A look at interest rates, credit risk, and bond valuations

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What is a bond?

A bond represents a loan agreement between an issuer (typically a business or government) and an investor. The bond issuer has an obligation to pay a specified amount of interest (the coupon) at specified future dates. At maturity, the face value is returned back to the investor.

Provided the issuer does not default on its obligations, the cash flows and rate of return (see "yield to maturity") from a bond investment can be perfectly known at the time of purchase.

However, holding a bond to maturity is rarely a reality. Most bond portfolios are held through a fund vehicle such as a mutual fund or exchange traded fund. These fund companies continuously receive buy and sell requests from their investors on the bonds they hold. If a bond is sold prior to maturity, a number of other risks can alter the bond's price. Two of the primary risk factors include *interest rate risk and credit risk*.

Bond Lingo 101

Coupon rate: *the bond issuer's fixed annual interest payments in exchange for a "loan" expressed as a percentage of the loan amount.*

Maturity: *the bond's final repayment date, or when the original "loan" is paid back.*

Yield to maturity: *a bond's estimated return if it's held to its due date.*

Face value: *the amount paid to the investor at maturity.*

Interest rate risk

To illustrate the concept of interest rate risk, let's review a basic bond example. If I (the issuer) were to ask you (the investor) for a loan of $100 to be repaid in five years with annual interest based on today's prime interest rate (3.7%). At the end of each year, I would pay you $3.70, along with your $100 at the end of the fifth year.

However, say you required the loaned funds back after the second year. Since your agreement with me will only expire after the fifth year, you will need to find another investor to take over the loan. Fortunately for you, the bond market has many willing buyers, although only at a fair price. Logically, the buyer of your loan will require compensation based on current interest rates (two years later), not the interest rate at the time of the original agreement. For example, if the prime rate after two years has increased from 3.7% to 5.7%, investors would not be interested in a yield to maturity of 3.7% since current interest rates demand a higher return.

To fairly compensate the buyer, you will need to sell your loan for less than $100 to reflect current interest rate yields (the opposite would be true if interest rates had fallen). I will spare you the calculation details, but the selling price would be approximately $95 instead of the original $100. The rate of return associated with the combination of coupon rates and change in price is known as the **yield to maturity** **(see "Bond Lingo 101" on page 1)**.

Of note, the longer a bonds maturity date, the more sensitive the price will be to interest rate changes. Longer duration bonds are more volatile due to the uncertainty associated with long-term economic changes such as interest and inflation rates, as well as the increased risk of the issuer experiencing financial trouble. In the previous example, suppose the loan matured in ten years (and not five), the fair selling price would be reduced to an amount closer to $88 (from $95).

To recap, interest rate changes will cause the price of bonds to fluctuate because:

1) **A purchaser of a bond requires their yield to maturity to reflect the current interest rate environment.**
2) **Longer maturity bonds will have greater price volatility due to the increased chance of unfavorable changes in economic and business risk.**

Source: U.S. Global Investors [1]

