



# A Guide to Fixed Income

What is Fixed Income?

Diversification

Categories

How to Invest...



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## Introduction

As investors, we find ourselves in a world of continual change: fluctuating interest rates, volatile equity valuations and unstable oil prices can have vast and unpredictable effects on markets. Under these conditions, it is more important than ever to understand what drives the markets so we can make informed investment decisions. It is also important to take steps to mitigate investment risks in this environment, and modern portfolio theory argues that the optimal risk-adjusted portfolio will be diversified across asset classes.

Fixed income, too often considered a secondary choice to investing in equities, can provide a cornerstone of portfolio diversification. To the uninitiated, investing in debt instruments may appear to be less adventurous than investing in stocks, but as we shall see, in certain market conditions bonds can significantly outperform equities. Some investors may also be surprised to learn that the global bond market is double the size of the global equity market\*, so liquidity is another key advantage of fixed income securities.

The purpose of this guide is to give investors an introduction to the fixed income asset class as a whole, and in particular to take a more detailed look at bonds. We discuss the terminology of the fixed income world and try to distil this sometimes confusing vernacular into more comprehensible and meaningful definitions. We look at the drivers of fixed income returns, the pros and cons of investing in this asset class and how an investor can include an allocation to fixed income in his or her portfolio.

I hope you find this guide useful in considering your investment options.



**Keith Williamson**

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*Global Investment Selection*

\* Source: McKinsey Global Institute, 2011



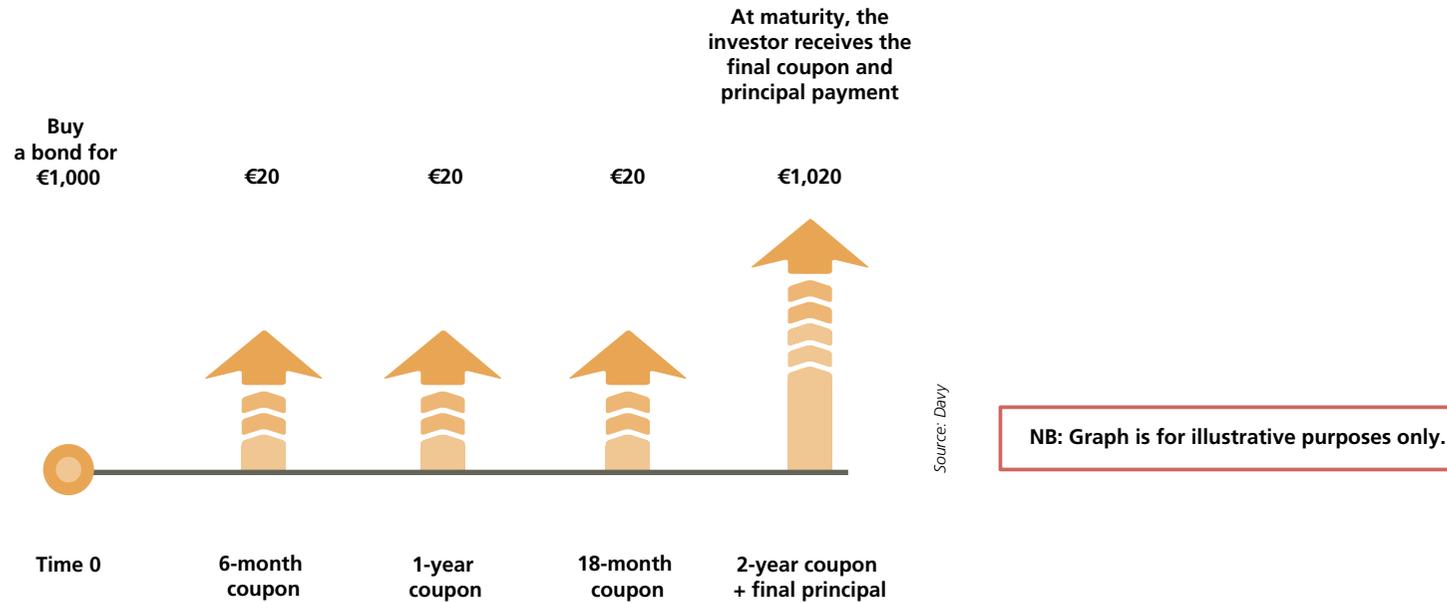
01

Fixed Income as an Asset Class

# Fixed Income as an Asset Class

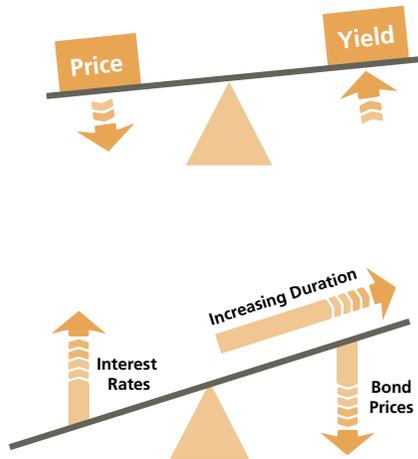
Fixed Income is a broad term for the class of assets which includes most forms of interest-paying debt: loans, bonds and mortgages are all branded under the fixed income umbrella.

