



Investors
Intelligence

An introduction to
**THE BOND MARKETS
AND FIXED INCOME
INVESTING**

Welcome to the bond markets!

A casual browser of the UK's financial media could be forgiven for believing that the only options open for private investors are equities, cash and pooled investments such as managed funds. This is far from the case, and the sterling fixed income markets offer investors a wide choice of assets ranging from the security of government-backed gilts through to more speculative, and higher yielding corporate bonds.

For the last few decades, these markets have largely been the preserve of institutional investors, with the players typically bank treasuries, insurance companies and fund managers dealing in multi-million pound units. Price transparency and liquidity for the individual investor has at times been poor. The situation, however, is changing. ISA and SIPPS are increasing the demand from private investors for income-producing assets. In addition to this, online execution platforms such as the LSE's new ORB platform are enabling brokers to obtain price discovery and execute small-size tickets (i.e sub £1 million) at commercial prices. We aim to help increase the understanding and usage of this important asset class through a combination of educational articles, analysis reports, model portfolios and other tools. Over the next few years, we expect the majority of private investors to have at least a small proportion of their portfolio held in fixed income assets. See ***"Why every portfolio should contain bonds"*** for more on this subject.

Please take the time to read through these guides at your leisure. You may also wish to become a regular reader of our ***"Bond of the week"***, which aims to lay out the features of a number of different bonds over the course of a year, as well as highlighting potential investment opportunities.

- **Types of Bonds:** Gilts, Eurobonds etc. What's in a name?
- **Why every Portfolio should contain Bonds:** The argument for bonds.
- **What are the risks?** How does holding bonds compare to cash, equity or other assets?
- **Credit Ratings explained:** Credit Ratings are a tool used by professional investors to help assess risk
- **Calculating the yield,** or what's my return?
- **Glossary:** A few useful phrases to bandy around with your broker

Investors Intelligence has further educational articles on the fixed income markets, explaining some of the more exotic instruments trading in the bond markets and features on the main players in this multi-billion pounds arena.

Please note, this guide is provided for educational purposes. Examples shown of prices, yields and credit ratings may have changed since the time of publication.

See more at: <http://www.investorsintelligence.co.uk>

Bond FAQ

Q: I am used to trading equities. Can private investors trade bonds?

A: Yes, but the nature of the instruments makes them better suited to a “buy & hold” strategy.

Q: Do I need a lot of money to trade bonds?

A: If you invest in comparatively small sums, the return may be diminished by dealing costs. Investments of below £1,000 are unlikely to be viable. Also, some bonds have minimum denominations. This is traditionally £1,000, although increasingly bonds are being issued with £50,000 minimums – an unwelcome development.

Q: I own various bonds in my portfolio, why are they not shown on this website?

A: There are thousands of Sterling denominated bonds. Not all of them are liquid and we are unable to display accurate price data for all of them. The bonds displayed are provided by Canaccord Genuity, based on considerations of quality and liquidity. To deal in bonds not shown on this list, please contact your broker.

Q: Are credit ratings displayed on the website?

A: At present, credit ratings are not displayed on the website, however coverage and opinion of the credit quality of individual issues is featured in “Bond of the Week”. For more about credit ratings see “Credit Ratings Explained”.

Q: Where can I look up credit ratings?

A: Private investors can look up the rating of most bond issuers on <http://www.moodys.com/> and <http://www.standardandpoors.com/>. Also Fitch IBCA (www.fitchratings.com).

Q: Can I put bonds in my ISA account?

A: Inland Revenue rules state that in order to be eligible for holding within an ISA, a bond must fulfil the following criteria: firstly the bond must have a life of five years or more at the time of purchase (without a holder’s option for early redemption). Secondly, the bond should be listed on a recognised stock exchange, or the bonds must be issued by a company which is itself listed (or a major subsidiary thereof).

Q: Can I put bonds in my SIPP?

A: Yes, the majority of SIPP schemes allow you to hold bonds. There is no theoretical barrier, however the bond must be listed (note; all the bonds in our “universe” are).

Q: I have heard that equities provide a better return than bonds. Is this true?

A: Yes, over the longer term, equities have typically outperformed bonds. However, there will be periods of time when bonds outperform equities (such as 2000-2003).

Q: If I sell my bonds before the coupon pays out, will I miss out on the interest?

A: No, you will receive a pro-rata payment known as the “accrued interest”. Conversely, if you buy a bond half way through its coupon period, you will have to compensate the previous holder. This way, the “clean” trade price of the bond is kept separate from the gradual roll-up of interest.

Q: What about income tax?

A: Income from bonds is paid gross, but is taxable and thus should be recorded on your tax return. If you hold bonds in an ISA or a SIPP, you will be able to benefit from tax free income.

Q: And capital gains tax?

A: All Gilts are free from GCT. The majority of Sterling bonds are free from capital gains tax, providing that they are “Qualifying Corporate Bonds”. Broadly speaking this means most bonds apart from convertibles, however it is best to check if any individual issue is disqualified from this. Note, caution should also be used with low or zero coupon bonds, where the capital gain may be viewed as income.

Q: And stamp duty?

A: The situation is confused. No for gilts and no for investors holding bonds via the Euroclear system. In some cases, HMRC charges “stamp duty reserve tax” on bonds delivered via the Crest system.

Q: Does the Fixed Income Investor model portfolio use real money?

A: Yes; we track the performance of a £100,000 portfolio, started in January 2007.

Q: What does subordinated mean?