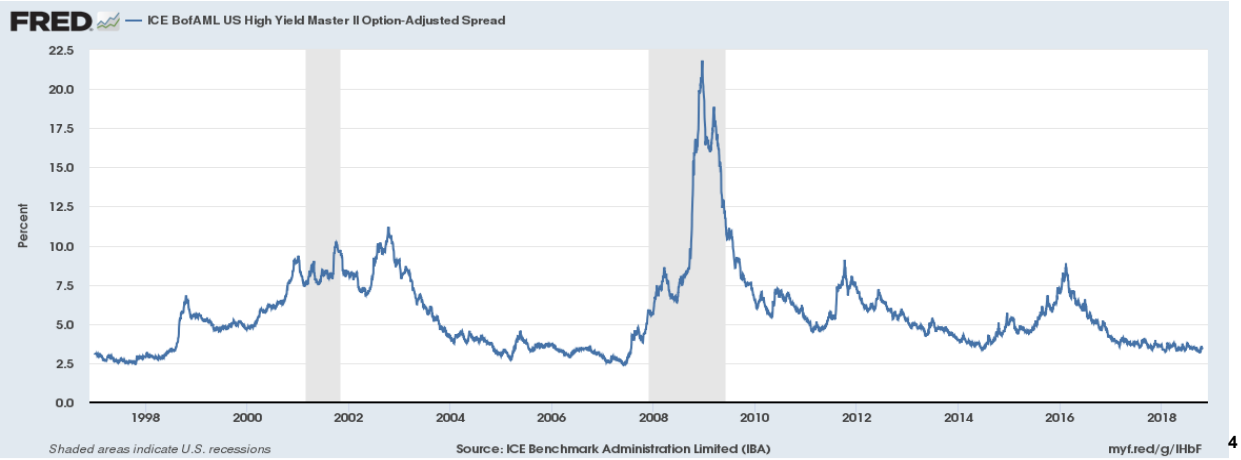
Credit risk

Credit risk is the risk of default on a debt that may arise from a borrower failing to make their required payments. The higher the level of perceived credit risk, the higher rate of interest an investor will demand on the loan[2]. Most corporate bonds offer a higher yield than equivalent government bonds due to the perceived increased level of repayment risk.

Many of you are familiar with the lending practices of financial institutions who also utilize this approach when offering mortgages, credit cards, and other loans. For example, before obtaining a mortgage, a lending institution will generally assess your ability to repay (i.e. credit score, income, assets), and apply an interest rate based on their assessment.

Although credit risk applies individually to each bond issuer, the general economic environment will also contribute to evaluating credit risk. The difference in yield between bonds of similar maturity but different quality is known as the **credit spread**. Credit spreads will widen when U.S. Treasury markets (high quality government loans) are favored over corporate bonds, typically in times of uncertainty or when economic conditions are expected to deteriorate[3]. In other words, investors will generally demand higher a return when holding riskier bonds during a recession - compared to holding the same bond during favorable economic conditions.

[1] http://www.usfunds.com/investor-library/frank-talk/muni-bonds-have-performed-well-in-volatile-times/#.W9CJ400UmFQ
[2] https://www.investopedia.com/terms/c/creditrisk.asp
[3] https://www.cnbc.com/2018/03/21/widening-credit-spreads-could-be-flashing-a-warning-sign-for-markets.html



[4]

Currently, credit spreads are relatively low. The above graph demonstrates the difference between high yield bonds and US treasury rates. The graph demonstrates the following:

1) *Credit spreads were lowest in 1998, the mid-2000's, and 2010-present (when economic conditions were most favorable).*
2) *Credit spreads were highest during the recessions of 2001 and 2008.*

Historic Asset Returns – How will bonds perform over a full market cycle?

The below investment returns table ranks the best-to-worst performing asset categories by year from 2001 to 2008. During the market recessions of 2001 and 2008, higher quality investment grade bonds (labeled "Bloomberg Barclays Agg") performed the best relative to all other asset categories. The referenced Bloomberg benchmark index measures higher quality investment grade bonds, including US Treasuries, mortgage backed securities, government-related and corporate securities.

However, during periods of higher economic confidence (2003-2007), higher quality bonds offered some of the lowest relative returns (although still positive). Generally, bonds (especially short-term bonds) have underperformed common stocks over a long-term time horizon.

[4] ICE Benchmark Administration Limited (IBA), ICE BofAML US High Yield Master II Option-Adjusted Spread [BAMLH0A0HYM2], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/BAMLH0A0HYM2, (as at October 22, 2018).

