Janus Henderson
INVESTORS

A SIMPLE GUIDE TO YIELDS

Yield can be quite a confusing term. That is because there are several types of yield and it is helpful to know the differences. Yield is often used as a term to describe the income return generated by an asset, although the more useful yield terms also take into account potential capital gain or loss. In this guide we explore several different types of yield, how they are calculated and why yield is important.

What do we mean by yield?

In finance, yield represents the level of income or return on a security over a set period (typically annual), expressed as a percentage of the security's price. Most of this document relates to bond yields but we will cover some equity and fund accounting yields on page 6.

Bond yield basics

A bond is essentially an "I owe you" issued by a borrower such as a government or company, with the bondholder receiving income payments over the course of the bond. Bonds have two very basic yields that relate solely to the income a bond pays.

Coupon rate

The first of these is the **coupon rate** (also known as **nominal yield**). A bond is typically issued with a par (or face) value that is repaid at maturity. For example, a bond issued in April 2025 with five years to maturity might be the Treasury 5% 30 April 2030. The bond is issued at $100, i.e. the investor pays $100 to own the bond. The investor is paid a coupon (interest) of $5 each year for the five-year term and is repaid $100 at maturity on 30 April 2030. The coupon rate is the coupon divided by the par value, so $5/$100 = 5%. We multiply 0.05 by 100 to get 5%.

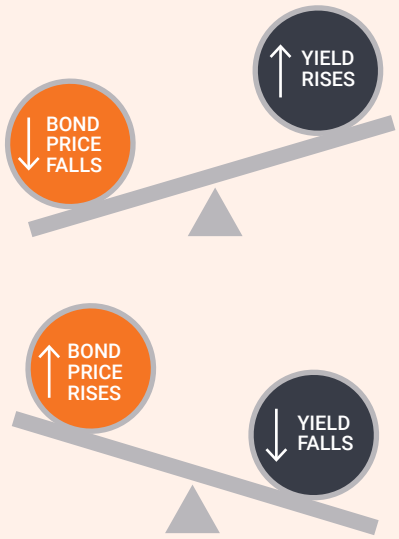
Observation. The coupon rate and the yield in the bond's name are identical. A bond bought at issue and held to maturity will return its coupon rate (provided the issue price and maturity price are the same). The coupon rate is fixed no matter when or at what price the bond is bought.

Limitation: *The coupon rate ignores price fluctuations so may not be an accurate representation of the return earned by the bondholder.*

Current yield

A more useful yield is the **current yield** (or **running yield**). Here, we use the current bond price rather than the par value in our denominator. Let's use our earlier example and imagine by the start of the second year the Treasury bond moves down in price to $95. The coupon is still $5 but we are now dividing by the current bond price. The bond purchaser has paid less than the par value but is still receiving the same coupon as the investor who bought at issue. The current yield is $5/$95 = 5.26%

Observation. The decline in the bond price has caused a rise in the yield. This is an important concept. A bond's price and its yield move in opposite directions.



Limitation: *The current yield is a better representation of return but it only considers income, it still does not reflect any capital gain/loss between the bond's current price and its par value at maturity.*

Seeking a more comprehensive yield

Yield to maturity

In the investment world we would not normally ignore the capital gain or loss on an investment. The solution is **yield to maturity** (also known as **redemption yield**). The yield to maturity (YTM) shows the annualised total return if the bond is held to maturity.

It considers the current price of the bond, the coupon, the time to maturity, the par value and assumes that interest payments are reinvested. Using our earlier example, if an investor buys the bond at the start of the second year for $95, they receive the $5 coupon for the next four years but also gain a further $5 at maturity by receiving $100 par value for a bond that only cost them $95. Taking all this into account, the yield to maturity is 6.46%.

The yield to maturity is an annualised figure. This means the total return (the combined income and capital gain) over the four years is converted into an annual rate.