A: A subordinated bond is an issue which carries less seniority in the “pecking order” of the company’s balance sheet. When times are good, this will make little difference, but in the event of the issuer hitting hard times, the coupon payment on certain classes of subordinated debt may be waived (see below). Also, if the issuing company is forced into liquidation, subordinated debt holders will only be paid out once senior debt has been repaid (note: sub holders will, however, rank ahead of equity holders). The ranking is as follows (with guidelines of typical features):

- Senior Debt: this is the best
- Lower Tier 2: No coupon deferral. The next best after senior debt.
- Upper Tier 2: Coupon deferral, but cumulative.
- Tier 1: Coupon deferral, non cumulative.
- Preference Share. Generally, coupon payment can be waived, non-cumulative.

Q: Is the yield shown annualised, or to the redemption date?

A: The yield shown is annualised. This means that a 6 month bond showing a yield of 10% will provide a total return of 5%. Likewise, a 10% bond with two years to run will provide a total return of 20%.

Q: When are the coupons paid?

A: Coupons are paid on the anniversary of the redemption date. The majority of non-gilt sterling bonds pay annually. Gilts pay semi-annually (apart from War Loan, which pays quarterly)

Q: Where can I find out the full details of a bond so that I can check its level of security, such as priority ranking, restrictions etc?

A: The full details of a bond are available on the prospectus. We have loaded many of these onto the website and continue to add to this library as time goes on. Also, these documents can normally be obtained from the IR dept (and often the website) of the issuing company. Alternatively, contact your broker, who should be able to download a copy for you.

Bond Glossary

BS	Asset backed securities. A bond backed by financial securities such as credit card receipts, loans, leases etc.
Accrued Interest	The theoretical (ie not yet paid) amount of interest that the bond has earned since the last coupon payment.
Basis Point (BP)	One-hundredth of one percent. Used to describe small increments of yield and price. For instance, a quarter of 1% would be expressed as 25 basis points or bp.
Bulldog	A Sterling bond issued by an overseas borrower into the UK domestic bond market. Now rare.
Bund	German Government Bonds
Call	A feature where the issuer has the option to redeem the bond early.
Cap	A maximum coupon
CD	Certificate of Deposit. A short-term note issued by a Bank.
CDS	Credit Default Swaps: a contract offering protection against the default of a given issuer. The premium charged will be closely related to the “spread” on the bond and is a measure of perceived risk.
Clearstream	The Deutsche Borse settlement and custody system.
CMO	Collateralised Mortgage Obligation
Collar	A combination of a minimum and maximum coupon features.
Convertible	A bond that may be converted into equity (or another asset).
Coupon	The annual (or other) regular interest payment from a bond.
Credit Rating	The creditworthiness of a bond, as determined by several credit rating agencies. AAA is best, C the worst.
Crest	The central securities depository for UK and Irish markets. Certain bonds can also be settled in Crest.
Cross default	An issuer failing to pay one debt may be often viewed as in default on all outstanding debt.
Default	The issuer failing to pay a coupon or redemption payment. See also cross default.
Dirty Price	The price of a bond plus any accrued interest outstanding.
Discount	Where the price of a security is below its principal amount. Large amounts are known as “deep discounts”.
Discounted Margin	Calculation used by market professionals to establish the spread over LIBOR for an FRN. Also known as DM. DM Discounted Margin; used to calculate the spread of LIBOR for an FRN
Duration	The weighted average of a bond’s cash flows. Used as a measure of the bond’s sensitivity to interest rate shifts.

Bond Glossary - continued

Eurobond	A bond issued into the international capital markets, may be denominated in any currency.
Euroclear	Large custodian used by all professional traders for holding Eurobonds and other securities.
Floor	A minimum coupon
FSA	The UK Financial Service Authority
FRN	Floating Rate Note
Gilt	British Government Bonds
Global	A bond tradable on both the US and the international markets.
Investment Grade	Bonds rated above BBB
ICMA	The International Capital Markets Association. The trade body for bond dealers.
JGB	Japanese Government Bond Junk Bond A bond rated below investment grade. Generally BBB- or lower.
LIBOR	The London Interbank Offered Rate; the wholesale lending rate.
Maturity	The redemption date of the bond
MBS	Mortgage backed securities. Bonds backed by mortgage loans.
Moody's	Major international credit rating agency
MTN	Medium Term Note
Nominal	The face value of the bond
OAT	French Government Bond
Perpetuals	Bonds with no fixed maturity date
PIBS	Permanent Interest Bearing Securities. Issued by many UK Building Societies
Preference (shares)	A type of equity, often bearing a fixed coupon. NB, taxed as shares and subject to stamp duty.
Premium	When the price of a security is greater than its principal amount (see discount).
Prepayment	A feature on MBOs and some asset-backed instruments allowing for full or partial early redemption.
Put	A feature allowing the bondholder to redeem the bond ahead of maturity at a specified date or dates.
Redemption	The maturity date of the bond.

Bond Glossary - continued

Running Yield	The coupon payment adjusted for the price.
S&P	Standard & Poors, a major credit rating agency.
Seasoned	Certain US accounts may not purchase a bond until it is trading freely in the secondary market or “seasoned”.
Senior Debt	The highest ranked obligation of a company
Simple Margin	Simple calculation used to establish the spread of LIBOR for and FRN.
Sinking Fund	Where the issuer has an obligation to repurchase a given number of outstanding bonds.
Spread	The difference between the yield of a bond (typically corporate) and the yield of a benchmark such as a UK Gilt .
Strip	A component of a bond such as a coupon or redemption payment which trades independently from the bond.
Subordinated	Debt ranked below senior debt.
Swap	A financial transaction where cash flows are exchanged, ie swapping fixed income from a bond to a floating rate.
Tranche	Bond may be issued in several blocks, known as tranches.
Yield Curve	The relationship between yield and maturity. Shows the market’s future expectation of rates.
Yield to worst	The yield allowing for the potential exercise of any issuer options.
YTM	Yield to maturity
Zero (coupon)	Bond without coupon, generally issued at discount

Building a portfolio

Building a bond portfolio for income

At the time of writing, interest rates are plumbing new lows and investors need to be creative to secure income from their money. The bond market remains a good source of assets for those seeking yield, but it is important for investors to consider that purchases of bonds should ideally be made as part of a structured portfolio plan, rather than a few random acquisitions. A well-structured portfolio holds many advantages over a single security holding, offering:

- Assets selected to present a suitable level of potential risk & reward for the investor
- Diversification across sectors and classes
- Regular income flows
- Typically, lower volatility than its individual components

Before embarking on the construction of a bond portfolio, an investor should consider what he or she wishes to achieve, and indeed, what he wishes to avoid!

