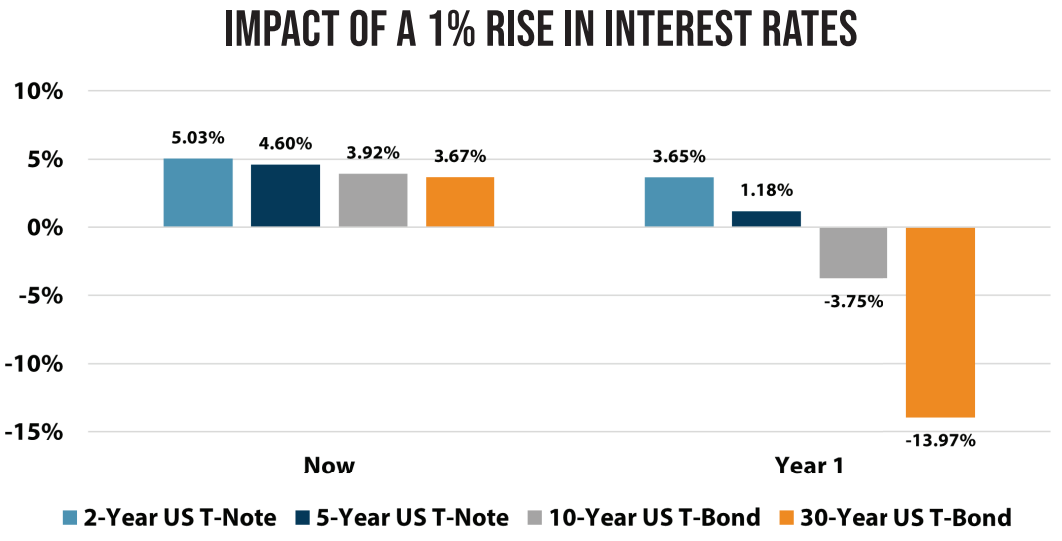
Consider visualizing the inverse relationship as a seesaw with bond prices on one end and interest rates on the other. When one side rises, the other typically falls, underscoring the inverse dynamic between bond prices and interest rates.



MEASURING INTEREST RATE RISK

Understanding the nuances of the relationship between bond prices and interest rates is crucial. A bond's sensitivity to changes in interest rates can vary. This sensitivity is quantified by a metric known as duration, which more specifically measures the percentage change in a bond's price in response to a one percentage point shift in interest rates. Bonds with longer durations are more sensitive to changes in interest rates, carrying greater interest rate risk. Conversely, bonds with shorter durations are less sensitive to interest rate fluctuations, suggesting a lower interest rate risk.

The main driver of bond duration is the maturity of the bond. All else equal, bonds with longer maturity typically have higher duration than bonds with lower maturity. The graph below is a hypothetical example that shows the impact of rates rising by 1% on various bonds. The bonds that mature sooner, like the 2-year T-Note, have a smaller duration, so they decline less when rates rise. Compare that with the impact of rising rates on the 30-year T-Bond, which declines more as it has a longer duration.