2001	2002	2003	2004	2005	2006	2007	2008
Bloomberg Barclays Agg 8.43%	Bloomberg Barclays GI Agg ex US 22.37%	MSCI Emerging Markets 55.82%	MSCI Emerging Markets 25.55%	MSCI Emerging Markets 34.00%	MSCI Emerging Markets 32.17%	MSCI Emerging Markets 39.38%	Bloomberg Barclays Agg 5.24%
Bloomberg Barclays High Yield 5.28%	Bloomberg Barclays Agg 10.26%	Russell 2000 47.25%	MSCI ACWI ex USA 20.91%	NFI-ODCE Val Wt 20.15%	MSCI ACWI ex USA 26.65%	MSCI ACWI ex USA 16.65%	Bloomberg Barclays GI Agg ex US 4.39%
NFI-ODCE Val Wt 4.64%	NFI-ODCE Val Wt 4.57%	MSCI ACWI ex USA 40.83%	Russell 2000 18.33%	MSCI ACWI ex USA 16.62%	Russell 2000 18.37%	NFI-ODCE Val Wt 14.84%	NFI-ODCE Val Wt -10.70%
CS Hedge Fund 4.42%	CS Hedge Fund 3.04%	Bloomberg Barclays High Yield 28.97%	Bloomberg Barclays GI Agg ex US 12.54%	CS Hedge Fund 7.61%	S&P 500 15.79%	CS Hedge Fund 12.56%	CS Hedge Fund -19.07%
Russell 2000 2.49%	Bloomberg Barclays High Yield -1.37%	S&P 500 28.68%	NFI-ODCE Val Wt 12.00%	S&P 500 4.91%	NFI-ODCE Val Wt 15.27%	Bloomberg Barclays GI Agg ex US 11.03%	Bloomberg Barclays High Yield -26.16%
MSCI Emerging Markets -2.61%	MSCI Emerging Markets -6.16%	Bloomberg Barclays GI Agg ex US 19.36%	Bloomberg Barclays High Yield 11.13%	Russell 2000 4.55%	CS Hedge Fund 13.86%	Bloomberg Barclays Agg 6.97%	Russell 2000 -33.79%
Bloomberg Barclays GI Agg ex US -3.75%	MSCI ACWI ex USA -14.95%	CS Hedge Fund 15.44%	S&P 500 10.88%	Bloomberg Barclays High Yield 2.74%	Bloomberg Barclays High Yield 11.85%	S&P 500 5.49%	S&P 500 -37.00%
S&P 500 -11.89%	Russell 2000 -20.48%	NFI-ODCE Val Wt 8.28%	CS Hedge Fund 9.64%	Bloomberg Barclays Agg 2.43%	Bloomberg Barclays GI Agg ex US 8.16%	Bloomberg Barclays High Yield 1.87%	MSCI ACWI ex USA -45.53%
MSCI ACWI ex USA -19.73%	S&P 500 -22.10%	Bloomberg Barclays Agg 4.10%	Bloomberg Barclays Agg 4.34%	Bloomberg Barclays GI Agg ex US -8.65%	Bloomberg Barclays Agg 4.33%	Russell 2000 -1.57%	MSCI Emerging Markets -53.33%

[5]

[5] https://www.callan.com/wp-content/uploads/2018/01/Callan-PeriodicTbl_KeyInd_2018.pdf
(as at October 26, 2018)

Conclusion

To recap, bonds will offer a perfectly known return if two conditions are met:

1) The bond is held to maturity.
2) The bond issuer does not default on its payments.

As discussed, holding a bond to maturity is usually not a reality given the inflow and outflow requests between fund companies and their investors. When a bond is sold prior to maturity, the two primary pricing risks are:

1) Interest rate risk.
    - As interest rates rise (fall), the price of a bond will fall (rise).
    - The longer (shorter) the bonds maturity, the larger (smaller) the price impact of a change in interest rates.
2) Credit risk.
    - The greater the risk of default, the higher the compensation an investor will demand on a bond.
    - Credit spreads calculate the difference in return between bonds of similar maturity but different credit quality.
        - Expectations of deteriorating economic conditions will widen credit spreads.

<u>Action Items</u>

Given the possibility of rising interest rates, as well as the current narrow spread between higher risk and investment grade bonds, a review of your bond holdings should be explored. Currently, the yield to maturity on high quality/short duration bonds in Canada and the U.S. ranges from approximately 2.50% to 3.3%. Although these returns may seem modest, they have historically offered relatively good returns during a market correction.

In the event your financial goals require some short term price certainty, the following bond fundamentals are most consistent with maximizing short-term capital protection:

1) **High quality investment grade bonds.**
2) **Bonds of short maturity (roughly 1 – 5 years).**
3) **Any foreign fixed income investments should be hedged to the Canadian dollar to eliminate foreign exchange risk.**
4) **A low cost, fee efficient fund.**

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