- **Risk:** In the current uncertain economic environment, investors who require absolute security of the return of capital should stick to Gilts and bonds issued by major sovereigns and their agencies (such as the World Bank and the European Investment Bank). More risk-positive investors may wish to lock in the higher yields available from bank, corporate and other bonds.
- **Time horizon:** How long will the money be invested? If the funds are required for a specific purpose, such as children's school fees, the maturities of the holdings can be tailored to these dates. Alternatively, retirees may wish to lock in income for the years to come and will swing their portfolio towards longer-dated issues.
- **Income:** Is the portfolio for income, or will the cash flows be re-invested? Suitable selections should be made to ensure both the amount and the periodicity of the coupon payments (typically annual for corporate bonds, semi-annual for gilts).
- **Tax:** bond portfolios held within ISAs or SIPPs are generally free of taxes, but investors should review their own personal situation.

The Ladder Structure

One of the most useful tricks of the trade for running a bond portfolio is the "ladder" structure, where bonds are purchased with staggered maturities ranging from short to long. Ideally, a portfolio of ten bonds should have a maturity roughly every year. This keeps the cash flow rolling back in to the portfolio and helps negate the influence of a rising rates scenario on the portfolio, enabling the redemption proceeds to be re-invested into higher coupon bonds.

Below, I have laid out two model portfolios, both using this approach.

Note; These model portfolio were constructed in February 2009. Price, yields and credit ratings shown are those in force at that time. Model portfolio constructed at a later date may utilise different bonds and yields/prices etc will vary over time).

Two Model Portfolios

(1) Gilt and AAA-rated

This portfolio is an illustration of a selection of bonds for a lower risk-investor. Due to the high credit quality of the holdings, all of which are rated AAA, a lower level of diversification can be used (three or four holdings). However the portfolio does use the “ladder” structure to keep cash moving back into the portfolio and has coupons paying in March, June, July, Sept and Dec thanks to the semi annual payment made by the two Gilt holdings.

Bond	Price	Running Yield	Yield to redemption	Credit Rating
Gilt 3.25% Dec 2011	104.5	2.9%	1.61%	AAA
EIB 4.375% Jul 2015	106.7	4.1%	3.17%	AAA
Gilt 4.5% March 2019	108.68	4.1%	3.47%	AAA
Average			2.75%	

Note: The running yield is based on the effective coupon received by the investor. The yield to redemption takes into account any capital gain/loss over the holding period to redemption.

(2) The Mixed Bond Portfolio

This portfolio aims to straddle a range of credit qualities. The risk is higher than that of the portfolio above. Greater volatility should be expected, possibly even a default. However, the average yield is higher and the portfolio also has the potential for recovery/capital appreciation.

Bond	Price	Running Yield	Yield to redemption	Credit Rating
Bank of Scotland 4.375% Dec 2009	100.5	4.4%	3.76%	AA-
Merrill Lynch 5.125% Sept 2010	99.95	5.1%	5.07%	A+
Allied Domecq 6.625% Apr 2011	101.8	6.5%	5.73%	BB+
Imperial Tobacco 6.875% 2012	104.2	6.6%	5.37%	BBB-
KFW 4.875% Jan 2013	108.05	4.5%	2.66%	AAA
Marks & Spencer 5.625% March 2014	96.2	5.4%	6.42%	BBB-
Kingfisher 5.625% Dec 2014	86.65	6.5%	8.45%	BBB-
British Telecom 8% 2016	109.45	7.3%	6.32%	BBB+
Tesco 5.5% Dec 2019	107.05	5.1%	4.57%	A-
UK Gilt 4.25% Dec 20127	100.5	4.2%	4.21%	AAA
Average			5.26%	

Finally, some golden rules:

If buying corporate and non Gilt bonds, aim for a minimum of ten holdings, ideally of roughly equal size. This means that any single default will not be a disaster for the portfolio.

Avoid always buying the cheapest, highest yielding bond on the list; you will end up with a portfolio of junk!

Try to spread purchases across both a range of sectors and a range of credit qualities and select bonds that pay coupons across the calendar.

When possible, to buy bonds at prices below “par” in order to preserve capital. However, good bargains can often be found in bonds trading above 100.

Readers interested in learning more about running a bond portfolio may wish to view the monthly Model Portfolio updates on this website and the regular “Bond of the week” feature, found in the Research section of the website.

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Buying bonds

If you are new to buying bonds, we have prepared a short guide to the practicalities of dealing in, and owning these instruments.

First..... select and identify your bond.

Once you have determined which bond or bonds to buy according to appropriate criteria of maturity, credit quality and yield (see Types of Bonds for more on this subject), it is important to correctly identify the security to prevent errors in dealing or other misunderstandings. When dealing in equities this process is usually fairly easy, and most equities will only have one class of share, and one ticker. Not so bonds, and each issuer may have several bonds trading in the market at any given time. Market convention describes bonds in the following notation: Issuer, coupon, maturity. Thus, the Tesco bond illustrated below would be described as the “Tesco five point five percent 13th December 2019”.

