Fiduciary Insights

OPTIMIZING YOUR BOND PORTFOLIO THROUGH RISK FACTOR MODELING

FIXED INCOME INVESTMENTS SPAN A BROAD RANGE OF SENSITIVITIES TO CHANGES IN YIELDS AND CREDIT SPREADS. Understanding how different types of fixed income investments will likely behave in different market environments is critical to the effective management of bond portfolios. This edition of our Fiduciary Insights series outlines Strategic's fixed income risk factor model and highlights its application to fixed income portfolio management.

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Introduction

Fixed income investments fulfill many functions in investment portfolios. They are typically less volatile and more liquid than other assets, and can help to diversify the sources of portfolio risk. In liability-driven portfolios, fixed income investments play an essential role in hedging funded status volatility. In all their roles and applications, it is critical to understand the factor sensitivities of different fixed income instruments. Disentangling the risk factors underlying fixed income portfolios is an essential means to manage risk, seek to add value, and optimize the construction of the fixed income investments in the context of the total portfolio. Strategic's fixed income factor model is the proprietary analytical tool that we use to construct fixed income portfolios that are expected to fulfill their intended role in the broader portfolio.

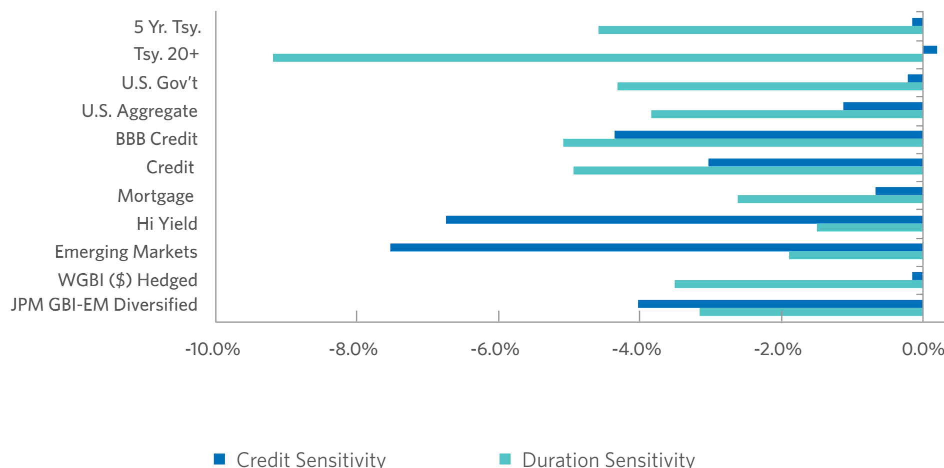
Strategic's Fixed Income Factor Model

Investors tend to see fixed income investments as highly segmented and amenable to clear-cut demarcations. Investment grade bonds, for example, are considered to be quite distinct from junk bonds, with a clear red line separating the two. In reality, however, fixed income securities span a wide continuum of sensitivities to market factors. Maturities range from one month to 30+ years, driving sensitivity to changes in yields. Credit quality ranges from AAA-rated sovereigns to companies on the verge of default, driving highly variable credit spread dynamics. Managing bond portfolios across the spectrum of interest rate and credit sensitivity requires a factor model that disentangles the underlying exposures of a fixed income portfolio.

FIGURE 1:

Estimated Sensitivities to Changes in Yields and Spreads

Duration and Credit Sensitivity of Fixed Income Sectors



[1] Figure 1 provides a highly abbreviated summary of the various indicators used, focusing on only two dimensions of duration and credit. Strategic's full factor model includes a broader range of factors to assess sensitivities related to yield curve structure, convexity, currency, and other exposures.

Strategic's fixed income factor model measures the exposure of a fixed income portfolio to changes in the level of yields, the shape of the yield curve, credit spreads, and the value of the dollar. Historical regression analysis informs our view of the sensitivity of different fixed income sectors to key risk factors. We have found sector volatility and risk relationships to be fairly stable. For example, the annualized yield volatility of the 5-year U.S. Treasury has historically remained about 100 basis points.