We can work out the yield to maturity if we know the current bond price, the coupon rate and the par value. The formula below assumes coupons are paid once per year:

$$PV = \left(C \times \frac{1 - \frac{1}{(1 + YTM)^n}}{YTM} \right) + \left(\frac{FV}{(1 + YTM)^n} \right)$$

Where:

PV = present value = current bond price
C = coupon
FV = future value = par value
n = number of years to maturity
YTM = yield to maturity

This is a complex calculation. We have to solve for it by trial and error. You could do this manually by plugging in higher or lower YTMs until you arrive at one where the present value of the future cash flows equals the bond's current price. It may take you a while. Fortunately, a financial calculator or a computer can find the YTM in an instant and can adjust for different frequencies of coupon payment.

Readers who are interested to see how the numbers are substituted into the equation are welcome to do the calculation below and see that it rings true (the YTM of 6.46% is inputted as 0.0646):

$$95 = \left(5 \times \frac{1 - \frac{1}{(1 + 0.0646)^4}}{0.0646} \right) + \left(\frac{100}{(1 + 0.0646)^4} \right)$$

Observation. A useful aspect of YTM is that we can now make comparisons between different bonds, because no matter what the price, the coupon or the length of time to maturity, we can calculate their YTM. This is useful for investors when trying to identify relative value between bonds.

Limitation: *The YTM assumes the bond is held to maturity. Circumstances both in the economy and for the borrower might change so it is not a guaranteed return. Interest rates may change over time or the borrower might default, i.e. fail to meet a repayment.*

Relationship between different yield measures

You may have noticed that we have calculated three different yields for our Treasury 5% 30 April 2030 bond: a coupon rate of 5%, a current yield of 5.26%, and a YTM of 6.46%. The YTM is always higher than the coupon rate or current yield when an investor buys the bond below par value. The opposite is true if an investor buys the bond above par value.

Certain relationships exist between these yield measures depending on the price paid for the bond.

Bond bought at:	Relationship
Discount to (below) par value	YTM > current yield > coupon rate
Premium to (above) par value	coupon rate > current yield > YTM
Par value	coupon rate = current yield = YTM

The relationship is different for zero coupon bonds. These are bonds that are issued at a discount to par so all the return on the bond is generated from receiving the higher par value at maturity. For zero coupon bonds, the coupon yield and current yield are zero while the YTM is positive.

Factors that cause calculations of yields on a bond to differ include:

Price: The further a bond's price is from its par value, the more the yields will differ.

Time to maturity: A short time to maturity means any price gains or losses are realised more quickly.

Call options: Callable bonds give issuers the right to redeem the bond before maturity. This can alter both the time to maturity and the par value an investor receives. We explain how in the next section.

Yield to Call and Yield to Worst

To understand **yield to call** and **yield to worst**, we first need to understand how a callable bond works. The terms of a callable bond allow the issuer to "call" the debt i.e. repay the bond before its original maturity date.

Did you know?

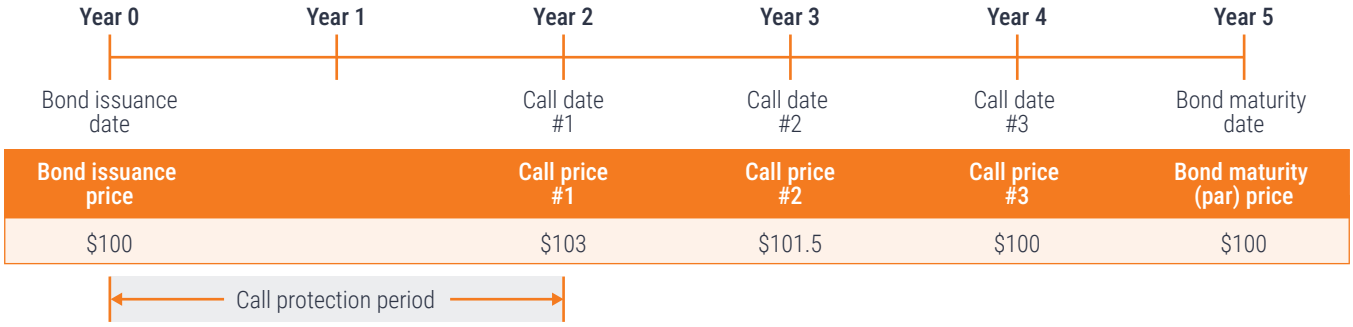
Callable bonds are very common. Issuers like the flexibility to repay the debt early and reissue at lower interest rates if interest rates decline. Equally, many high yield borrowers do not want to leave refinancing to the last minute. They often refinance early when market conditions are amenable rather than risk markets not being open to them.