Ccy	Issuer	Coupon	Date	Life	Price	Yield
GBP	Tesco Plc	5.5%	13 Dec 2019	9.75 yrs	105.5	4.72%

What will the final cost be?

The price that you see on the screen will typically be around 100, perhaps ranging in the 80 to 120 area. This price is expressed as a percentage of the nominal value (i.e. the redemption value) of the bond. This is known as the “clean” price of the bonds and on this basis an investor buying £10,000 of bonds at a price of 99.30 will pay £9,930. However, we must also consider the factor of any accrued interest (see below).

What is accrued interest? If an investor buys a bond on its first day of issue, or just after the last coupon payment, the price seen on the screen will be the full price. However, when buying a bond half way through its coupon period (for instance 6 months after the last coupon payment for an annual bond), there will be an adjustment for the income that has “accrued” to the bond. This is standard practice in the bond market and strikes a fair balance between buyers and sellers, as well as neatly differentiating between cash flows from income and those from capital gains.

With the majority of non-gilt bonds, the basis of this accrued interest is calculated on a “30/360” basis. This assumes that each month has 30 days, and each year has 360 days. Thus, let us assume that we are buying £10,000 nominal of the Tesco 6% 13 June 2008 as of today’s date (12th December 2007). The market price is 99.80 and the trade is for settlement in three days time

£10,000 nominal of Tesco 5.5% 13 Dec 2019 @ 105.5 = £10,550

The settlement date is the 12th March 2010. Thus, we have to calculate how much accrued interest that we should reimburse the seller for. The bond pays a coupon annually and the last payment was the 13th Dec 2009.

Period 13 Dec through to 12 March = Total 89 days on a 30/360 basis.

So, the accrued interest will equal 29/360 days times the annual coupon, times £10,000 nominal, or:

$30/360 \times 5.5/100 \times £10,000 = £44$

Thus, our contract note will show roughly the following:

£10,000 nominal of Tesco 5.5% Dec 2019 bonds @ 99.80	=	£10,550
Accrued interest	=	£44
Commission	=	£25
Total	=	£10,619

Note: The price shown on the screen will not include accrued interest and will be known as the “clean price”. The effective price that you pay, including any accrued is known as the “dirty price”.

Accrued interest for gilts

The Debt Management office produces a detailed document on calculating the accrued interest on gilts which can be downloaded in pdf form by clicking [here](#). This covers the subject in some detail, including the more complex calculations performed on index linked gilts.

At the risk of oversimplifying the subject, the main variations from the calculation process shown above are as follows:

- 1) Most gilts pay coupons twice a year (the majority of non gilts pay annual coupons). The exceptions to this rule are some of the undated bonds such as 2.5% Consols.
- 2) The accrued interest is calculated on “actual/actual” basis, where the true number of calendar days is used to determine the apportionment of the dividend.

Selling your bonds

The best strategy for investing in bonds is typically that of “buy and hold”. Remember, unlike equities there is no need to sell in order to realise your investment; capital will be returned to you on maturity.

However, from time to time all investors will need to sell a bond in order to raise capital, or perhaps in order to switch into some more tempting investment opportunities elsewhere. In the event of this, bonds can be sold back into the market. Please note that this market price may be higher or lower than your purchase price and may impact the return that you receive on the investment.

When selling a bond, the accrued interest must also be factored into the calculation. In this case, any unpaid interest will be paid over from the new buyer to the seller, effectively the reverse of the scenario illustrated above.

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Calculating the yield

Investors will generally buy a bond for two reasons. The first is to lock-in a known future income stream. The second is to attempt to benefit from rising bond prices. But what would cause the value of a bond to rise? As with all traded assets, it will be down to our old friends, supply and demand. There are two main variables affecting the price of bonds, the first being interest rates and the second the perceived credit quality or risk of default for the bond. Let's consider the effect of the former on bond prices. As interest rates fall in the money markets, a bond paying a fixed rate of interest every year will become increasingly sought after by investors. Conversely, rising interest rates in the money markets, perhaps accompanied by inflation, will make the fixed income stream unattractive to investors and the market price of the asset will fall. This relationship between price and yield is the key to understanding the factors moving the fixed income markets.

Price & yield.

The key to understanding the return on all fixed income instruments is to view a bond as a series of discounted cashflows. At the start of the period, the investor pays out cash to purchase the bond. Over the course of the bond's life, the investor will then receive several payments, usually one or two a year from interest payments, known as coupons and a final repayment at the end of the bond's life-span, known as redemption. In this respect, bonds differ fundamentally from equities, where the future cashflows are unknown.

Given that the future cashflows are known quantities, the relationship between the price of a bond and the yield received by an investor is governed by mathematical formulae. We are going to look at three methods of analysing a bond's yield; the income yield, the simple yield and the yield to maturity or YTM.

Income yield.

Let's take an example of a Gilt, the UK Treasury 5% 2014. This bond pays a 5% coupon (divided into two semi-annual payments) and matures on the 7th September 2014. Thus, if we were able to buy the bond at the face value of 100% or "par", we know that we would receive an income 5% per annum on our investment until maturity.

But what would happen if we paid less than par for the bond? Let us assume that we purchase the bond for 95% of face value. Our income (or "running") yield would be:

$\text{Par/purchase price} \times \text{coupon} = \text{running yield}$

Or $100/95 \times 5\% = 5.26\%$ per annum.

At the time of writing this article, the UK Treasury 5% 2014 is trading at a price of 110. This premium to par has the effect of reducing the bond's income yield as follows:

$100/110 \times 5 = 4.5\%$ per annum

The income or running yield (sometimes also known as the flat yield) does not take into account any profit or loss made by holding the bond to redemption, and simply assumes that the investor will be able to sell the bond at the same price that he or she purchased it for. For a more accurate measure of yield, we must turn to the Yield to Maturity, the standard calculation employed by market professionals, also sometimes known as the redemption yield.

