Bonds 101:

The Fundamentals of Fixed Income

Bonds are an important part of an investment portfolio and offer many benefits for investors. Because these benefits are not always as apparent as those of other asset classes, it is important to understand how bonds work and what characteristics they possess in order to appreciate the full value of fixed income.

WHAT IS A BOND?

A bond represents a loan from an investor to an issuer. When a bond is issued, an investor is essentially loaning the purchase price, or issue price, to the issuer. The issuer then makes periodic interest payments at a pre-determined rate (coupon rate) to the investor. At the end of the bond's life (maturity date), the issuer pays the investor back for the original value of the bond (face/par value).

WHAT ROLE DO BONDS PLAY IN A PORTFOLIO?

There are three main asset classes: equities (stocks), fixed income (bonds) and cash equivalents. The role of fixed income in a portfolio is very different from that of equities. Fixed income securities serve two major roles in a portfolio: to act as a hedge to equity risk and to provide a source of income.

Diversifying a portfolio among multiple asset classes is a fundamental way for investors to hedge against risk. The low correlation between equities and fixed income helps to shield a portfolio from exposure to risk, with the goal that if one asset class falls, the other will pick up the slack and keep the portfolio as a whole from experiencing the full decline of any one asset class (Figure 1). While equities offer an opportunity for higher returns, they also carry a higher potential for volatility. Alternatively, fixed income provides a way to preserve capital and aims to maintain

KEY TERMS

Basis Points: One hundredth of a percent (1% is equal to 100 basis points); figures in fixed income are commonly quoted in basis points

Coupon Rate: The income earned on a fixed income security

Discount: A bond trading below its face value; one that costs less than the face amount on the bond

Duration: A measure of a bond's sensitivity to interest rate changes

Face Value: The amount paid to a bondholder at the maturity date

Issue Price: The price at which a bond is offered for sale when it first becomes available to the public

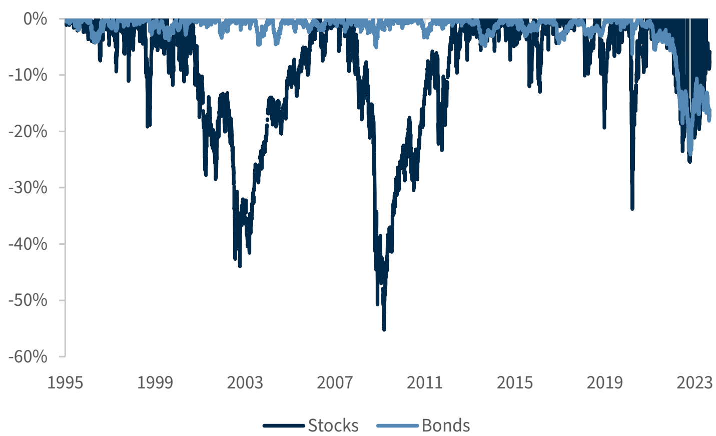
Maturity Date: The due date on which the issuer must pay back the principal amount in full

Premium: A bond trading above its face value; one that costs more than the face amount on the bond

Yield: The income return on a bond; refers to the interest received from a security

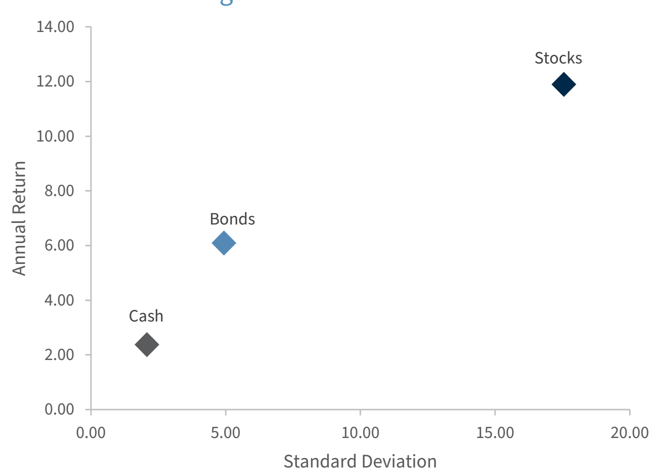
Yield Curve: A line that plots yields of bonds with equal credit quality but differing maturity dates; the slope of the yield curve gives an idea of future interest rate changes and economic activity stability in a portfolio, but typically offers lower returns (Figure 2). The appropriate allocation to fixed income will vary for each investor, and depends on the time horizon and risk tolerance of the investor.

