

Understanding Risks in the Bond Markets

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Bonds have historically been viewed as less volatile than equity investments. Although bonds can help investors lower risk, as they seek to allocate assets in a variety of investments, it is important to be aware that bonds, like all investments, carry risks in all types of market cycles. To assist investors with their decision making, several risk factors are identified and explained below.

I. Interest rate or price risk

Bond prices are inversely related to changes in market yields. In other words, if yields rise, the dollar value of an existing bond portfolio will decline. Furthermore, the longer the maturity, the greater the bond price sensitivity to market yield fluctuations. Given the number of circumstances that can influence a bond's pricing, risk levels can only be estimated, as opposed to determined. However, the table below provides an approximate sensitivity analysis*.

Recalculating a bond's price based on the change in interest rates provides an estimate of where the bond

would be priced. For instance, a 5-year Treasury Note yielding 3% at a current price of 100.00 would be price around 95.5 if the 5-year interest rate increased by 100 basis points (1.0% is equal to 100 basis points, or "bps"). Conversely, the same bond would trade around 104.7 if interest rates moved downward by the same 100 bps. These moves represent changes in price of -4.5% and +4.7%, respectively. On a 30-year security with a 5% yield, a 100 bp movement would result in a more significant price fluctuation; -13.8% or +17.4% respectively.*

To mitigate price risk in a rising interest rate environment, a portfolio can be structured using laddered sequential maturities, floating rate instruments, or shortened maturities. For investors who are considering estate planning, a number of issues include a "survivor's option". Upon passing an estate to one's heirs, these issues can be redeemed at par. Investors should read the appropriate offering document carefully for complete details.

Term	Coupon	Change in interest rates*								Change in price
		-3.00%	-2.00%	-1.00%	-0.50%	0.50%	1.00%	2.00%	3.00%	
1 Year	1.75%	NA	NA	1.0%	0.5%	-0.5%	-1.0%	-1.9%	-2.9%	
3 Year	2.50%	NA	5.9%	2.9%	1.4%	-1.4%	-2.8%	-5.5%	-8.2%	
5 Year	3.00%	NA	9.7%	4.7%	2.3%	-2.3%	-4.5%	-8.7%	-12.8%	
10 Year	4.00%	28.5%	18.0%	8.6%	4.2%	-4.0%	-7.8%	-14.9%	-21.3%	
20 Year	4.50%	51.6%	31.3%	14.3%	6.8%	-6.3%	-12.0%	-22.2%	-30.8%	
30 Year	5.00%	67.4%	39.4%	17.4%	8.2%	-7.3%	-13.8%	-24.9%	-33.9%	

Source: Charles Schwab & Co., Inc. *Actual values may vary.

II. Default Risk

The ability of an issuer to meet debt service requirements is measured by the firm's ability to generate sufficient cash flow, along with a broad array of financial metrics. Investors commonly rely on the major rating agencies to determine an issuer's credit worthiness. The three major rating services are Standard & Poor's, Moody's and Fitch. Generally speaking, it is advisable that individual bond investors stick to issues with investment grade ratings. The chart below presents investment grade ratings. Ratings below Triple B are considered speculative, and normally only appropriate for those who have access to professional management.

Moody's	Standard & Poor's	Fitch	Risk Level
Aaa	AAA	AAA	Max. Safety
Aa1, Aa2, Aa3	AA+, AA, AA-	AA+, AA, AA-	Upper Tier
A1, A2, A3	A+, A, A-	A+, A, A-	Middle Tier
Baa1, Baa2, Baa3	BBB+, BBB, BBB-	BBB+, BBB, BBB-	Lower Tier

The rating agencies generally communicate the upgrade or downgrade of an issue in three phases: credit outlook, credit watch and then by the actual rating change.

