

## Managing Portfolio Risk

How do you view risk? Is it something that you try to avoid, minimize, or manage? Every investor has their own answers to these questions and those responses influence their investment decisions. Given the market volatility that we have witnessed over the past six months, this seems like an opportune time to discuss the concept of risk management. This article will examine various investment risks and steps that investors can take to properly manage them.

The goal of every public agency investor is to manage risk and optimize performance by focusing upon safety, liquidity, and return. It is for good reason that safety comes first in the list of priorities. Safety, or the management of risk, is the key to structuring an effective investment program. In essence, portfolio management *is* risk management. By identifying and quantifying the appropriate level of risk, an investor can then devise a strategy for managing risk while still producing strong returns.

There are four main types of risk that the fixed income investor is interested in managing: interest rate risk, credit risk, liquidity risk, and reinvestment risk. The final goal of the risk management process is to produce the highest possible **risk-adjusted returns**.

### Interest Rate Risk

Interest rate risk, also called “market risk,” is the risk that movements in the level of market interest rates will adversely affect the value of an investor’s securities holdings. In fixed income portfolios, when interest rates rise, portfolio market value falls; when rates fall, portfolio value rises. Historically, these changes in the level of market interest rates have been responsible for approximately 90% of the fluctuation in the value of fixed income portfolios.

### Measuring Interest Rate Risk

The most commonly used measure of interest rate risk is **duration**. Duration is the weighted average maturity of a security’s cash flows, and is often used as a measure of a security’s (or a portfolio’s) sensitivity to changes in the level of interest rates. The higher (lower) the duration, the more (less) the price of the security moves when interest rates change.

### Managing Interest Rate Risk

Portfolio risk in general and interest rate risk in particular, can never be completely avoided. To use an absurd example, even if an “investor” chose to hide their money under the mattress, the house could still burn down. The key to successful investing is not *risk avoidance*, but *risk management*. Successful risk management and successful portfolio management are really the same thing.

The simplest technique for avoiding fluctuations in the value of a portfolio is to invest in securities with the shortest maturities available, thereby minimizing interest rate risk. Unfortunately, this also forces the investor to accept lower returns over time, which can result in the portfolio not generating sufficient cash flow to meet future liabilities. Therefore, a better strategy for optimizing risk-adjusted returns is to extend the duration of a portfolio to match whatever risk tolerance is appropriate for a particular investor.

The first step in this process is to accurately identify risk tolerances by measuring cash flow needs, liquidity constraints, loss restrictions, and political considerations. Once the risk tolerance has been identified, determining appropriate portfolio duration becomes a math exercise. First, loss constraints should be measured against a base-case and worst-case scenario in order to determine how the portfolio is likely to perform in a variety of circumstances. With this information in hand, benchmark portfolio duration can be calculated.

The fixed income portfolio should then be managed with the aim of maintaining a portfolio duration that closely tracks the chosen benchmark duration. Small deviations from the benchmark duration may be appropriate depending upon market conditions or other factors; wild deviations resulting from speculations on the future direction of interest rates should be avoided. If this program is followed consistently, the interest rate risk of the portfolio should prove to be relatively constant, and unpleasant surprises should be avoided.

Managing interest rate risk by identifying and maintaining appropriate portfolio duration is the key to safe and effective fixed income portfolio management. With this foundation established, the fixed income investor can then begin analyzing the other factors that are likely to affect their portfolio's returns.

### **Credit Risk**

Credit risk refers to the possibility that a security will not repay its principal upon maturity. While historically only a small percentage of fixed income securities have defaulted, prudent investors will carefully evaluate their individual risk tolerance and return objectives before deciding upon an appropriate strategy for managing credit risk. The most risk-averse investors will choose to purchase only government guaranteed US Treasury bonds or FDIC insured certificates of deposit (CDs). Treasury bonds and CDs guarantee that an investor will not lose principal, but offer commensurately low returns.