Figure 1: Bonds Offer More Muted Downside Risk



Source: FactSet, as of 9/12/2023

Figure 2: Risk-Reward Tradeoff

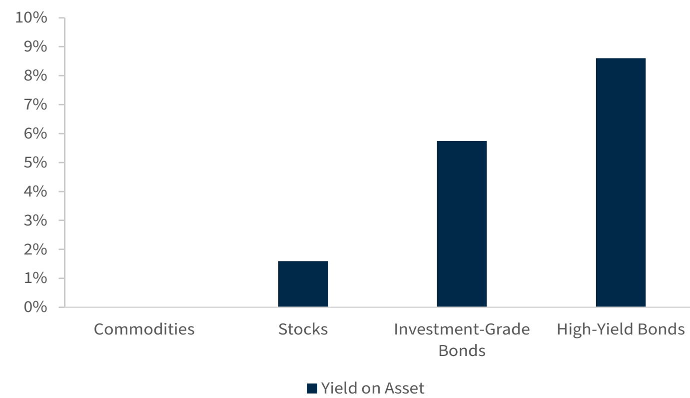


Source: FactSet, as of 9/12/2023

Bonds are represented by the Bloomberg Barclays Aggregate Bond Index; Stocks are represented by the S&P 500 Index

Bonds also offer an opportunity to provide income in a portfolio. The recurring coupon payments provide a dependable stream of income for bond holders and can allow them to confidently plan for spending. This feature of fixed income is also very useful for investors who are retired and no longer receive a normal flow of income from employment. Regardless of monetary policy at any given moment, fixed income can still provide income to your portfolio.

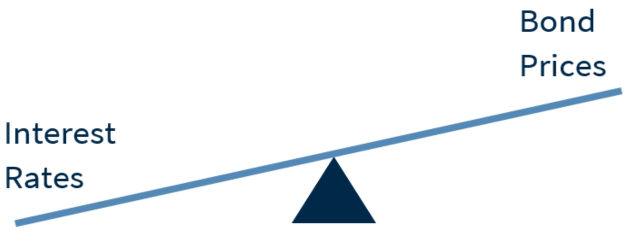
Figure 3: Fixed Income Remains the Highest Yielding Asset Class



Source: FactSet, as of 9/12/2023

HOW ARE BONDS PRICED?

At the date of maturity, the holder of a bond receives the principal amount (face value), in addition to the coupon payments they have received over the life of the bond. However, an investor is not obligated to hold a bond until maturity, and following the initial offering, bonds can be bought and sold on the open market. At this point, the bond's price is then determined by supply and demand. The main factor impacting bond prices in the open market is interest rates. The relationship between the two can be condensed down to the following observation: *when interest rates go up, bond prices go down; when interest rates go down, bond prices go up*. This correlation is due to the fact that most bonds are 'fixed coupon bonds,' meaning that the amount of the coupon payment does not change throughout the life of the bond.

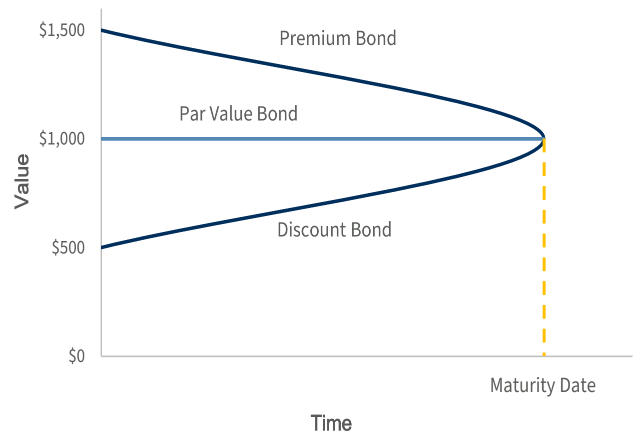


For example, suppose Bond A has a par value of $1,000 and an annual coupon rate of 10%, which is equal to the current market rate. Bond A will earn $100 a year for the life of the bond, regardless of how interest rates in the market move during that time.

However, suppose that during that time, the market rate falls to 5%. This means that a newly issued bond, Bond B, with the same par value ($1,000) would only earn $50 a year. Because Bond A earns a higher income than Bond B for the same price (par value), Bond A would be more attractive to investors, effectively driving up demand and, in turn, increasing the price of the bond. As the price of the bond increases above par value, Bond A is now said to be trading at a **premium**.