A bond, like a mortgage, is a loan between a borrower and a lender which calls for repayment at some date in the future, as well as for regular interest payments in the interim. The important details of a bond will be agreed upon at the outset: the amount due for repayment ('par value' or 'principal'), any interest payments due on the debt (the 'coupon') and the date when repayment is due ('maturity date').



The borrower or *issuer* in this arrangement is usually an entity, such as a government or corporation. The investor is known as the *lender*.

## Factors to Consider



### Duration versus Term

The word 'duration' here can be confusing as it describes a bond's sensitivity to interest rates rather than the term of the bond. The term of the bond is referred to as its 'maturity'.

Factor	Description
<b>Price</b>	Bonds are usually priced at par value at their initiation, but this price can change throughout the bond's life depending on interest rates, credit ratings and other factors.
<b>Yield</b>	Yield is the overall return on a bond, incorporating income payments, as well as any change in value between purchase and redemption. Yield-to-maturity is the most commonly cited measure, but bonds do not have to be held until maturity. Yields move inversely to bond prices.
<b>Duration</b>	Duration is defined as the sensitivity of a bond's price to changes in interest rates. The number signifies the percentage change in price for a 1% change in interest rates. Prices move inversely to interest rates, so a duration of 10 means that if interest rates fall by 1%, the bond's price will increase by 10%. Duration is also used as an approximation of the length of time in years that it will take for the price of a bond to be repaid by its cash flows.
<b>Term</b>	The term of a bond is defined by its maturity date. It can be any length of time, but 10-year bonds are commonly used to compare yields across different issuers. Instruments with a term of less than five years are sometimes referred to as 'bills', and maturities of less than one year are considered Money Market Instruments.
<b>Credit Rating</b>	Credit ratings agencies such as Moody's, Standard & Poor's and Fitch use a scoring system to rate the credit quality of bond issuers, both corporations and governments. The resulting grade (e.g. AAA) categorises a bond according to its risk of default: the highest grades are termed 'investment grade' and are considered reasonably safe, while lower grades are called 'speculative grade', 'high yield' or 'junk' bonds and are considered much riskier. Credit upgrades and downgrades can affect a bond issue's attractiveness and therefore also its price.

## Other Types of Fixed Income Investment

Bonds are the most common form of fixed income security, but other instruments exist which can provide a similar pattern of income. A selection of these is laid out in the table below.

Term	Definition
<b>Loan</b>	A loan is a debt instrument usually issued by a bank or finance institution. It can be secured (collateralised against an asset, such as a car, to which the lender can stake claim if the debtor fails to meet repayments) or unsecured (backed only by the borrower’s creditworthiness, rather than any collateral).
<b>Mortgage</b>	A mortgage is a debt instrument where the loan is secured against a house or other property. They are usually long-term – up to 30 years or more – and the issuer may be able to seize the underlying property if the borrower is unable to meet the regular payments.
<b>Mortgage-Backed Security (MBS)</b>	A mortgage-backed security (MBS) is a bond-like instrument where the value is derived from a pool of regular mortgages. The regular payments from the underlying mortgages are collected by the bank or MBS-issuing entity and distributed to the holders of the MBS, much like the coupon on a bond.
<b>Asset-Backed Security (ABS)</b>	An asset-backed security (ABS) is a bond-like instrument where the value is derived from a pool of underlying assets. This differs from the MBS as the security is collateralised by assets other than mortgages or property, such as car loans, credit card debt or company receivables.
<b>Collateralised Debt Obligation (CDO)</b>	A collateralised debt obligation (CDO) is a special type of ABS where the pool of assets – mortgages, bonds or other loans – is packaged into discrete ‘tranches’. Each tranche carries a different risk profile, and senior tranches will have a higher priority over the junior tranches in the event of default on the underlying assets. Senior tranches will, therefore, have a higher credit rating and offer lower coupon rates than the junior tranches.

Source: Davy



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Bonds in Focus

## Bonds in Focus

Fixed income accounts for around 74% of the global stock of outstanding debt and equity financing, compared with around 26% for equities. Bonds form the largest portion of the fixed income market, accounting for approximately 60% of total global debt (Source: McKinsey Global Institute, 2011). For this reason, bonds have become virtually synonymous with the term fixed income, and we give them special attention here.