Investors willing to accept slightly higher levels of credit risk in order to achieve higher returns will consider investing in US government agency bonds or mortgage-backed securities. While not guaranteed by the US government, these securities are extremely safe and the possibility of default is considered remote. Agency and mortgage-backed bonds offer higher returns than default-free treasuries or CDs.

Corporate bonds are issued ratings based upon their ability to generate cash flow to pay back their debts. These ratings can range anywhere from “AAA” to “D,” with higher ratings implying less credit risk. Many investment policies stipulate that corporate securities must carry a certain minimum rating to be considered. Of course, recent events have demonstrated that a high credit rating alone is not a guarantee of a security’s safety. Independent credit analysis is necessary in order to determine if a security is an appropriate investment.

Investors should not seek to completely avoid credit risk. Instead, they should carefully consider their risk and return objectives and then make appropriate decisions as to the level of credit risk to accept. This credit risk should then be prudently managed through diversification, which simply means holding a variety of issuers in the portfolio. Many investors choose to set limits upon what percentage of their portfolio may be held in the securities of an individual issuer.

### **Liquidity Risk**

One of the functions of an investment portfolio is to provide liquidity to meet future cash flow needs. The possibility that the portfolio may be unable to meet these needs is called liquidity risk. Liquidity risk can be avoided by investing in only the shortest securities available; this assures that cash is always available when needed. There is a trade off though, because avoiding liquidity risk will result in a portfolio that produces less than optimal returns over time. A better practice is to manage liquidity risk in order to produce a portfolio that provides for cash flow needs while also producing superior returns.

One strategy that some investors use to manage liquidity risk is a laddered portfolio. A laddered portfolio consists of securities across a wide range of maturities. This ensures that the portfolio will have both short-term securities to meet cash flow needs and longer term securities to generate higher returns. Investors without the ability or inclination to accurately forecast cash flow needs and manage multiple portfolios may want to consider a laddered portfolio. When implementing a laddered portfolio, it is still important to ensure that there are sufficient short-term securities maturing to meet any cash flow needs.

Investors with the resources to pursue a segmented portfolio strategy will find it to be more effective for managing liquidity risk and producing optimal investment returns. A segmented portfolio consists of a short-term portfolio designed to meet future cash flow needs and a longer-term portfolio designed to provide greater growth opportunities. A segmented portfolio requires confidence in cash flow forecasts, as well as the ability to manage the portfolio to optimize returns in the growth portion of the portfolio.

### **Reinvestment Risk**

The possibility that bond maturities or interest payments may need to be reinvested at a lower rate of return is known as reinvestment risk. For instance, if an investor has a six percent bond that matures, and the current market environment only provides for five percent returns, the investor will have to reinvest their proceeds at a lower rate.

One of the most effective ways to manage reinvestment risk is to own securities across a wide range of maturities. By doing so, an investor can avoid having to reinvest a large segment of their portfolio at an inopportune time. Additionally, limiting the percentage of callable bonds and mortgage-backed securities (both of which have uncertain cash flow patterns) will also help to manage reinvestment risk, by providing for more consistent and easily forecasted cash flows.

Most importantly an investor should avoid trying to forecast future interest rate movements and reinvesting based upon these forecasts. Academic studies and most market participants are in agreement that it is impossible to forecast interest rate movements accurately and consistently. Once an overall portfolio strategy has been set, reinvestment of cash flows should occur regardless of an investor's perception of overall market conditions.

### **Safe and Effective Portfolio Management**

It is important for investors to avoid the natural assumption that risk is a bad thing. Risk should be managed, not avoided. By managing interest rate risk, credit risk, liquidity risk, and reinvestment risk, investors can enhance their ability to optimize risk-adjusted returns. Remember, risk management *is* portfolio management.

**Risk-Adjusted Returns** – a portfolio's performance after taking into account its level of risk. This measure takes into account the fact that the goal of portfolio management is not to take excessive risk in an attempt to maximize returns, but rather to produce optimal results while strictly managing risk.

**Duration** – the weighted average maturity of a security's (or portfolio's) cash flows. Duration is a commonly used tool for measuring the interest rate, or "market," risk of a portfolio.

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