Callable bonds are seen as riskier for investors because they introduce some uncertainty. An investor whose bond is repaid early may face having to reinvest at a lower interest rate. This is called **reinvestment risk**. To compensate for this risk, callable bonds often have a higher initial yield compared to similar bonds of the same credit quality and maturity date.

The bond's terms specify when the company may call the bond, typically on set call dates. Most bonds have 'call protection', which stipulates the amount of time before a bond can be called. For example, a bond may have call protection for the first two years, but after this period has elapsed, it may be at the issuer's discretion (continuously callable) when to redeem before the maturity date.

If a bond is not continuously callable, the call schedule lists all the dates when the bond can be redeemed and the specific price (call price) that the issuer will have to pay. Most investment grade bonds are callable at their par price but many high yield bonds have specific call prices. When a company calls a bond they need to pay the investor the call price plus any accrued interest up to the call date (i.e. any interest outstanding since the last coupon was paid).

Callable bond illustration



Source: Janus Henderson Investors. For illustrative purposes only. A common high yield convention is that the first call price is par plus half the coupon (so for a 6% coupon bond, it would be 103) and the second call price is par plus a quarter of the coupon (so 101.5) before dropping to par through to maturity.

From our example above, you can see there are several call dates and call prices and this creates several yields to call. The **yield to call** is calculated in much the same way as the yield to maturity, but we treat the call price at the particular call date as the par value.

To find the **yield to worst**, you compare the YTM and all the yields to call on a bond. The lowest of these yields is the yield to worst. It is aptly named because it is the worst possible annualised return you could receive if you bought a bond at today's price and hold it either until maturity or until the company calls it by repaying it early.

Limitation: *Yield to call and yield to worst assume interest rates do not change and there are no defaults.*

If a bond can be recalled at par value, we can add yield to call (YTC) to our relationship table. When a bond trades below par and is called early, the investor benefits from receiving the maturity value sooner (e.g. receiving $100 for a bond trading at $95). Conversely, when a bond is trading at a premium and is called, the investor loses as they receive less over a shorter period (e.g. receiving $100 for a bond trading at $102).

Bond bought at:	Relationship
Discount to (below) par value	YTC > YTM > current yield > coupon rate
Premium to (above) par value	coupon rate > current yield > YTM > YTC
Par value	coupon rate = current yield = YTM = YTC

If a bond has call prices that are different to par value then the relationship will depend on how those call prices compare with the bond's current price.

Why do yields differ between bonds?

A borrower that is seen as reliable and highly likely to repay their debt can typically borrow at lower yields. There are some rough approximations that can be made between two comparable bonds, although circumstances and individual bonds vary so the below approximation does not always hold.