Bonds are divided into two broad categories: government or corporate bonds. They can be further divided into groupings according to the credit quality of the issuing company or country. Characteristics of these four groupings are summarised below:

	Government Bonds		Corporate Bonds	
	Developed	Emerging Market	Investment Grade	High Yield
<b>Description</b>	Bonds issued by governments, central banks or their agencies in economically developed countries.	Bonds issued by governments and central banks of economically developing countries.	Bond issues with the lowest risk of default: AAA to BBB- (S&P and Fitch) or Aaa to Baa3 (Moody's).	Lower quality issues with a higher risk of default: BB+ to D (S&P and Fitch) or Ba1 to C (Moody's). Also called Speculative grade or 'Junk' bonds.
<b>Default risk</b>	Lower	Higher	Lower	Higher
<b>Yield to maturity</b>	Lower	Higher	Lower	Higher

Source: Davy

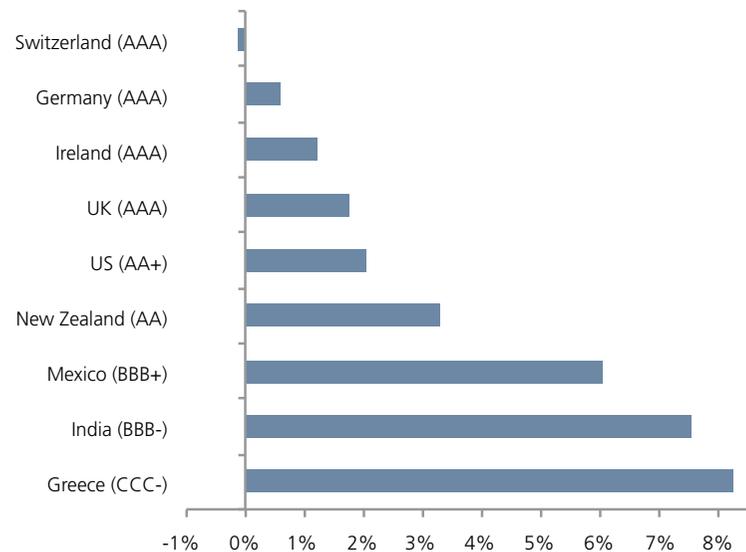
# Government Bonds

Government bonds, such as those issued by the US Treasury, are issued with the full financial backing of the country's reserves (in the US this is the Federal Reserve). Because of this endorsement, they are usually considered to be low risk and in some cases are used as a proxy for a 'risk-free' asset.

However, this credit quality is dependent on the financial strength of the country's economy at any given time, and various countries have defaulted on their loans in the past.

Figure 1 shows the 10-year yields for several government bond issues and their respective credit ratings.

**Figure1: Yields on 10-year government bonds**



Source: Bloomberg as at 30<sup>th</sup> September 2015



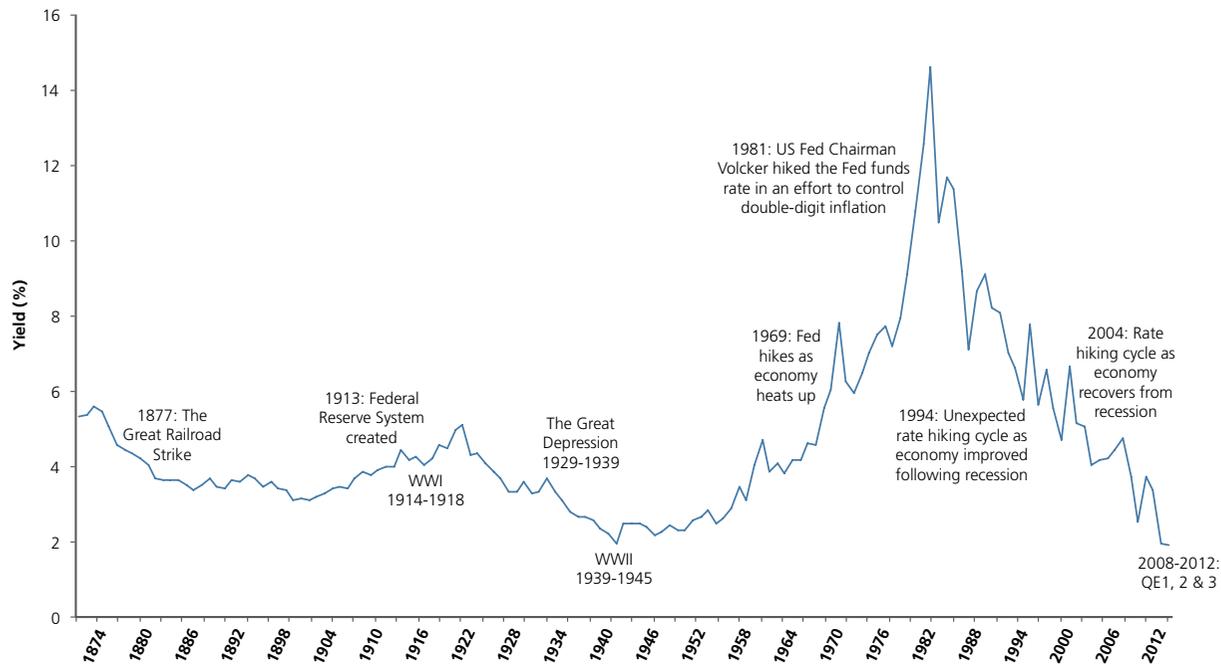
The first government bonds were issued in order to raise money to fund wars. Nowadays, the proceeds are more commonly used to invest in infrastructure (roads, schools, hospitals, etc.). A government can also use bonds as a tool to exercise its monetary policy, as has recently been experienced by several major economies in the form of quantitative easing (see page 13 for more information).