On the other hand, say that rates in the market rise to 15%. Now, a newly issued bond, Bond C, with a par value of $1,000 would earn $150 per year. As Bond A earns only $100 a year, it becomes less attractive to investors, leading to a decline in demand and, consequently, in the price of the bond. When the price drops below the par value, Bond A is said to be trading at a **discount**. (Figure 4)

Figure 4: Premium & Discount Bond Pricing



Source: Investment Strategy

WHAT RISKS ARE ASSOCIATED WITH BONDS?

The fluctuation in bond prices as a reaction to interest rate moves, as seen in the previous example, is known as **interest rate risk**. Because the factors that influence interest rates are so unpredictable, an investor can never be sure what rates will be at some point in the future. For this reason, bonds with a longer **duration**, are viewed as more risky, because the longer a bond is in the market, the more time there will be for the price to be impacted by a change in rates.

As previously noted, a bond is essentially a loan from the investor to the issuer. The chance that the issuer may become unable to make the coupon payments or repay the principal amount, resulting in the inability of the investor to recoup their initial investment, is known as **credit risk**. One way for an investor to limit exposure to credit risk is by examining a bond's credit rating. Independent rating agencies issue scores based on an analysis of an issuer's creditworthiness, or the ability of the bond issuer to pay back their debt. There are three main rating agencies for bonds: Standard & Poor's (S&P), Moody's and Fitch. The rating scale ranges from AAA (strongest) to D (weakest) for Standard & Poor's and Fitch, and from Aaa to C for Moody's. (Figure 5)

Figure 5: Credit Rating Scale

Investment Grade	Moody's	Standard & Poor's	Fitch
Strongest	Aaa	AAA	AAA
	Aa1	AA+	AA+
	Aa2	AA	AA
	Aa3	AA-	AA-
	A1	A+	A+
	A2	A	A
	A3	A-	A-
	Baa1	BBB+	BBB+
	Baa2	BBB	BBB
	Baa3	BBB-	BBB-
Non-Investment Grade	**Moody's**	**Standard & Poor's**	**Fitch**
	Ba1	BB+	BB+
	Ba2	BB	BB
	Ba3	BB-	BB-
	B1	B+	B+
	B2	B	B
	B3	B-	B-
	Caa1	CCC+	CCC+
	Caa2	CCC	CCC
	Caa3	CCC-	CCC-
	Ca	CC	CC
Weakest	**Moody's**	**Standard & Poor's**	**Fitch**
	C	C	C
		D	D

WHAT TYPES OF BONDS ARE THERE?

One way to classify bonds is by their credit rating. Recall that bonds are issued a rating based on the issuer's creditworthiness. Higher quality bonds, those with a relatively low risk of default, are dubbed **investment grade**. On the ratings scale, investment-grade bonds range from AAA to BBB- (S&P and Fitch) or Aaa to Baa3 (Moody's). Bonds with a lower credit rating are known as **high yield** (or non-investment grade). Because these bonds are thought to be riskier, as the issuer has been deemed less likely to meet their debt obligations, investors are offered a higher yield (coupon rate) as an incentive to take on this extra risk. Bonds with a rating lower than BBB- (S&P and Fitch) or Baa3 (Moody's) are classified as high yield.

Another way to classify bonds is by the type of issuer. Two of the largest classes are government bonds and corporate bonds. As the name suggests, **government bonds** are issued to fund government spending and obligations. They are typically paid for by government revenues, such as taxes, and backed by the issuing government. For these reasons, government bonds are relatively low risk and therefore typically offer lower yields.

In contrast, **corporate bonds** are issued by firms to finance business activities. While these bonds as a whole are viewed as more risky than government bonds (and therefore pay a higher yield), the level of risk can vary greatly between individual corporate bonds as their credit ratings can span the entire scale.

HOW CAN I OWN BONDS?

There are two main ways to own bonds: holding individual bonds (which can be purchased through a broker or directly from an issuing government) and investing in a bond fund (a pooled investment of fixed income instruments). A key difference between the two is that **individual bonds** have a set maturity date (at which time an investor is paid back the amount of their principal investment) and steady, reliable interest payments that investors can count on throughout the life of the bond. Conversely, bond funds have no maturity date, and are instead bought and sold on the secondary market. Depending on the fluctuation of price due to market factors, investors in a bond fund are not guaranteed a return of their principal. Additionally, while bond funds do offer a periodic interest payment, the monthly payment is based off of the combined yield of all the products in the fund, so the amount of the payment can fluctuate, making it a less reliable source of income.