Yields are typically lower for a bond with the same term to maturity when:

Comparison	Explanation
The borrower has a higher credit rating.	Credit rating agencies score companies according to how reliable they judge the borrower to be. A company with a high credit rating (e.g. investment grade) can usually borrow for less than one with a low credit rating (e.g. sub-investment grade or high yield).
The borrower is government-backed.	Governments can normally borrow at a lower yield than a company. This is because governments have the option of taxing their citizens or printing money to repay the debt (although governments sometimes do default).
The borrower is from a developed market.	Developed markets are seen as having fewer risks than emerging markets so borrowers from these countries can typically borrow at lower rates.
The borrower is from a less cyclical sector.	Companies that operate in less cyclical sectors, such as utilities, are often able to borrow at lower yields because they are seen as having steadier cash flows.
The bond is more senior in the capital structure.	Senior bonds are repaid before junior (or subordinated) debt in case of liquidation. Senior bonds are therefore lower risk so typically have lower interest rates than junior bonds.

When choosing which bond or bonds to invest in it is not enough just to look at the yield. Bonds with higher yields tend to be higher risk as investors demand a higher return from the bond to help offset the risk. In fact, bonds with higher yields are often rated sub-investment grade by credit rating agencies and are called “high yield” bonds. Sub-investment grade does not mean they are uninvestable, but it does mean investors need to take more care when investing in these bonds.

Professional investors, such as bond fund managers, undertake careful research and analysis to determine the strength of a borrower’s finances and their ability to meet bond repayments.

When investing in bonds it may be a good idea to hold a portfolio of bonds – just as you might equities – as this helps to spread risk in case a bond defaults.

Diversification *neither assures a profit nor eliminates the risk of experiencing investment losses.*

Interest rates and inflation



One of the key factors affecting bond yields are interest rates set by central banks. These policy rates affect the wider banking system and influence the rates at which companies can borrow. Yields on bonds typically rise when interest rates are high and fall when they are lowered.

Central banks alter interest rates principally to keep control of inflation (preventing prices from rising or falling too much in an economy) and to support steady employment or economic growth (seeking to prevent booms or busts). Inflation reduces the spending power of the coupon and par value of a bond so when inflation rises, the yield on a bond often rises and its price falls.

The yield curve

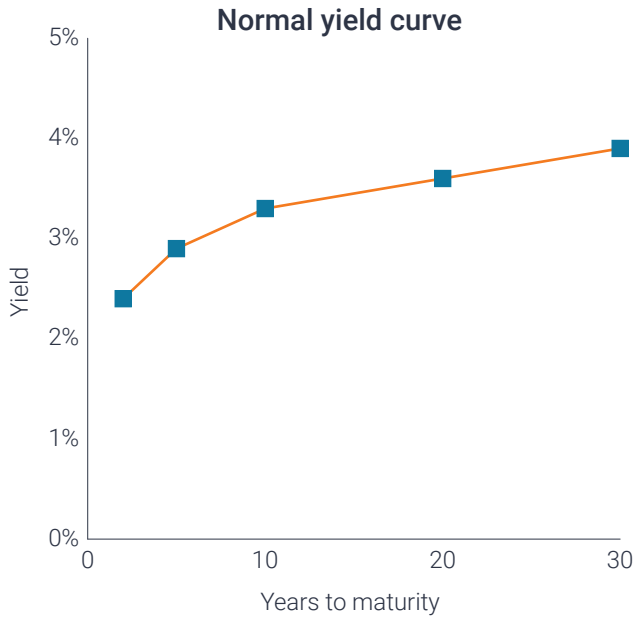
Borrowers issue bonds ranging from very short 3-month Treasury Bills through to longer-dated bonds such as 30-years or more. There are also undated bonds (known as perpetuals) that pay a coupon each year but have no final maturity date.