The model allows the management of the duration and credit characteristics of a fixed income portfolio. This is achieved by assessing the sensitivity of each security to particular factors. The market factor coefficients are expressed in annualized units of one standard deviation. The coefficients indicate the expected impact of a one standard deviation move of various risk factors on different segments of the fixed income portfolio. For example, as illustrated in Figure 1, if credit spreads were to widen by one standard deviation (0.7%), there would be virtually no impact on the price of a five-year U.S. Treasury, but an index representing the high yield sector would be expected to lose 6.8%.[1] Alternatively, if yields on five-year U.S. Treasuries were to increase by one standard deviation, 10-year U.S. Treasuries would be expected to lose about 7.3%, while the high yield index would fall by only about 1.5%.

Applications to Portfolio Management

Strategic uses the fixed income factor model to construct and manage bond portfolios. The model is instrumental to the implementation of Strategic's active fixed income barbell approach to managing bond portfolios. It informs the implementation of tactical tilts within the fixed income portfolio and facilitates the monitoring of risk.

Strategic's active fixed income barbell approach seeks to capture risk premia associated with illiquidity, complexity, and preferred investor habitat. This approach combines fixed income managers seeking to add value in less efficient sectors of the bond market at one end of the barbell with U.S. Treasury securities managed by Strategic at the other. The weights, and duration and credit risk characteristics, of the respective ends of the barbell are adjusted using the fixed income risk factor model to achieve the targeted aggregate portfolio exposure. Strategic uses the barbell approach to manage a bond portfolio in a way that strives to enhance opportunities to add value through specialist managers in inefficient segments of the bond market as well as through tactical tilts across segments of the fixed income market.

FIGURE 2:
Five-Year U.S. Treasury Yields Versus "Fair Value" Yields
Souce: Bloomberg

For example, the widely used benchmark Barclays Capital U.S. Aggregate (Barclays Aggregate) Index encompasses the range of duration and credit exposures available in the dollar-denominated investment grade fixed-rate taxable bond market, including U.S. Treasuries, government-related and corporate securities, mortgage pass-through securities, asset-backed securities, and commercial mortgage-based securities, with weights based upon sector market capitalization. The duration of this widely used benchmark is about 4 years and the weighted average credit rating of its constituent securities is AA. Traditional core bond managers seek to approximate the risk characteristics of the Barclays Aggregate by investing in each of the market segments comprising the index. As just described, Strategic's barbell approach combines segments of the bond market more selectively to achieve targeted risk exposures in an attempt to replicate the underlying exposures of the Barclays Aggregate index more efficiently using strategies that have more opportunities to add value than the traditional core fixed income approach.