To mitigate default risk, a portfolio should be well diversified, using several issuers or obligors representing a variety of industries. Schwab generally recommends that an investor consider purchasing at least ten different issues of corporate or municipal bonds. Treasury securities are virtually default free, and bonds can provide additional safety as well, (unless the insurer also becomes insolvent). To put this risk into perspective, if an insured bond rated AAA is yielding 4.25% and a comparable A rated bond is yielding 4.5%, the investor must decide whether the extra \$250 per year on a hypothetical \$100,000 investment is worth the additional default risk.

III. Inflation Risk

The purchasing power of a bondholder's coupon payments is directly affected by the rate of inflation. For instance, if a retiree's income is \$50,000 per year, and inflation increases by 5%, his purchasing power would be diminished by \$2,500 per year.

To mitigate inflation risk, a variety of inflation protected securities are now available by a host of issuers, including the U.S. Government, FDIC insured banks, and corporations. A broad range of maturities, credit ratings, and payment structures are offered as well.

IV. Prepayment or Reinvestment Risk

In a declining interest rate environment, replacing a matured bond or one that was called (redeemed) prior to maturity will typically lead to a sacrifice in yield or an increase in risk, should the investor wish to retain the same cash flow. For instance, if an investor's 8% bond is called and current rates are 5%, his or her income would drop by 37.5%. Replacing the 8% yield would require the investor to venture out on the yield curve (longer maturities) or endure higher credit risk by purchasing bonds with lower credit ratings.

To avoid reinvestment risk, an investor can purchase non-callable bonds, which are not subject to early redemption. The yield will usually be slightly lower than comparable callable bonds.

V. Liquidity Risk

Some bonds are traded more frequently than others. For instance, daily trading volume of Treasury securities tends to be relatively heavy compared to most municipal bond issues. In general, the higher the trading volume of an issue, the higher the liquidity and, therefore, the narrower is the bid/ask spread. Essentially what this means is that if an investor were to simultaneously buy and sell a security, the difference between the buy and sell price is less with an actively traded bond. If an investor believes he or she will hold the bond until maturity, liquidity risk is generally not a major concern.

To mitigate liquidity risk, an investor should match his investment time horizon with the bond's maturity. If an investor wishes to assume the risk of a longer-term bond with the intention of selling prior to maturity, he should opt for a highly liquid issue.

VI. Opportunity (Cost) Risk

A risk that many investors fail to consider is the opportunity cost of placing funds in cash, in anticipation of investing these funds at higher yields in the future. Under this scenario, if interest rates remain stable for a given time period, the investor is accepting a far lower rate of return. The steeper the yield curve, the higher the potential opportunity cost. For instance, an investor places funds in a shortterm investment that yields 0.75% in anticipation of the 10year Treasury note rising from 4.0% to 4.5%. If the investor's assumption is correct and one year later, she invests in the tenyear instrument, it will take 6.5 years to make up the difference between the 0.75% yield and the 4.0% yield that would have been earned, had she invested her funds immediately. Keep in mind, by the time 6.5 years passes; the 10 year note only has 3.5 years to maturity.

In summary, there are many risk factors that can impact bond investing that include, changes in interest rates, credit ratings, inflation, prepayments, liquidity, and others. No matter what your specific fixed income objective, it is always important to keep in mind that:

The higher the yield, the higher the risk.

Experienced Schwab Fixed Income Consultants are available to assist investors in reviewing their bond portfolio or constructing a bond portfolio to meet their specific objectives. Please call 1-800-626-4600 for further information.

Change in Yield	Wait 6 Months	Wait 1 Year	Wait 18 Months	Wait 2 Years	Wait 2.5 Years	Wait 3 Years	
0.25%	6.50	13.00	19.50	26.00	32.50	39.00	Years to catch up
0.50%	3.25	6.50	9.75	13.00	16.25	19.50	
0.75%	2.17	4.33	6.50	8.67	10.83	13.00	
1.00%	1.63	3.25	4.88	6.50	8.12	9.75	

Source: Charles Schwab & Co., Inc.