**Warning: Past performance is not a reliable guide to future performance. The value of your investment may go down as well as up. These products may be affected by changes in currency exchange rates.**

Figure 2 shows how yields on US government bonds have changed over time. There is a clear downward trend since peaking in the early 1980s, reflecting the falling interest rates over this time. Government bond yields are driven primarily by changing prices and interest rates, and these in turn depend on several key factors:

- Inflation expectations
- Economic growth
- Money supply and demand
- Central bank activity

**Figure 2: A history of 10-year US treasury yields**



Source: <http://www.econ.yale.edu/~shiller/data.htm>

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### Quantitative Easing Explained

In addition to raising money to finance public spending, a government can also use bonds as a tool to exercise its monetary policy. If a central bank purchases a bond, the investor relinquishes it for cash and subsequently there will be additional money in circulation. This increase in money supply is the basis for Quantitative Easing (QE) programmes – effectively mass-purchasing by a central bank of existing government debt in an attempt to pump money back into the economy and stimulate growth. Although often referred to colloquially as ‘printing money’, additional currency is not actually minted.



### Recent QE Programmes

- 2008-2014 US: \$3.5 trillion
- 2009-2012 UK: £375 billion
- 2010+ Japan: Currently ¥80 trillion per year (US\$700B)
- 2015+ Europe: €60 billion per month, targeting €1.1 trillion by September 2016

### Variations on conventional government bonds

- **Index-linked bonds** – bonds where the coupon is pegged to a specific index. Usually this is the Consumer Price Index (CPI), or an alternative index which represents inflation. For this reason they can also be referred to as inflation-linked bonds.
- **Zero-coupon bonds** – bonds that do not make the regular coupon payments as with conventional bonds. Instead, the coupon-free bond is priced at a greater discount to par value than an otherwise identical coupon-paying bond.

USD/AUD  
NOK/JPY  
USD/CAD

Source: Davy as at 30<sup>th</sup> September 2015

## Corporate Bonds

Corporate bonds are issued by companies as a means of financing their ongoing operations, growth, or expansion into new markets. From the investor's perspective, corporate bonds generally have a greater risk of default than government bonds (in other words, in times of financial difficulty the company may find itself unable to make the interest payments as they become due or repay the capital at maturity). To compensate for the greater credit risk, corporate bonds usually come with higher yields than developed market government bonds, but this can also depend on their credit rating and whether they are investment grade or high yield bonds.

### Investment Grade Bonds

Bonds issued by companies deemed by ratings agencies to have the lowest risk of default. S&P and Fitch define these ratings as AAA to BBB- (equivalent to Aaa to Baa3 ratings by Moody's). Some examples of companies with investment grade bond ratings are Microsoft (AAA), Apple (AA+), Ryanair (BBB+) and Vodafone (BBB+).\*



### High Yield Bonds

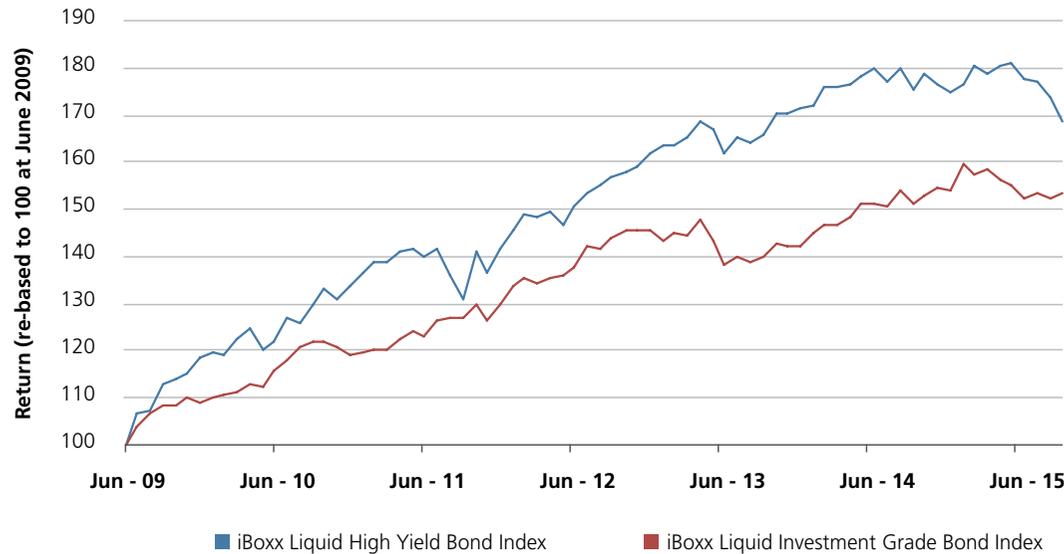
Issuers of high yield bonds, also called 'speculative grade' or 'junk' bonds, are deemed by credit ratings agencies to have a higher risk of credit default than investment grade issuers. S&P and Fitch define these as BB+ to C (equivalent to Ba1 to C ratings by Moody's). Examples of high yield bond issuing companies are Tesco (BB+), Levi Strauss (BB), MGM Resorts (B+) and Netflix (B+).\*



\* Credit ratings correct at 30<sup>th</sup> September 2015

Figure 3 shows the performance over the last five years of high yield bonds against investment grade bonds. While the outperformance over time is clear, it should be understood that this excess return comes with increased volatility and greater risk. In certain markets, such as during 2011, investment grade bonds can be seen to perform better than high yield bonds.

