

# Fundamentals of Fixed Income

In Australia, fixed income as a defensive asset class has not normally received as much attention as its equity counterpart, owing in part to the strong returns exhibited in the equity market in the five year growth period between 2002 and 2007, and in part due to limitations in accessing the asset class. However, the onset Global Financial Crisis (GFC) in 2007 and the subsequent share market volatility refocused thinking toward fixed income as an asset class, and the role it could play in achieving investment objectives.

## What Is Fixed Income?

In their simplest form, fixed income securities, commonly referred to as bonds, are instruments whereby the borrower, the 'issuer', takes out a loan from the lender, the 'investor'. The capital received by the borrower is then used to fund other investments and ongoing business activities which are designed to grow the business and improve profitability, and then in turn, repay investors their original loan amount plus interest.

## Who Issues Fixed Income Securities?

Any entity that needs to raise funds to finance investments and ongoing activities can issue bonds to meet their capital requirements. Typically, Australian bond issuance is dominated by the following categories of borrowers;

1. **Governments** Commonwealth, State and Local bodies
2. **Government Sponsored Entities** Building Societies and larger Supranational (e.g. Asian Development Bank)
3. **Corporations** Financials and other large corporations

Figure 1: Key Features of Fixed Income Instruments

Feature	Example	Description
Issuer	Australian Government	The issuer of the bond is the borrower of money who is responsible for repaying the investor the amount borrowed (plus interest), at the end of the loan period. The more financially secure the issuer is, the more confident an investor will feel about receiving their expected payments.
Credit Rating	AAA	The credit rating is an important signal on the ability of the borrower to meet their debt obligations. Credit ratings are issued by Ratings agencies such as Standard & Poor's® (S&P®), Moody's and Fitch, and reflect the risk in investing in the issuer. The higher the credit rating, in general, the lower amount of risk associated with the investment. Using the S&P scale, anything between AAA and BBB- is considered 'Investment Grade', and anything below BBB- is classified as 'Speculative', sometimes referred to as 'junk bonds'.
Par Value/Face Value/Principal	\$100	The face value of the bond represents the amount an investor will be paid on maturity of the bond. It is also the principal amount that is used to calculate regular coupon payments.
Interest Rate/ Coupon Rate	5.00%	The coupon rate is the annual interest rate paid to the investor, calculated as a percentage of the face value. In this example, the amount received as a coupon payment would be 5.00% x \$100 face value = \$5 per year. The coupon rate can be fixed (usually paid semi-annually) or floating (usually paid quarterly). For floating coupons, the rate is expressed as a margin (in basis points) over a reference rate. If paid quarterly, this is usually the 90 day Bank Bill Swap (BBSW) rate.
Maturity Date	30-June-2016	The date the issuer is required to repay the par value to the investor. Bonds are generally issued with a minimum of one year to maturity, however the date can be as long as required, and assuming investors will lend money to the issuer for that period.

## How Can I Value a Bond?

There are a number of metrics that indicate the market's price expectations of a bond. Unlike equities, where shares are traded on the stock exchange, bonds mostly trade in the over-the-counter (OTC) market, and as such, pricing is not as readily and transparently available. Three common bond pricing metrics include;

### Bond Price

Often this is an average of OTC prices traded throughout the day.

If the bond price is above face value (using the previous example, \$105 versus \$100), it is said to be 'trading at a premium'. If it is below face value (i.e. \$95), it is said to be 'trading at a discount'. If it is at face value (i.e. \$100), it is said to be 'trading at par'.

### Current Yield

The current or 'market' yield refers to the annual yield the investor should expect to receive at the current market price. It is calculated by taking the annual coupon rate divided by the market price.

### Yield to Maturity

The yield to maturity is the annual yield the investor should expect to receive should the investor hold the bond until maturity. It takes into account the purchase price (i.e. whether it was at a discount or premium), the value of all remaining coupons and any capital gain or loss associated with the face value being returned at maturity.

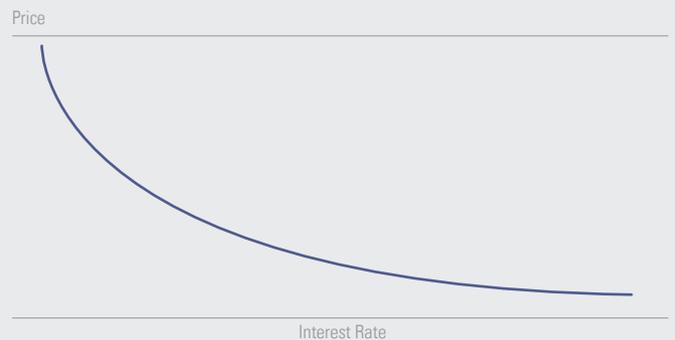
## What Affects the Price of a Bond?