Before we turn to the more complex (and more accurate) Yield to Maturity, it is worth considering the "simple yield". This is a good rough guide to the return available on a bond, and can often be worked out in one's head.

Yield to Maturity (YTM)

With longer dated bonds, the same theory applies, but to gain a more accurate measure, we must discount each future cash flow according when it will be paid. The formula used to calculate this is known as the **yield to maturity** (YTM) and is effectively the internal rate of return on the investment, allowing for each and every cash flow. The calculation assumes that the interest payments received on the bond can be reinvested at the same rate, although this may not be the case in real life.

The formula for this calculation is somewhat of a handful, and certainly not one for mental arithmetic. For readers who enjoy a challenge, it is:

$$\text{Price} = \text{Coupon} * 1/r [1-1/(1+r)^n] + \text{Redemption}/(1+r)^n$$

Luckily for us, YTM's for Sterling bonds are published on this website! See the "**Bond Prices and Yields**" section for more information. What is more, we have developed an online yield calculator which you can access from the top navigation bar (just click on **Yield Calculator**).

Alternatively YTM's may be calculated by using the YIELDMAT function on Microsoft Excel or on a dedicated financial calculator such as a Hewlett Packard 12C or 17B. Online calculators provide another easy route to determining the value of a bond, with an excellent example to be found in the "Bonds" section of Yahoo Finance (<http://bonds.yahoo.com/calculator.html>).

Why does the price of some bonds move more than others?

Using the example of our theoretical 4% bond with 12 months left to run until maturity, a 1% shift in the yield demanded by investors will produce a change in price roughly equivalent to 1%. In the case of a longer dated bond, with many more years to run until redemption, the price move will be considerably more. This relationship between a given change in yield and the resulting change in price is known as the duration of the bond. Duration is based on the weighted average of the cash flows and will have a considerable effect on the volatility of the asset over a range of different interest rate scenarios. Let's take three UK Gilts as an example (calculations based from March 2010).

Bond	Duration	2% YTM	3% YTM	4% YTM	5% YTM
Treasury 5% 2012	1.9	105.8	103.8	101.9	100
Treasury 4.75% 2015	4.89	114.22	108.8	103.7	98.8
Treasury 4.75% 2020	7.9	124.8	115	106	98.05

Note that the higher the duration of the bond the greater the price move shown per change in yield. Duration is governed by the length of time to maturity and the size of the coupon, in effect, the average period of all cash flows. A long bond with a low coupon will have the greatest duration, a short bond with a high coupon will have the lowest duration. Investors looking to benefit from falling yields should look to add duration to their bond portfolios, defensive investors, or those envisioning a rising interest rate scenario will look to reduce.

And how about corporate bonds?

The relationship between price and yield for a corporate bond is exactly the same as a government bond, and the same yield calculators can be used for both. However, compared to a super-safe government bond, investors will demand an additional return for lending money to corporations due to the risk of default. This premium over the equivalent government bond yield is known as the spread.

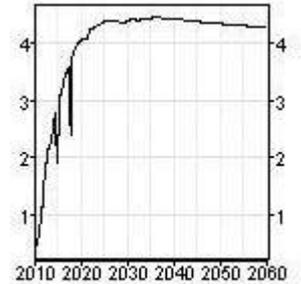
Non-government bond spreads vary greatly, with the highest quality banks and supranational agencies (such as the World Bank) trading at only a tiny fraction over governments while the debt of smaller, risky or unfashionable companies may trade at a level returning several percent or more over a government bond of an equivalent maturity.

Remember, corporate bond spreads reflect the market's view of the creditworthiness of the issuer. This opinion can change quickly, adding price volatility to this type of bond over and above that determined by interest rate fluctuations.

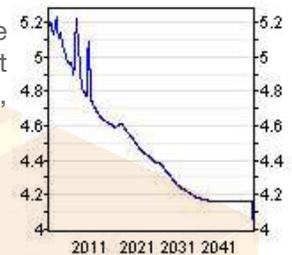
The yield curve.

Both government and corporate bonds are issued in a variety of maturities, ranging from super-short 3-month treasury bills and corporate paper through to 30 year or even undated or “perpetual” bonds with no final maturity.

Interest rates change over time, and bonds of different maturities will have different yields, reflecting the market’s expectations for future interest rates. Generally, investors will require an incremental yield for longer dated securities (see illustrated chart of UK yield curve as of March 2010, right). This means that long bonds generally yield more than short bonds. This is known as a “positive yield curve” and is the usual state of play in the markets. If investors expect interest rates to rise in the future, the price of longer dated bonds will fall, pushing up yields at the long end of the curve. This is known as a “steepening” of the yield curve.



Alternatively, the perception of falling rates can lead to an “inverse” yield curve, where investors scramble to lock in fixed rates at the long end, pushing yields down below current money market rates. This is the situation reflected by the UK Gilt yield curve illustrated (left), seen as of December 2006.



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Index Linked Gilts

It is often quoted that the main risk that bond investors face is that of inflation. This is broadly speaking true. A bond investor purchases an asset with known forward stream of cash flows. If the purchasing power of those cash flows is eroded over time, the investor will lose out.

One might argue that this is equally true of equity and property investments, but these types of investments have a degree of natural hedge against inflation typically dividends and rental incomes rise with inflation over time.

From the point of view of pension fund managers and trustees, hedging against the risk of inflation has always been one of the main priorities. Funds of this nature have long-term liabilities, often linked to inflation or earnings and thus have a strong appetite for inflation-linked assets to put on the other side of the balance sheet. Given the demand from the UK's pension fund industry, the creation of index linked bonds was not surprising. Perhaps what was surprising was who was the first government off the block to issue them none other than our own HM Treasury. 1981 saw the first issue of UK index-linked gilts (commonly known as "linkers") hit the market. Amazingly, the more sophisticated US Treasury market did not follow suit with its own index-linked securities (Treasury Inflation Protected Securities or TIPS) until 1997.

