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Viewpoints

Interest rate volatility part I: considerations in predicting interest rates

CONTRIBUTORS
Jonathan Camp, ASA
Gordon Latter, FSA, FCIA
Rose Smith
Orray Taft, CAIA, FRM

In this two-part series, we identify core considerations for investors when determining how best to evaluate and manage interest rate risk. In part I, we set the stage by discussing compensated versus uncompensated risks, how forward curve considerations provide a benchmark for interest rate expectations, and how economists have performed at forecasting yields.

With these three points framing the paper, we arrive at several conclusions. First, in the absence of the term premium, taking on interest rate risk is an uncompensated risk. Second, forward yield curves provide an unbiased market view of the future direction of interest rates. This means that any investor who wants to take a view on the direction of interest rates would have to "out guess" the market by comparing their own interest rate predictions to those projected by the forward curve. Third, the economist community has performed poorly in predicting the future levels of interest rates, as their recent average bias was much higher than actual outcomes.

In part II of the series, we will outline strategies to consider capitalizing on interest rate volatility.

Compensated risks versus uncompensated risks

Every investable asset contains risk/return tradeoffs. In this section, we limit our discussion by delineating these risks into compensated and uncompensated risks.

Compensated risks come with the expectation of profit over time. That is, an investor is willing to accept these risks due to their expectation that they will deliver excess return over a default-free rate or Treasury yield of a similar maturity. For example, investment in an S&P 500 equity index comes with the expectation of higher long-term returns relative to a lower risk asset (e.g., Treasury bonds). There exists a risk that equity prices can and will depreciate over shorter time periods. The equity investor is subject to risks such as changes in the cashflow profile, dividend uncertainty, and changes in the residual value of the firm. Typically, to accept the additional risks that are inherent in investing in equities, they expect compensation above that offered by Treasury yields. Over the long-term, this risk is viewed as compensated as there is a long track record of equities outperforming bonds.

Uncompensated risks are risks an investor accepts but for which the investor is unlikely to be compensated. For example, for a US-based investor, investing in non-US dollar assets incurs currency risk, along with whatever the underlying risks are for that asset. Taking on currency risk – manifested via exchange rate fluctuations – is not something for which an investor should expect to be compensated.

Another example can be the decision to extend the duration of a Treasury security portfolio (e.g., sell a two-year Treasury and purchase a 30-year Treasury), as such a decision will result in greater risk, specifically interest rate risk. When the term premium is positive[1] (i.e., when the yield on the longer-dated bond is expected to exceed that of a series of shorter-dated bonds), this provides compensation for holding longer-dated Treasuries. However, in the absence of this term premium, the goal of capitalizing on longer-term interest rate predictions is generally considered an uncompensated risk.[2]

[1] Please see: https://www.frbsf.org/economic-research/publications/economic-letter/2007/july/term-premium/.

[2] This view should not be confused with views on government bonds as a legitimate asset class for inclusion in portfolio construction.

Forward curve considerations

The *forward rate* is the market's expectation of the yield in the future based on current (spot) yields. The forward rate (at any tenor) is the yield at which an investor would be indifferent to investing in one longer-term bond versus splitting it into two shorter-term bonds.

For example, consider the situation of an investor who is deciding between investing in a two-year Treasury or investing in a one-year Treasury and then "rolling" the proceeds into another one-year Treasury one year from now. Since we know the yield on the one-year and two-year Treasuries today, we can derive what the one-year Treasury yield would have to be one year from now to receive the same yield over the full period as the two-year Treasury. This yield is referred to as the one-year *forward rate* on the on the

on the one-year Treasury. In an efficient market, forward rates act as a collective "best guess" of what yields will be in the future, based on factors such as monetary policy expectations and term premium estimates.

In Figure 1, we plot the Treasury spot curve as well as the one-, three-, and five-year forward yields. Since the Treasury curve is upward sloping (as is typically the case), current forward yields are higher than spot yields. Indeed, on a month-end basis, in the last 20 years, the difference between the 10-year and two-year yields was positive 95% of the time.

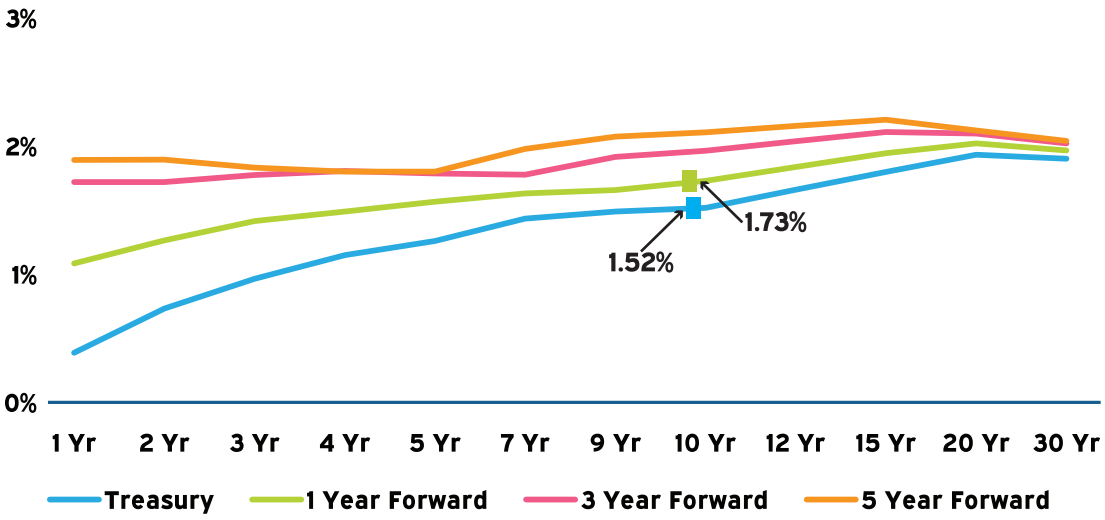

FIGURE 1

Spot and Forward Treasury Yields as of 12/31/2021

Source: Bloomberg.

