Understanding Interest Rate Risk

Many investors have responded to worries about interest rate risk by keeping their fixed income investments restricted to money market accounts and very short-term fixed income securities. The following discusses the risks of following such a strategy and what should be considered.

Over the past year, we have received questions about the potential impact of rising interest rates on fixed income portfolios. Some investors have been so concerned about interest rate risk that they have kept their fixed income allocation in either money market accounts or very short-term fixed income securities. Let’s explore the interest rate risk characteristics of the types of fixed income securities and funds that we recommend. This should provide a better understanding of the risks imbedded in fixed income and how it could impact total portfolio risk.

Interest Rate Risk

For high-quality fixed income portfolios, interest rate risk (a measure of the potential loss on your fixed income holdings) is primarily dependent on two factors:

▲ **Maturity of the fixed income securities held** — All else equal, you have more exposure to interest rate risk as the maturity of your fixed income holdings lengthens. If you double the average maturity of your fixed income portfolio, you roughly double your exposure to interest rate risk.

▲ **Interest rate volatility** — The more volatile interest rates are, the more exposure you have to interest rate risk. If interest rate volatility doubles, then so does interest rate risk.

Estimating Prospective Volatility

One of the best (but by no means perfect) estimates of prospective volatility of fixed income securities is recent historical volatility. The following are the annualized volatilities of returns for three of the fixed income funds we commonly use, for the 12 months ending October 2010.

▲ **DFA Two-Year Global Fixed Portfolio (DFGFX)** — 0.7 percent

▲ **DFA Five-Year Global Fixed Portfolio (DFGBX)** — 2.8 percent

▲ **DFA Inflation-Protected Securities Portfolio (DIPSX)** — 5.3 percent

They suggest that even if interest rates were to rise dramatically, annual returns would rarely be lower than –2 percent, –8 percent and –15 percent, respectively, for each of the three funds.

Another way to think about the risk of potential loss from investing in these funds is a fixed income concept called duration, which is closely related to average maturity. Duration simply represents the expected percent loss if yields were to go up by 1 percent. Yield is a rough approximation of the annual percent return that you can expect to earn on fixed income investments that are essentially free of default risk. When yields go up, fixed income returns go down.

The three funds mentioned above have durations of:
This means that if yields were to move up by 1 percent (which would be a very large increase), the associated returns would roughly be –1.4 percent, –3.8 percent and –7.9 percent, respectively.

**Interest Rate Risk From a Total Portfolio Perspective**

To put the historical volatilities into context, the annualized volatility of the S&P 500 Index for the same time period was 19 percent or roughly 27 times more volatile than DFGFX, approximately 7 times more volatile than DFGBX and about 4 times more volatile than DIPSX. At the portfolio level, this means that interest rate risk will be dwarfed by equity risk for any substantial allocation to equities (for example, 50 percent or more of the portfolio allocation).

**The Potential Costs of Ultra-Short-Term Fixed Income**

By sticking with ultra-short-term fixed income securities over the last couple of years, investors have essentially eliminated interest rate risk but given up substantial returns as a result. For example, three-month Treasury bills have earned total returns of about 0.6 percent from October 2008 through October 2010, while three-year Treasuries have earned total returns of about 10.2 percent. The cost of cash was substantial over this period, and the tradeoff between interest rate risk and this potential cost should factor into any fixed income allocation decision.

**Summary**

Interest rate risk is a concern when constructing a fixed income portfolio. However, it is important to understand the magnitude of this risk, which is low in an absolute sense for the fixed income securities and funds we use. It is also low relative to the volatility of equities. In a steep yield curve environment, one must also keep in mind the fundamental tradeoff between interest rate risk and the potential cost of ultra-short-term fixed income securities.

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1. Investors in fixed income funds or securities with substantial default risk must consider that risk as well.
2. These numbers roughly represent in statistics what would be called a three standard deviation event, which are very rare.

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