Let's take a look at that first index linked security – £1 billion of the **Treasury 2% Index-linked 1996** was issued on the 27th March 1981 following the announcement of this new class of security by the then chancellor Geoffrey Howe in the previous budget. Purchase of the instrument was restricted to pension funds and the like, although this restriction was sensibly removed the next year in order to improve the marketability of the security.

So how did this security work? The basic principle was very simple. All future cash flows (both the semi-annual coupon and redemption payments) were to be linked to the **UK's Retail Price Index (RPI)**. Thus, should the value of the RPI double by the bond's maturity date, the holder will receive coupons at the rate of twice the initial 2% coupon and a redemption payment* of twice the "par" (100) redemption price.

The technicalities were a little more complex than conventional gilts. It was important to ensure that the next payable coupon was a known quantity in order to facilitate secondary market trading (particularly the calculation of accrued interest). In order ensure this, an eight-month lag was applied to the indexation process. All subsequent payments were then adjusted to by the ratio of the 8-month lagged RPI to the "base" RPI, the latter being determined by the value of the RPI 8 month's prior to the launch. This system worked well enough, although cynics will point out these bonds offer no protection against inflation for the last eight months of its life.

If we take a look at the Treasury 2% 2006 Index Linked gilts, issued in July 1981, here are the actual payments received by investors holding the bond from issue to maturity, based on a £100 nominal value.

Date	Payment	Date	Payment	Date	Payment
19-Jan-1982	£0.92	19-Jan-1991	£1.81	19-Jan-2000	£2.38
19-Jul-1982	£1.11	19-Jul-1991	£1.87	19-Jul-2000	£2.39
19-Jan-1983	£1.17	19-Jan-1992	£1.92	19-Jan-2001	£2.45
19-Jul-1983	£1.18	19-Jul-1992	£1.95	19-Jul-2001	£2.47
19-Jan-1984	£1.21	19-Jan-1993	£2.00	19-Jan-2002	£2.50
19-Jul-1984	£1.24	19-Jul-1993	£2.01	19-Jul-2002	£2.49
19-Jan-1985	£1.28	19-Jan-1994	£2.03	19-Jan-2003	£2.53
19-Jul-1985	£1.30	19-Jul-1994	£2.03	19-Jul-2003	£2.56
19-Jan-1986	£1.37	19-Jan-1995	£2.08	19-Jan-2004	£2.61
19-Jul-1986	£1.38	19-Jul-1995	£2.09	19-Jul-2004	£2.62
19-Jan-1987	£1.40	19-Jan-1996	£2.15	19-Jan-2005	£2.68
19-Jul-1987	£1.42	19-Jul-1996	£2.15	19-Jul-2005	£2.72
19-Jan-1988	£1.46	19-Jan-1997	£2.20	19-Jan-2006	£2.76
19-Jul-1988	£1.48	19-Jul-1997	£2.21	19-Jul-2006	£2.78
19-Jan-1989	£1.52	19-Jan-1998	£2.25	19-July-2006	£278.63 redemptn
19-Jul-1989	£1.58	19-Jul-1998	£2.29	19-Jan-1990	£1.65
19-Jan-1999	£2.35	19-Jul-1990	£1.70	19-Jul-1999	£2.36

The first point to note is that the first sum received of 92p is less than the 100p one might expect from a semi-annual payment of the 2% coupon. My first assumption was that this was due to a short-lived spell of deflation. However this was not the case. The first coupon was fixed at the time of issue and took account of the fact that the bond was part-paid in three installments (March, August and September), reflecting the delayed investment process.

From then on, the process was straightforward. The “base” RPI was set from data calculated eight months before the issue. In the case of this partly-paid issue the figure eight months prior to July was applied, this being 274.1 on the 1975 rebased data*. The amount payable for the second coupon in July 1982 was then calculated by applying the appropriate RPI data point, in this case the RPI eight months before July 1981 and comparing it to the base. Thus, for £100 nominal of the bond:

RPI (July 1981 – eight months) X semi annual coupon (1%)

Base

Or $306.9 \times 1\% = \text{£}1.11$ (coupon payment are rounded down to the nearest penny)

274.1

And so on and so forth. Each semi-annual payment is adjusted for the RPI. This was almost always upwards but I note that July 2002 saw a very small downward move. Illustrating the point that indexation on these bonds is not “upward only”.

Finally, the holders received the maturity payment of £278.63, some 14 years after the bond launched and in 2006 the world’s first index-linked bond was retired. How good did this protection against inflation prove to be? Certainly, the holders enjoyed the security of quantifiable hedge against the RPI but it might be worth considering that conventional gilts offered yield of 9-11% in the early 1980’s, a figure that would have considerably outperformed the total return seen on our index linked bond.

Consider also that the so-called inflation link may not have been perfect. If I remember correctly a pint of beer could be had for about 65p in most areas; perhaps 95p in a more fashionable establishment. By 2006 I’d say that £3 was the norm.

Moving back to the world of bonds, numerous “linkers” followed the first issue, with the new asset class finding strong demand from the pension fund industry. Many examples of these “mark I” index linked are still trading in the markets and their relatively simple calculation basis makes them a popular choice. At the time of writing, the following index linked gilts were available for trade on the Bondscape platform. Note the high prices of these instruments, a result of the fairly distant issue date and the subsequent rise in the RPI.