Figure 3: Performance of high yield bonds against investment grade bonds, 2009-2015



Source: Bloomberg as at 30th September 2015

**Variations on Conventional Corporate Bonds**

- **Convertible bonds** – bonds where the investor has the option to convert the bond to common stock at some date in the future.
- **Callable bonds** – bonds where the issuer (borrower) has the option to prepay the principal before the official maturity date.
- **Amortising bonds** – bonds which pay off a portion of the principal along with the coupon payments, similar to a mortgage arrangement.

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# The Yield Curve

The yield curve charts the yield of a bond against its maturity. Figure 4 compares the normal yield curve of several different issuers: the highest rated securities (UK and US in the example opposite) have the lowest yields, while the riskier issues (such as corporate debt and emerging market sovereign debt) have higher yields. Similarly, longer maturity bonds are usually compensated with higher yields than those with shorter maturity.

## Shape of the yield curve

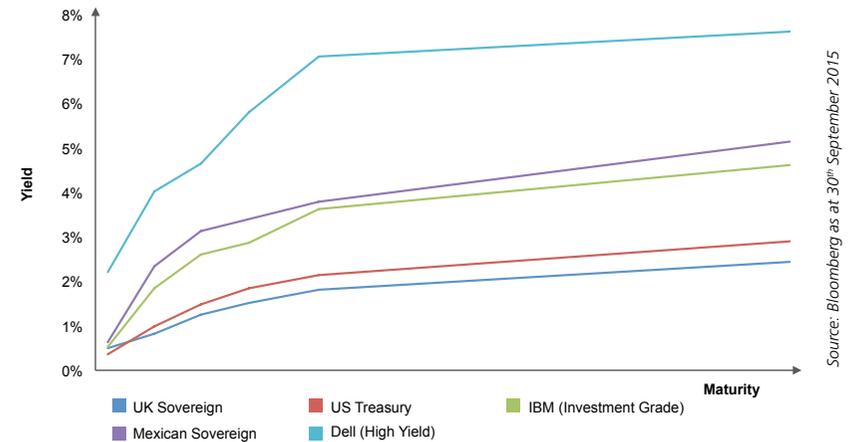
The yield curve generally takes one of three shapes depending on the future economic outlook:

- Normal (short-term yields < long-term yields), when expectations for future inflation and economic growth are higher.
- Inverted (short-term yields > long-term yields), when expectations for future inflation and economic growth are lower.
- Flat (short-term yields = long-term yields), when the outlook for inflation and economic growth are uncertain.

### The importance of the yield curve

- An inverted yield curve suggests lower expectations for inflation and weaker economic growth: in the 1990s, Duke University Professor Campbell Harvey found that inverted yield curves have preceded the last five US recessions.
- The steepness of the slope of the yield curve is also important as it gives an indication of the magnitude of these expectations. The curve will steepen and flatten as yields change in accordance with the economic landscape. The steeper the curve, the more pronounced the expected effect.
- Changes in the shape of the yield curve can have an impact on portfolio valuations, since it means some bonds become more or less valuable relative to other bonds.

Figure 4: Shape of the normal yield curve



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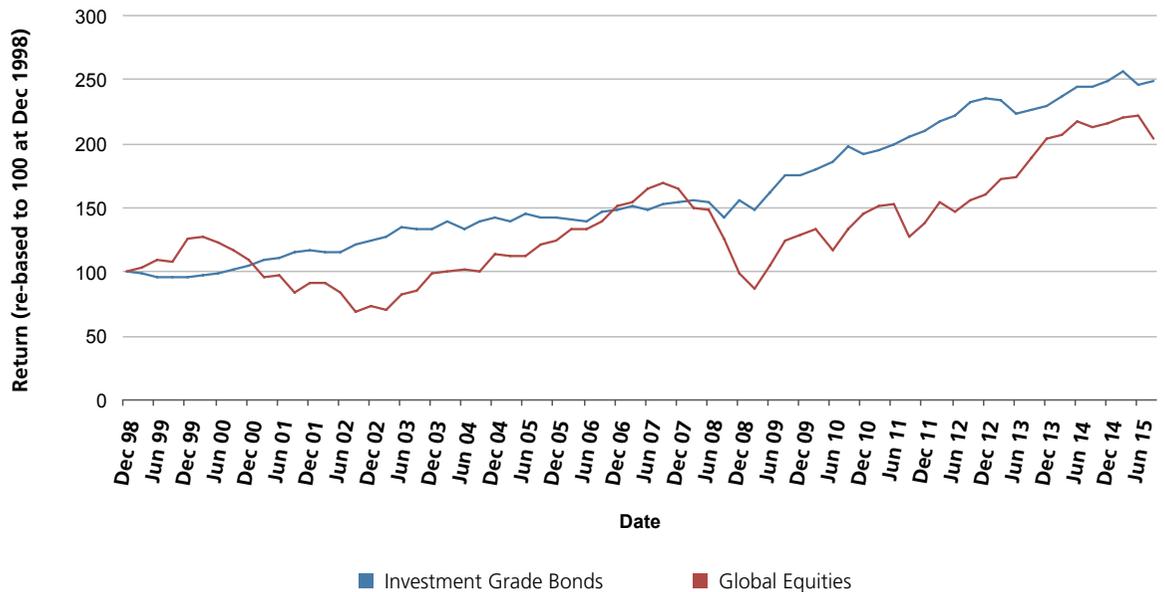
Why Invest in Fixed Income?