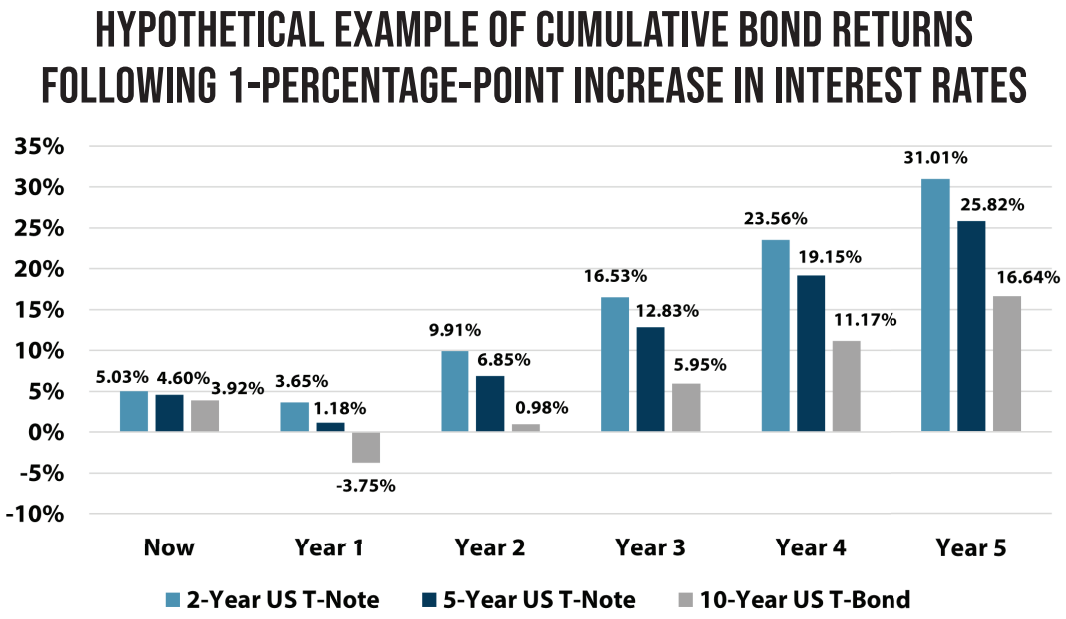


Notes: This hypothetical example does not represent the return on any particular investment. Assuming a one-time instantaneous parallel shift in the yield curve with no further changes in interest rates. Source: Author's calculation using data from TreasuryDirect by the U.S. Department of the Treasury Bureau of the Fiscal Service. For illustrative purposes only.

MANAGING INTEREST RATE RISK

Rising interest rates often raise concerns among bond investors. As previously mentioned, an increase in interest rates typically leads to a decline in bond prices, adversely affecting investors' returns. Therefore, bond investors should carefully consider interest rate risk as a crucial factor influencing their investments' performance.

Using the concept of duration, the chart below shows the estimated drop in various types of bond prices, assuming interest rates rise by 1%. In this hypothetical example, the yield is assumed at 5.03%, 4.60%, and 3.92% for the 2-, 5-, and 10-year treasuries. With a 1% rise in interest rates, the bond with the highest duration falls the most since it is the most sensitive to interest rate change.



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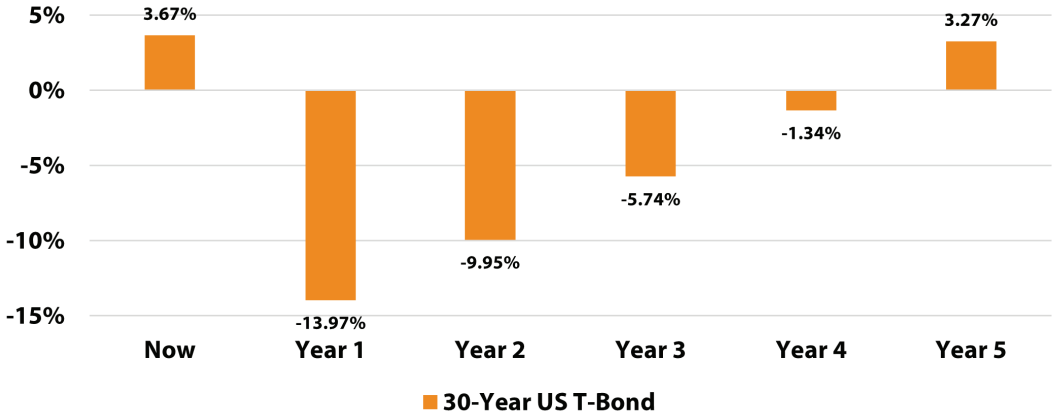
Of interest in the graph above is that while returns initially declined on a cumulative basis, the returns became positive in the proceeding years. After the interest rate increases, bond investors enjoy higher returns on their reinvestments. For long-term investors, rising interest rates can be good for bond returns as they provide higher returns over time.

It is crucial to manage your bond investments' interest rate risk carefully. Taking too much interest rate risk coupled with a large mismatch in duration and time horizon can be potentially disastrous. For example, the following graph extends the graph above and shows the impact of a 1% interest rate increase on 30-year treasuries. Given the longer duration of the 30-year bond, a one percent increase in interest rate is expected to result in prices declining approximately 14%. This decline is large enough that, even after four years, the cumulative bond returns are not positive in this hypothetical example.

HYPOTHETICAL EXAMPLE OF CUMULATIVE BOND RETURNS FOLLOWING 1-PERCENTAGE-POINT INCREASE IN INTEREST RATES



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INTEREST RATE RISK AND YOUR INVESTMENTS

The rising interest rate environment may produce higher than normal chances of bond prices declining. Managing the interest rate risk in your bond portfolio is important. Taking too much interest rate risk can be a negative for bond returns. However, the market has previously experienced a relatively strong relationship between current yield and future fixed income returns. While rising rates result in an immediate price decline, they also increase the long-term returns of fixed income and can ultimately benefit long-term investors. Investors should match the duration of their fixed income investments to that of their investment horizon to help manage interest rate risk. Your advisor can help you determine your optimal allocation and can help you tailor a strategy for your individual needs.

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