UK Index Linked Gilts

Ccy	Update	Issuer	ISIN	Coupon	Maturity	Life	Price	Yield
GBP	12 May 2010	UK Gilt I-L Stk	GB0009063578	2.5	23 Aug 2011	1 yr 3 mths	309.33	0.73
GBP	12 May 2010	UK Gilt I-L Stk	GB0009036715	2.5	16 Aug 2013	3 yrs 3 mths	272.255	1.94
GBP	12 May 2010	UK Gilt I-L Stk	GB0009075325	2.5	26 Jul 2016	6 yrs 2 mths	304.305	3.15
GBP	12 May 2010	UK Gilt I-L Stk	GB0009081828	2.5	16 Apr 2020	9 yrs 11 mths	307.25	3.69
GBP	12 May 2010	UK Gilt I-L Stk	GB0008983024	2.5	17 Jul 2024	14 yrs 2 mths	270.21	3.88
GBP	12 May 2010	UK Gilt I-L Stk	GB0008932666	4.125	22 Jul 2030	20 yrs 2 mths	257.975	3.85
GBP	12 May 2010	UK Gilt I-L Stk	GB0031790826	2.0 26	Jan 2035	24 yrs 8 mths	157.825	3.82

“Type-two” linkers

Since the 1981 launch of the original UK index-linked gilts, various developments occurred in the international markets, notably the emergence of the US Treasury Inflation Protected Securities or “TIPS”. The US had followed a model established by the Canadian government in the structure of its index-linked bonds and this gradually became the norm in the international capital markets and in 2005 the UK government followed suit (as indeed did many other governments) with the establishment of “Canadian style” index-linked gilts.

These new type of linkers were not, as many gilts dealers expected at the time, issued with a side of maple syrup. The “Canadian style” structure referred to a three-month lag structure for the calculation of coupons and redemption amounts. Arguably, this is a fairer method of calculation, given that the shorter lag means a tighter relationship between the index and the security. However, it does make the calculation of the accrued interest from the six-monthly coupons fairly tricky. An estimate has to be made, using the “index ratio” a factor published daily by the DMO.

The next complexity for investors to get their heads round is the pricing convention. “Old-style” linkers trade on an inflation-adjusted basis. As we can see from the table above, this means that the cumulative effect of inflation has increased the secondary market price of these bonds to two or even three times their original issue price. However, the “type two” or “Canadian-style” linkers trade on what is known as a “real price” basis. This means that the inflation has been stripped out and as a result prices tend to gravitate around par. However, when the bonds are settled, the consideration will reflect the accrued inflation. The “inflation-adjusted dirty price” is calculated as follows:

Inflation adjusted dirty price = (Index Ratio x real clean price) + (Index Ratio x real Accrued Interest).

At the time of writing, the table below shows the “type two” linkers trading in the market with the respective clean and dirty prices. Again, thanks to Winterflood Securities for the provision of this data.

Gilt	Price without inflation	Price with inflation (inflation)	Interest (with)	Yield with inflation assumption at 5.18%	DMO Real Yield
Treasury 1.25% 20017	107.25	123.50	0.199	5.438%	0.257%
Treasury 1.875% 2022	112.15	121.65	0.282	6.030%	0.832%
Treasury 1.25% 2027	105.2	120.93	0.199	6.121%	0.920%
Treasury 1.25% 2032	108.47	111.44	0.178	6.037%	0.837%
Treasury 1.125% 2037	109.44	120.72	0.172	5.935%	0.738%
Treasury 0.625% 2040	97.30	100.25	0.289	5.924%	0.727%
Treasury 0.625% 2042	98.56	100.25	0.091	5.872%	0.676%
Treasury 0.75% 2047%	104.54	103.48	0.112	5.804%	0.609%
Treasury 0.5% 2050%	96.72	101.19	0.159	5.793%	0.599%
Treasury 1.25% 2055	128.22	148.82	0.201	5.742%	0.548%

On the subject of “new” linkers vs “old” linkers, there is one observation to be made. It is notable that the fixed element coupons of the more recent issues are considerably lower than the 2.5% seen on the original 1980’s issues. This perhaps reflects the generally lower expectations of investment returns of the modern world.

Estimating value in index linked gilts

With conventional bonds, an accurate assessment can be made of the forward yield of the asset. Future cash flows are known and investors can lock in a yield to maturity based on the current market level.

Not so index linked bonds. Both the future coupons and the future redemption price are unknown, so how can value be established? The best one can do is to make an educated guess. An assumption (that most dangerous of concepts!) must be made as to the future rate of inflation. One technique to apply is the calculation of the “**money yield**” of the bond. To perform this calculation, the “core” or average rate of inflation is applied to the future cash flows of the bond, and this in turn can be discounted back to calculate a conventional YTM. Another popular tool for valuation, or at least comparative judgment is the “**breakeven inflation rate**”. This data is published in the FT and other financial publications and shows the inflation rate at which index-linked bonds will “break even” with conventional gilts of an equivalent maturity. This is handy tool. Typically a buyer of index linked bonds will have a good idea of what level of inflation he expects or needs to beat and this concept will tell him or her whether he’d be better off with conventional or index linked assets over the given scenario.

Perhaps the next technique for valuation is the “real return at X% inflation”. With this technique a preset assumption for inflation is applied to the bonds, and the results calculated in “real” or inflation-adjusted terms. The table below is provided by market maker Winterflood Securities and shows this type of calculation based on an assumed 3% rate of inflation over the various periods. It is interesting to note that in some cases the real rate of return is negative. Of course, the end result may differ very greatly from this projection. Should inflation come back with a vengeance, the bonds featured will show considerable growth in both coupon and redemption value over the holding period.