# Why Invest in Fixed Income? – Returns and Diversification

Figure 5 shows performance of the MSCI World Equity Index against the iBoxx Investment Grade Bond Index since its inception in December 1998. Equity and bond values are driven by different factors, so each will have its occasion to outperform the other. The correlation of these two indices is low at 5.4% over the period above, meaning that holding both assets in a portfolio can provide diversification benefits. The overall risk can be reduced without significantly impacting expected returns.

While bond returns are usually more modest than those of equities, they display much less volatility and are not as exposed to the same bear markets that can shock equities. This can be seen most notably during the equity crashes beginning in 2000 and 2007. Annualised volatility for the equity index over this period is 17.5% compared with 6.4% for the bond index.

**Figure 5: Performance of the MSCI World Equity Index against the iBoxx Investment Grade Bond Index since inception**



Source: Bloomberg as at 30<sup>th</sup> September 2015

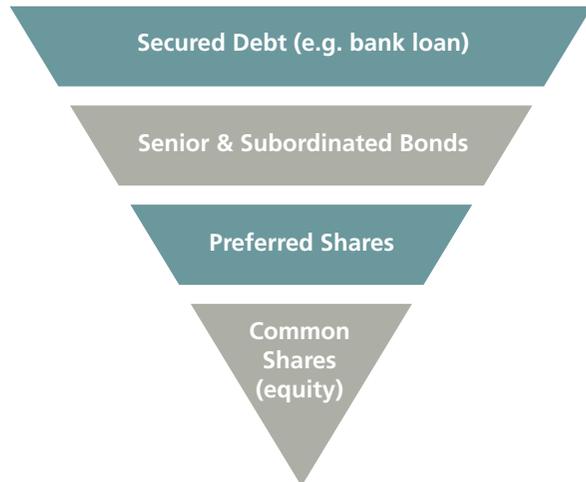
**Warning: Past performance is not a reliable guide to future performance. The value of your investment may go down as well as up. These products may be affected by changes in currency exchange rates.**

# Why Invest in Fixed Income? – Risk Management

Another advantage of investing in bonds is their relative safety. Government bonds are secured by their respective governments or central banks, and corporate debtholders have a much higher priority in the event of a company liquidation than common shareholders do. Figure 6 shows the order of seniority in the event of a company winding up.

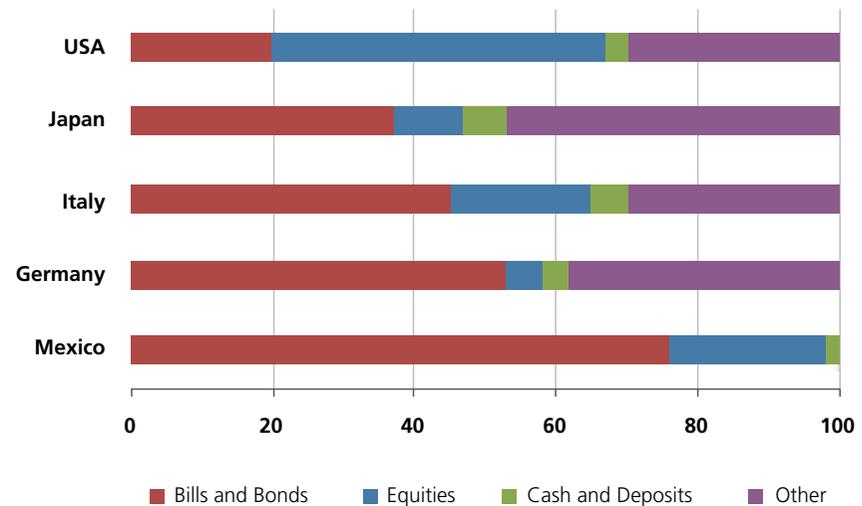
To this end, insurance funds and pension schemes wishing to preserve capital and grow over long time horizons are very large players in the fixed income markets. Figure 7 shows the asset allocation of pension funds across several OECD (Organisation for Economic Co-operation and Development) countries: the red bars represent allocation to fixed income instruments.