We see the current 10-year Treasury yield is 1.52%, and the yield on the 10-year one-year forward is 1.73%. Based on the forward curve, the current 10-year Treasury yield would need to increase by at least 21 bp (to, or in excess of, 1.73%) for the decision to shorten duration to be beneficial.

Stated another way, this forward rate provides an investor with a breakeven rate against which to benchmark their own 10-year interest expectations, and the degree to which their expectations differ can be used as a guide to either shorten or lengthen the portfolio's duration.

Interest rate predictions

There are no shortages of opinions on forecasting future yields, and economists are among those who have traditionally taken on this responsibility and whose predictions are recorded for posterity. In reviewing their predictions over the past two decades, we see underwhelming results.

Figure 2 compares the actual 10-year Treasury yield to economists' predictions from December of the prior year.[3] For example, in December 2020, 59 economists predicted where the 10-year Treasury would land one year later (i.e., in December 2021).Figure 2 compares the actual 10-year Treasury yield to the low, median, and high

[3] Data source: Forecasts are from Bloomberg annual economist surveys.

forecasts made at the previous calendar year-end over the last 20 years. Unfortunately, regarding the accuracy of these predictions:

- → The median prediction exceeded the actual 10-Year Treasury yield by an average of 0.7%.
- → In eight of the 20 years, the actual 10-year yield was lower than the lowest forecast.
- → The 10-year Treasury yield ended the year below the median forecast in every year but two - the Taper Tantrum in 2013 and this most recent year (2021).
- → The direction of forecasts (i.e., whether rates were going to go up or down) was correctly predicted less than half (45%) of the time. This does not inspire confidence, as random chance would imply a 50% accuracy rate in guessing the direction of rates.

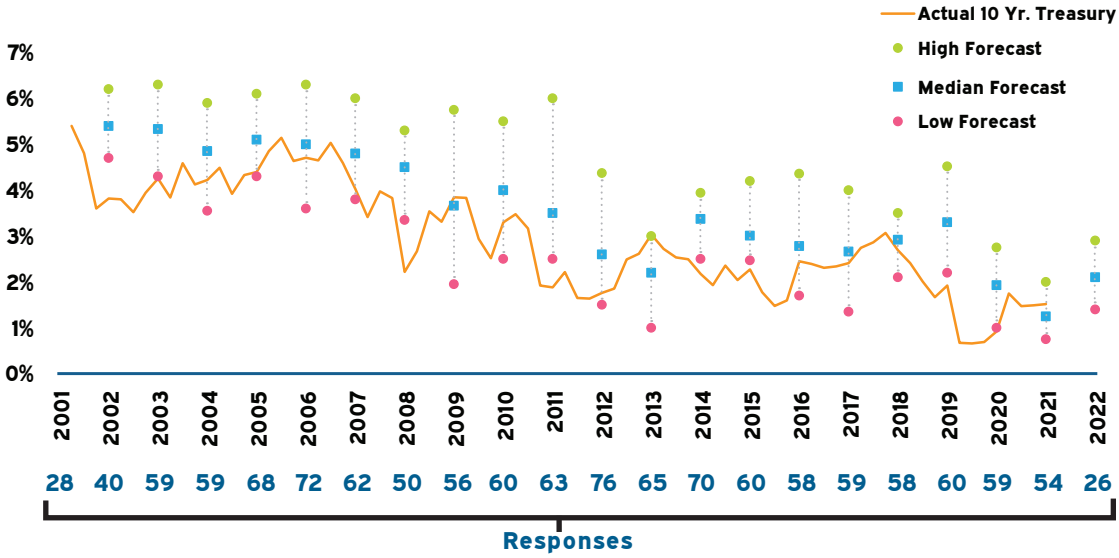

FIGURE 2

10 Year Treasury Yields - Actual vs. High, Low, & Median Estimates:

Source: Bloomberg

Summary

Addressing interest rate volatility when constructing a portfolio can be challenging. In this Viewpoint, we discussed several topics that are highly relevant to considerations around interest rate volatility: compensated versus uncompensated risks, how forward curve considerations serve as a benchmark for interest rate predictions, and how economists have performed at forecasting yields.

We found that investors who take on additional interest rate risk by extending duration are highly likely to be compensated for doing so thanks to a term premium that is usually positive. However, once this term premium is taken into account, interest rate risk is generally considered to be an uncompensated risk. Second, forward yield curves typically provide an unbiased market view of the future direction of interest rates. As such, this needs to be factored into any interest rate prediction. Third, professional forecasters have performed poorly in predicting the future levels of interest rates. This leads us to believe that it will be a difficult task for any investor to try to "out guess" the market and to consistently make successful bets on the future level of interest rates.

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