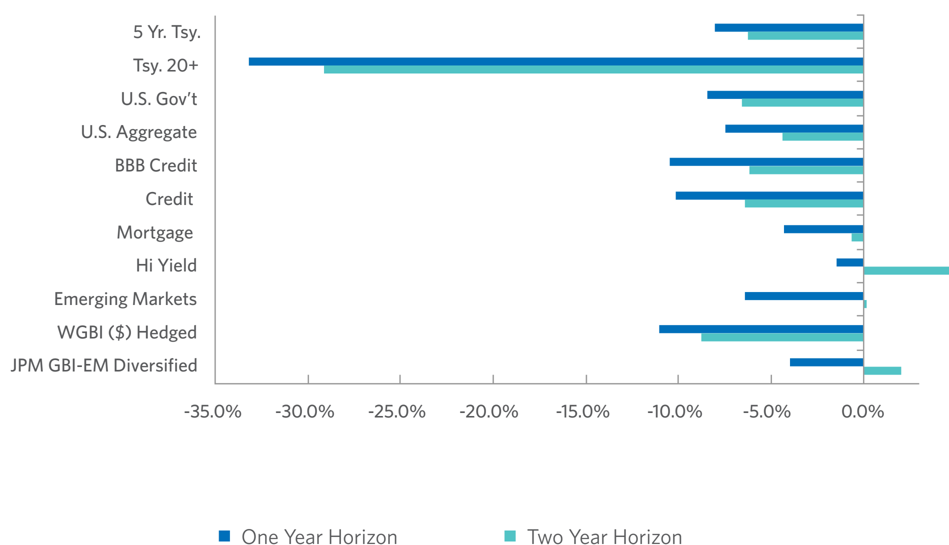
Applications to Risk Management

In addition to fixed income portfolio construction and management and the implementation of tactical tilts, the risk factor model is instrumental in monitoring risk and undertaking scenario analyses. In the interest rate environment prevailing in mid-2013, a key risk uppermost in investors' concerns was the impact on yields as the Fed tapers its extraordinary asset purchases undertaken as part of a quantitative easing policy necessitated by the financial crisis. Under quantitative easing, Fed intervention, including the direct purchase of a high proportion of long-term sovereign bonds, has contributed to keeping nominal yields near historic lows. By indicating that short-term rates are likely to remain near zero for an extended period and the accompanying direct purchase of some 35 percent of U.S. Treasuries with a maturity of 10 years or more,

FIGURE 3:

Rising U.S. Treasury Yield Scenarios

Estimated Returns From 200 bps Rise in Treasury Rates



the Fed has been a major force influencing the shape and level of the entire U.S. yield curve. As the Fed tapers its asset purchases and becomes less of a presence in the U.S. Treasury market, yields are likely to rise, perhaps significantly. For example, as illustrated in Figure 2, the yield on U.S. Treasury securities with a maturity of five years remained well-below historical norms at end-June 2013.

The risk factor model can be applied to assess the impact of different rising rate scenarios on segments of the fixed income portfolio. The results of this analysis can be applied to adjust the exposure of the fixed income portfolio to duration risk (or other risk factors of particular concern). As illustrated in Figure 3, the impact on bond prices of a two hundred basis point increase in U.S. Treasury yields is illustrated using a simplified modified duration method to calculate the sensitivity of different types of fixed income investments to rising yields. The impact of a rising rate environment would vary significantly across different segments of the fixed income market. Moreover, the impact would vary with the horizon over which yields were to rise.

Conclusion

The current interest rate environment puts a premium on understanding the underlying exposure of bond portfolios to different risk factors. Strategic's fixed income risk factor model is a key tool in implementing our active barbell approach, monitoring portfolio exposure to different sources of risk, and calibrating tactical tilts to seek added value. Portfolio management in the absence of such a tool risks both missed opportunity and a misunderstanding of portfolio risk.

Strategic Investment Group

Strategic, a pioneer in dedicated Outsourced CIO (OCIO) solutions since 1987, offers a comprehensive service platform for managing customized portfolios for institutional and private investors. Our proprietary process combines active portfolio management, rigorous risk management, and open architecture manager selection.

Strategic functions as our clients' investment partner and co-fiduciary, effectively becoming an extension of their resources. Clients are then free to focus on their core businesses, while we focus on providing the highly specialized portfolio management expertise that clients need to meet their investment goals. Depending on a client's needs and preferences, Strategic can orchestrate the management of an entire portfolio comprising multiple asset classes, focus on specific asset classes, such as alternatives (e.g., hedge funds, real estate, and/or private equity) or international investments, or manage strategies with high potential for adding value (e.g., portable alpha through investor-friendly turnkey structures). Customized liability-driven investing (LDI) solutions, whether through an integrated total portfolio approach or a targeted long-duration strategy, are also available, as are solutions that address mission-related investment objectives.

We strive to build enduring partnerships with our clients by strengthening their investment programs through a dynamic, value-enhancing investment process, sound governance framework, and world class client service. Our mission is to empower investors through experience, innovation, and excellence.

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