**Figure 6: Seniority of financing methods in event of company failure**



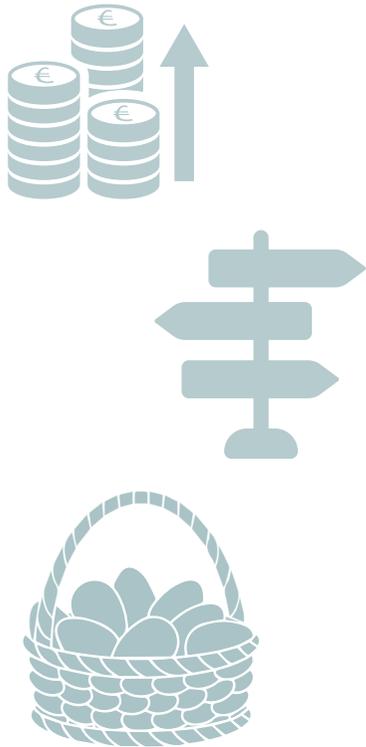
Source: Davy

**Figure 7: Asset allocation of pension funds across several OECD countries**



Source: OECD

# Why Invest in Fixed Income?



Factor	Description
<b>Returns</b>	Fixed income securities can provide a regular income stream which can be much more predictable than returns from equities or other assets.
<b>Diversification</b>	Historically, fixed income and equity markets have not moved in tandem. According to modern portfolio theory, this low correlation provides investors with diversification benefits.
<b>Risk</b>	Bonds are generally considered less risky than equities, since they are either backed by governments or, in the case of corporate bonds, are prioritised over equity-holders in the event of liquidation.
<b>Liquidity</b>	Bonds are frequently traded on established exchanges, so they are much more liquid investments than some other assets such as property or private equity.
<b>Strategy</b>	Bond prices are interlinked with interest rates and are therefore highly influenced by economic factors. This can be useful in implementing any strategic view on future rates.

Source: Davy



# 04

Risks

## Risks

So far we have outlined many of the advantages of investing in fixed income, but investors should also be aware that it is not without its risks. Even US government bonds, referred to as a proxy for a *risk-free* asset in investment terminology, are dependent on the financial stability of the Federal Reserve.

Some of the risks of investing in fixed income are summarised below. Potential investors should familiarise themselves with all risks before making any investment decision.

Risk	Description
<b>Credit Risk</b>	<p>Also known as 'default risk', this is the risk that the issuer will not be able to meet the interest payments or repay the principal value. Investors should expect a higher yield on their investment for taking on greater credit risk.</p> <p>Credit ratings agencies help to quantify the credit risk of various fixed income issuers.</p>
<b>Interest Rate Risk</b>	<p>This is the risk that the value of the fixed income investment will fall due to rising interest rates.</p> <p>Duration is a measure of interest rate sensitivity, and therefore helps to quantify the interest rate risk inherent in a fixed income investment.</p>
<b>Liquidity Risk</b>	<p>This is the risk of not being able to exit the investment in a timely manner should circumstances change. Most bond issues are traded frequently, and bond funds generally offer daily liquidity, but other fixed income instruments (such as mortgages and MBSs) may be less liquid.</p>

Source: Davy



05

How to Invest in Fixed Income

## How to Invest in Fixed Income?

There are three ways in which an investor can include fixed income in their portfolio:

### **1. Direct holding – easy to access but investor knowledge is required**

Purchasing a fixed income instrument directly, such as a bond, provides direct exposure to the markets, and the investor benefits from the regular income stream discussed earlier. However, it would be harder and more expensive to gain diversification using this method: many instruments would be required, and this would incur fees for each transaction.

### **2. Exchange Traded Fund (ETF) – increased diversification at a low cost but no control on instrument selection**

An ETF is a collection of instruments designed to replicate the performance of an index. The greatest benefit is automatic exposure to a diversified portfolio of bonds. ETFs also come with very attractive fees, and as they are traded on stock markets, they are very liquid. However, the downside to these instruments is the lack of control – by definition they must hold the instruments in the index, so their performance is fully tied to market upside as well as downside.

### **3. Investment fund – higher cost but benefit from the knowledge and skill of a professional fund manager**

The final option, a suitable investment fund, may be a better choice if the investor wishes to benefit from the expertise of a fund manager. Like an ETF, the fund is a diversified collection of underlying instruments, but the goal with an active fund is usually to *outperform* the benchmark index. The expectation of increased return comes with a higher fee, however, and there is no guarantee that an active fund will outperform.



06

Summary

## Summary

- Fixed income is a class of assets, dominated by bonds, which can provide a steady stream of returns. They are less volatile and less prone to large market crashes than equities.
- Bond returns display low correlation with equities and other asset classes, so they can provide diversification and downside protection.
- Bond valuations are driven by several factors, including credit ratings, interest rates, inflation expectations, economic growth potential and central bank intervention.
- Bonds can outperform stock markets over some time periods, however their returns are usually more modest than equities over time and they can still depreciate in value.
- The main drawbacks to investing in fixed income are:
  - › Values fall when interest rates rise (interest rate risk)
  - › Risk of issuer default (credit risk)
- Investors can access fixed income by investing directly or through a collective fund, either passive or active. Funds provide built-in diversification. Passive funds like ETFs benefit from lower fees, while active funds benefit from the knowledge and expertise of an experienced fund manager.