Bond funds allow investors to diversify fixed income holdings for a much lower cost. As most bonds are issued in increments of $1,000, achieving a diverse bond portfolio through the purchase of individual bonds can be expensive, so investing in a bond fund allows the opportunity for a more broad exposure to fixed income assets. Bond funds are available as both mutual funds and exchange-traded funds and holdings can range from a broad, wide-ranging collection of multiple types of bonds, to a more narrowly focused category based on a desired sector or duration.

Though today's low rate environment may reduce the opportunity for yield, fixed income remains an important part of a diversified portfolio. Talk to your financial advisor about your risk tolerance and time horizon to determine what the appropriate fixed income allocation is for your portfolio.

All content written and assembled by the Investment Strategy Group.

ADDITIONAL DISCLOSURES

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Investing in commodities is generally considered speculative because of the significant potential for investment loss. Their markets are likely to be volatile and there may be sharp price fluctuations even during periods when prices overall are rising.

This is not a recommendation to purchase or sell the stocks of the companies pictured/mentioned. Be sure to contact a qualified professional regarding your particular situation before making any investment.

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Exchange-traded funds are designed to provide investment results that generally correspond to the price and yield performance of their respective underlying indexes, the funds may not be able to exactly replicate the performance of the indexes because of fund expenses and other factors. ETF shareholders should be aware that the general level of stock or bond prices may decline, thus affecting the value of an exchange-traded fund. The prospectus contains this and other information about ETFs. The prospectus and summary prospectus is available from your financial advisor and should be read carefully before investing.

Every type of investment, including mutual funds, involves risk. Risk refers to the possibility that you will lose money (both principal and any earnings) or fail to make money on an investment. Changing market conditions can create fluctuations in the value of a mutual fund investment. In addition, there are fees and expenses associated with investing in mutual funds that do not usually occur when purchasing individual securities directly. Investors should consider the investment objectives, risks, charges and expenses of an exchange traded products and mutual funds carefully before investing. The prospectus contains this and other information about mutual funds. The prospectus and summary prospectus is available from your financial advisor and should be read carefully before investing.

Fixed-income securities (or "bonds") are exposed to various risks including but not limited to credit (risk of default or principal and interest payments), market and liquidity, interest rate, reinvestment, legislative (changes to the tax code), and call risks. Credit risk includes the creditworthiness of the issuer or insurer, and possible prepayments of principal and interest. Bonds may receive credit ratings from a number of agencies however, Standard & Poor's ratings range from AAA to D, with any bond with a rating BBB or higher considered to be investment grade. Securities rated below investment grade generally provide a higher yield but carry a higher risk of default which could result on a loss of the principal investment. Because high-yield bonds have greater credit and default risk they may not be appropriate for all investors. While bonds rated investment grade have lower credit and default risk, there is no guarantee securing the principal investment. Investors should consider the Yield to Worst (YTW) of a bond or bond portfolio versus the Current Yield as the YTW is the lowest potential yield that that can be received without default. YTW takes into account any bonds that could be called prior to maturity.

Bond prices and yields are subject to change based upon market conditions and availability. There is an inverse relationship between interest rate movements and bond prices. Generally, when interest rates rise, bond prices fall and when interest rates fall, bond prices generally rise. Short-term bonds with maturities of three years or less will generally have lower yields than long term bonds which are more susceptible to interest rate risk.

US government bonds and treasury bills are guaranteed by the US government and, if held to maturity, offer a fixed rate of return and guaranteed principal value.U.S. government bonds are issued and guaranteed as to the timely payment of principal and interest by the federal government.

The standard deviation is a measure of the amount of variation or dispersion of a set of values. A low standard deviation indicates that the values tend to be close to the mean of the set, while a high standard deviation indicates that the values are spread out over a wider range.

Diversification and asset allocation do not ensure a profit or protect against a loss.

Index Definitions:

Bloomberg Barclays US Agg Bond Total Return Index | The index is a measure of the investment grade, fixed-rate, taxable bond market of roughly 6,000 SEC-registered securities with intermediate maturities averaging approximately 10 years. The index includes bonds from the Treasury, Government-Related, Corporate, MBS, ABS, and CMBS sectors.

S&P 500 Total Return Index | The index is widely regarded as the best single gauge of large-cap U.S. equities. There is over USD 7.8 trillion benchmarked to the index, with index assets comprising approximately USD 2.2 trillion of this total. The index includes 500 leading companies and captures approximately 80% coverage of available market capitalization.

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INTERNATIONAL HEADQUARTERS: THE RAYMOND JAMES FINANCIAL CENTER
880 CARILLON PARKWAY, ST. PETERSBURG, FL 33716