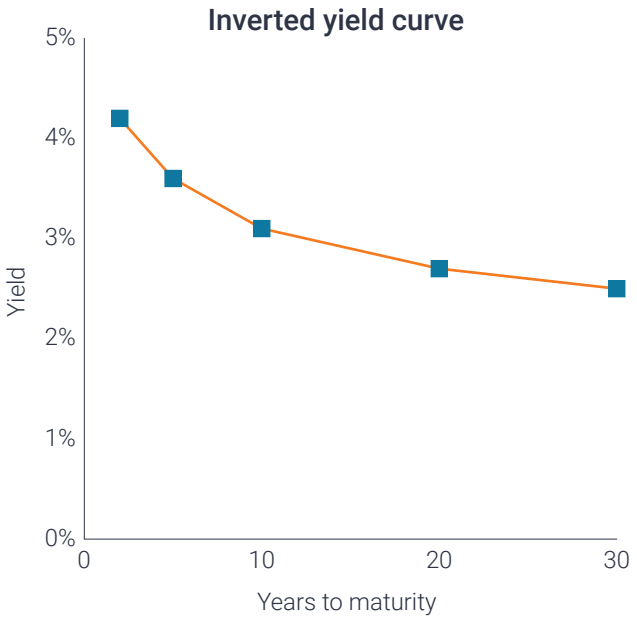
Ordinarily, the longer the maturity on a bond, the higher the yield. This is because investors do not know with certainty what will happen in the future so demand a higher yield to compensate for this risk. After all, inflation or interest rates might be higher, which would reduce the spending power of future coupon or maturity payments.

By plotting the different yields against different times to maturity we can create a yield curve. The normal yield curve is upward sloping. Sometimes it can be downward sloping (or inverted) – this happens when investors expect interest rates or inflation to be higher in the near term than further out.

Did you know?

An inverted yield curve has often been seen as a predictor of recession. This is because it signals that market participants expect future economic growth to be weak. Often the short end (one to two years to maturity) is higher because central bank interest rates are high – a tool to slow the economy or dampen inflation. Market participants anticipate that the central bank is likely to stimulate the economy if it slows, so rates are likely to come down in the future. This often leads to demand for bonds with longer maturities, pushing up bond prices and pulling down yields further along the curve. Historically, yield curve inversions have often preceded recessions but economic dislocation around COVID has made it a less reliable predictive tool.





Source: Janus Henderson Investors. For illustrative purposes only.

Equity yield basics

While yield tends to be used most widely with bonds, there are two yields that are often used in relation to equities (shares issued by companies).

Dividend yield

For equities, a common measure is the **dividend yield**. This is calculated by dividing the dividend payments over the past 12 months for a share by the share price. For example, if the company pays a dividend of $5 per share in a year, and the share price is $100, the dividend yield would be $5/$100 = 5%.

> **Observation.** A dividend is often an indicator of a company's financial health because it suggests that the company has sufficient profit to be able to distribute cash to shareholders.

Limitation: *A high dividend yield may be attractive to income seekers but the cash used to pay dividends could potentially have been reinvested to grow and generate more gains for shareholders. It is quite common for fast-growing companies not to pay a dividend, especially in their early years.*

In some instances, a high dividend yield can even indicate a troubled company. This is because the dividend yield is based on payments over the past 12 months, so if a company gets into difficulty today and its share price tumbles, the dividend yield would rise because we are dividing the dividend by a lower share price. Investors should take care when assessing a company and not rely on dividend yields alone, especially because dividends can vary over time and are not guaranteed.

Earnings yield

A variant of this is the **earnings yield**. This is identical to above, but we replace dividends with the earnings per share of a company. So, if a company generated $8 of earnings per share over the past 12 months and its share price is $100, the earnings yield is $8/$100 = 8%.

Fund accounting yields on factsheets

The last three yields we will look at are a few that you might see on some factsheets.

Historic yield

The **historic yield** reflects distributions over the past 12 months as a percentage of the price, as at the date shown. The historic yield does not include any preliminary charges and investors may be subject to tax on their distributions. It is typically used for funds that invest in equities.

Distribution yield

The **distribution yield** reflects the amount that may be expected to be distributed over the next 12 months as a percentage of the mid-market share price of the fund at the date shown. It is based on a snapshot of the portfolio on that day. It does not include any preliminary charge and investors may be subject to tax on distributions. It is typically used for bond funds.