07

Glossary

## Glossary

Term	Definition
<b>Asset-Backed Security (ABS)</b>	A security where value is derived from a pool of underlying assets. This differs from an MBS as the security is collateralised by assets other than mortgages or property, such as car loans, credit card debt or company receivables.
<b>Amortising Bonds</b>	Bonds which pay off a portion of the principal along with the coupon payments.
<b>Bills</b>	Government debt securities maturing in less than one year.
<b>Bonds</b>	These are debt securities issued by corporations or government bodies.
<b>Callable Bonds</b>	Bonds where the issuer (borrower) has the option to prepay the principal before the official maturity date.
<b>Collateralised Debt Obligation (CDO)</b>	A special type of ABS where the pool of assets – mortgages, bonds or other loans – is packaged into discrete ‘tranches’. Each tranche carries a different risk profile, and senior tranches will have a higher priority over the junior tranches in the event of default on the underlying assets. Senior tranches will, therefore, have a higher credit rating and offer lower coupon rates than the junior tranches.
<b>Convertible Bonds</b>	Corporate bonds issued with an option to convert to common stock at some date in the future.
<b>Corporate Bonds</b>	Debt securities issued by companies. Corporate bonds fall into two basic categories: investment grade (low-risk, low coupon) and high-yield (greater risk, higher coupon).
<b>Coupon</b>	The regular interest payments made by a fixed income security.
<b>Credit Rating</b>	This is the grade which is assigned by a ratings agency to an issuer of debt instruments and provides a summary view on the debtor’s creditworthiness.
<b>Credit Ratings Agency</b>	An agency, such as Moody’s, Fitch or Standard & Poor’s, which rates a debtor’s ability to repay its interest payments and the likelihood of default.
<b>Credit Risk</b>	The risk that an issuer of debt will not be able to meet its debt payments. Also known as default risk.
<b>Default Risk</b>	See Credit Risk.
<b>Duration</b>	The sensitivity of a bond’s price to changes in interest rates.
<b>Floating Rate Notes</b>	Bonds which pay a coupon with a variable rather than fixed rate. The rate is usually tied to a money market reference rate plus a quoted spread, for example LIBOR +3%.

Term	Definition
<b>Gilts</b>	Debt securities issued by the UK government.
<b>Government Bonds</b>	Debt securities issued by governments and their central banks.
<b>Index-Linked Bonds</b>	Bonds where the income payment is related to a specific price index, usually the Consumer Price Index (CPI).
<b>Junk Bonds</b>	Another name given to riskier, speculative grade bonds (i.e. non-investment grade bonds). They are also referred to as high yield bonds due to the higher returns expected from the added risk.
<b>Maturity</b>	The lifespan of the investment.
<b>Mortgage-Backed Security (MBS)</b>	A security where value is derived from a pool of regular mortgages. The regular payments from the underlying mortgages are collected by the bank or MBS-issuing entity and distributed to the holders of the MBS, much like the coupon on a bond.
<b>Mortgage</b>	A debt instrument where the loan is secured against a house or other property. They are usually long term – up to 30 years or more – and the issuer may be able to seize the underlying property if the borrower is unable to meet the regular payments.
<b>Municipal Bonds</b>	Debt instruments issued by US states, municipalities or counties.
<b>Notes</b>	Government debt securities maturing in 1 to 10 years.
<b>Par Value</b>	This is the face value of a bond - the amount which will be repaid at maturity.
<b>Principal</b>	See Par Value.
<b>Treasuries</b>	Debt securities issued by the US government.
<b>Treasury Inflation Protected Securities (TIPS)</b>	US Treasury bonds that are indexed to inflation.
<b>Yield to Maturity</b>	The annualised return achievable on a bond, including coupon payments and any change in value until maturity.
<b>Zero-Coupon Bonds</b>	Bonds that do not make the regular coupon payments as with straight bonds. Instead, the coupon-free bond is priced at a much greater discount to par value than an otherwise identical coupon-paying bond.

## Appendix

Table 1 shows 10-year government bond yields across various countries for the calendar years 2010 to 2014:

**Table 1: 10-year government bond yields, 2010-2014**

	2010	2011	2012	2013	2014
<b>Greece</b>	12.5	35.0	11.9	8.4	9.7
<b>India</b>	7.9	8.6	8.1	8.8	7.9
<b>Mexico</b>	n/a	6.5	5.4	6.4	5.8
<b>New Zealand</b>	5.9	3.8	3.5	4.7	3.7
<b>US</b>	3.3	1.9	1.8	3.0	2.2
<b>UK</b>	3.4	2.0	1.8	3.0	1.8
<b>Ireland</b>	9.1	8.2	4.5	3.5	1.3
<b>Germany</b>	3.0	1.8	1.3	1.9	0.5
<b>Switzerland</b>	1.8	0.7	0.5	1.1	0.3

Source: Bloomberg as at 30<sup>th</sup> September 2015. All yields reported in local currency.

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