There are several factors and key economic relationships which can influence bond pricing.

### Interest Rates

The fundamental relationship in bond valuation is that between a bond price and interest rates. In general, as market interest rates rise, bond prices fall, and vice versa as per Figure 1 at right top.

**Figure 2: Bond Valuation Relationship Between Price and Interest Rates**



Source: Fabozzi, F. (2006) Fixed Income Mathematics.

This inverse relationship ensures that the price of bonds issued at the previously lower (or higher) interest rates remain competitive with new bonds issued at the now higher (or lower) prevailing interest rates.

If the coupon rate paid on the bond is higher than the market interest rate, the bond should trade at a premium and if it is less than the market interest rate, it should trade at a discount, all else being equal.

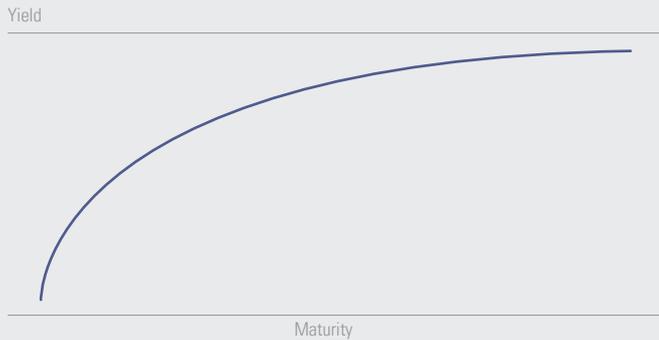
### Credit Quality

The identity of a bond's issuer is a major factor in determining its market value as it assesses the likelihood of default on behalf of the issuer. In general, bonds issued by the Commonwealth government are regarded as risk free as the probability of default is very small. This is because the government can always use taxes to raise revenue to repay debt. However, issuers such as banks or industrial corporations cannot raise taxes and therefore their probability of default is higher relative to government bonds. The higher the market perceives an issuer's credit risk to be, the higher the yield the issuer must offer to attract investors.

**Maturity (and the Term Structure of Interest Rates)**

The maturity date of a bond also greatly impacts its market value and is underpinned by a key economic relationship called the Term Structure of Interest Rates, otherwise known as the ‘Yield Curve’. The yield curve gauges the markets expectations about future interest rates by plotting the yield-to-maturities of various bonds (Commonwealth government bonds are often used as benchmarks) at staggered maturities.

**Figure 3: Normal Yield Curve**



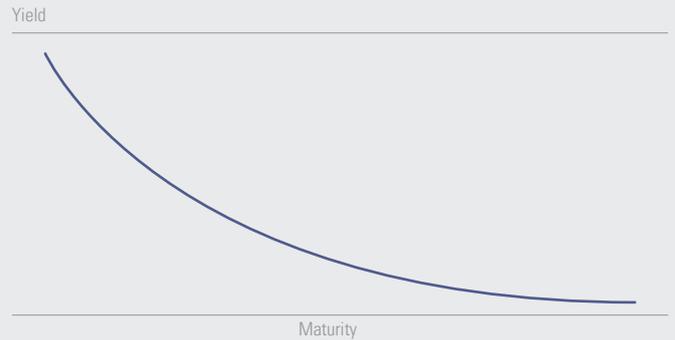
Source: Fabozzi, F. (2006) Fixed Income Mathematics.

**Normal Yield Curve**

This shape can suggest stable economic conditions, minimal economic data shocks and normal forecasted growth rates.

As such, shorter dated fixed income securities are expected to receive lower yields than longer dated securities, reflecting the less risky economic environment and therefore a strong chance of receiving the face value back at maturity. Conversely, the increased uncertainty in relation to market conditions further into the future imply that longer dated securities should carry a higher yield to compensate for the additional risk.

**Figure 4: Inverted Yield Curve**



Source: Fabozzi, F. (2006) Fixed Income Mathematics.

**Inverted Yield Curve**

In contrast, an inverse yield curve arises from extraordinary market conditions where volatility and uncertainty govern current investor sentiment.

In this case, shorter dated securities generally attract higher yields than longer dated securities, as the market expects interest rates to decline over time as the economy experiences a slow down following the adverse market conditions.

All of these characteristics need to be analysed when determining the relative value of a bond and whether to include it in a diversified bond portfolio.

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