Underlying yield

The **underlying yield** is calculated in the same way as the distribution yield but is net of charges so is typically lower. It reflects the annualised income net of expenses of the fund (calculated in accordance with relevant accounting standards) as a percentage of the mid-market share price of the fund at the date shown. It does not include any preliminary charge and investors may be subject to tax on distributions.

Glossary

Accrued interest: Interest that a bond has accumulated since the principal investment, or since the previous coupon payment, but has not yet been paid out. Accrued interest is typically added to the purchase price of a bond – that way the seller receives the interest they were due for the days they owned the bond.

Bond: A debt security issued by a borrower that pays interest periodically and returns a specified amount to the bondholder at maturity.

Callable bond: Bonds that can be redeemed (or called) early by the issuer, i.e. before the stated maturity date.

Coupon: A regular interest payment that is paid on a bond.

Credit rating: A score assigned to a bond issue or a borrower, based on their creditworthiness. It may apply to a government or company, or to one of their individual debts or financial obligations.

Default: The failure of a bond issuer to pay interest or return the principal when due.

Equity: A security representing ownership, typically listed on a stock exchange. To have equity in a company means to hold shares in that company and have part ownership.

High yield bond: A bond with a lower credit rating than an investment grade bond, also known as a sub-investment grade bond, or 'junk' bond. These bonds usually carry a higher risk of the issuer defaulting on their payments, so they are typically issued with a higher interest rate (coupon) to compensate for the additional risk.

Inflation: The rate at which the prices of goods and services are rising in an economy.

Investment grade: A bond typically issued by governments or companies perceived to have a relatively low risk of defaulting on their payments, reflected in the higher rating given to them by credit ratings agencies.

Maturity: the date when the issuer of a bond must repay the principal amount and any interest to the holder of the bond. The maturity date is set when the bond is first issued, but the bondholder can sell anytime before this date. Bonds can be short-term, medium-term or long-term, referring to the length of maturity.

Par value, face value or principal: The amount originally loaned on a bond, which must be paid back.

Refinancing: The process of revising and replacing the terms of an existing borrowing agreement, including replacing debt with new borrowing before or at the time of the debt maturity.

Volatility: The rate and extent at which the price of a fund, security or index, moves up and down. If the price swings up and down with large movements, it has high volatility. If the price moves more slowly and to a lesser extent, it has lower volatility. The higher the volatility the higher the risk of an investment.

Yield: The level of return or income on a security, typically expressed as a percentage rate.

At a glance

- ✓ Yield represents the income or return on a security over a set period, typically expressed as a percentage of the security's price.
- ✓ There are several types of yield so understanding how they are calculated helps you to understand what they are describing.
- ✓ Yields such as dividend yield and current yield reflect income return over one year.
- ✓ Yields such as yield to maturity and yield to worst reflect annualised total return, i.e. income and any capital gain/loss.
- ✓ Yield to maturity and yield to worst allow comparisons to be made between different bonds.
- ✓ Interest rates and inflation can affect bond yields: yields are typically higher when interest rates and inflation are high, and yields are typically lower when interest rates and inflation are lower.
- ✓ Due to uncertainty about the future, investors normally demand higher yields from borrowers to lend for longer periods, leading to an upward sloping yield curve. An inverted yield curve is downward sloping.
- ✓ When selecting a security, it is important to consider other factors that could affect risk and return on an investment and not just look at the yield in isolation.

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Important information

Fixed income securities are subject to interest rate, inflation, credit and default risk. The bond market is volatile. As interest rates rise, bond prices usually fall, and vice versa. The return of principal is not guaranteed, and prices may decline if an issuer fails to make timely payments or its credit strength weakens.

High-yield or "junk" bonds involve a greater risk of default and price volatility and can experience sudden and sharp price swings.

The value of an investment and the income from it can fall as well as rise and you may not get back the amount originally invested.

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