The future

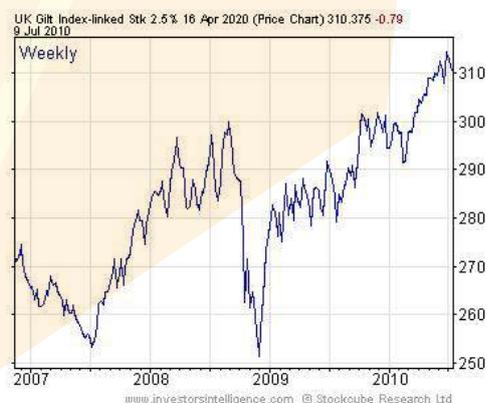
At the time of writing, the new Conservative/Liberal coalition government is attempting to reduce the enormous pension fund liabilities of the public sector. One technique to tackle this is to move the indexation benchmark for such pensions from the RPI to the CPI, the latter having been a historical underperformer. What is good for the goose is good for the gander and should the public sector shift to CPI indexation, it is likely that many private sector defined benefit schemes will also move to this slightly less arduous benchmark. This will create a curious situation of fund managers attempting to balance future CPI-linked liabilities with RPI-based assets. No doubt, ingenious investment bankers will come up with some solutions, but from a longer-term point of view, the obvious solution is for the government to commence issuance of CPI-linked gilts.

In conclusion

Index-linked gilts, yes or no?

The natural buyer of index linked gilts is a large pension fund, the trustees of whom need to match long-term index-linked liabilities. Such investors are prepared to give up a degree of performance in the security in return for a government-guaranteed hedge against inflation. Thus, all things being equal, one might expect index-linked gilts to underperform other more risk-positive assets over time.

This is a fair assumption, however, with index-linked gilts, as with most other asset classes, every dog will have its day. An investor or trader purchasing inflation-linked securities during a period of low inflation expectations may be pleasantly surprised by the performance of such bonds when those expectations shift. “Linkers” are not one of my favourite types of bonds, but they are undoubtedly worth monitoring as the performance of the UKTI 2.5% 2020 over the 2009-2010 period demonstrates in the chart above.



Credit Rating explained

Credit quality is a measure of the issuer's ability to service and repay its debt. In the case of gilts, US Treasury bonds and other high-quality government debt, this can be viewed as a certainty. However, for other issuers, the wise investor must do some homework. You may have your own knowledge and views on a company's ability to repay debt or, alternatively, you can view the credit rating assigned to issuers by several of the credit rating agencies, who deploy considerable resources to assess both the issuer and the individual bond. It is in the interest of bond issuers to obtain these ratings. Without this stamp of approval from an independent body, the bonds will be hard to sell. Indeed, most institutional investors will be unable to purchase a bond that does not have a rating. There are two main international credit ratings agencies, namely Moody's and Standard & Pools.

Credit ratings are the criteria used by most banks and fund managers when establishing the suitability of a bond as an investment but, remember, situations change quickly, and so can credit ratings. You can look up the rating of most bond issuers on <http://www.moodys.com/> and <http://www.standardandpoors.com/>. An honourable mention should also go to Fitch IBCA (www.fitchratings.com). Much research on this subject is also conducted by broking houses and investment banks, as well as some good up & coming independent analysts. However it is worth bearing in mind that price action in the markets will typically lead any change in the credit rating.

Here is Standard & Poor's definition of the ratings it awards to organisations issuing bonds (a conversion table for Moodys and S&P is shown on the right):

AAA:

Extremely strong capacity to meet its financial commitments. AAA is the highest issuer credit rating by Standard & Poor's.

AA:

Very strong capacity to meet its financial commitments. It differs from the highest rated obligors only in small degrees.

A:

Strong capacity to meet its financial commitments, but is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligors in higher-rated categories.

BBB:

Adequate capacity to meet its financial commitments. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitments.

Standard & Pools	Moody's
AAA	Aaa
AA+	Aa1
AA	Aa2
AA-	Aa3
A+	A1
A	A2
A-	A3
BBB+	Baa1
BBB	Baa2
BBB-	Baa3
BB+	Ba1
BB	Ba2
B	Ba3

The above credit ratings are known as 'investment-grade debt'. As a rule of thumb, investor's managing portfolios where the risk must be minimised, and security of income and capital is paramount, will restrict themselves to bonds rated AAA and AA, with perhaps a few single A investments. Consider also a bond's credit history. Has the rating improved or declined over time? Bonds subject to a potential re-rating will be on 'credit watch'.

Below BBB:

Bonds rated below BBB are known as 'non-investment grade'. These bonds are of a more speculative nature, and imply a certain degree of risk. In view of this, the incremental yield available on the instrument must be adequate to compensate the investor for this risk. Standard & Poor's gives the following definitions for non-investment grade debt.

BB:

Less vulnerable in the near term than other lower-rated obligors. However, it faces major ongoing uncertainties and exposure to adverse business, financial, or economic conditions that could lead to the obligor's inadequate capacity to meet its financial commitments.

B:

More vulnerable than the obligors rated BB, but the obligor currently has the capacity to meet its financial commitments. Adverse business, financial, or economic conditions will likely impair the obligor's capacity or willingness to meet its financial commitments.

CCC:

Currently vulnerable, and is dependent upon favourable business, financial, and economic conditions to meet its financial commitments.

CC:

Currently highly vulnerable.

C:

May be used to cover a situation where a bankruptcy petition has been filed or similar action taken, but payments on this obligation are being continued. C ratings will also be assigned to a preferred stock issue in arrears on dividends or sinking fund payments, but that is currently paying.

Plus (+) or minus (-): The ratings from AA to CCC may be modified by the addition of a plus or minus sign to show relative standing within the major rating categories

Types of issuer

Before we go on to look at some examples of individual bonds and their credit ratings, it is worth considering the different classes of issuer that one might be likely to come across in the Sterling bonds markets:

As a rule of thumb, the bonds with the least risk of default are the high quality sovereign issuers such as the UK and the larger and wealthier European countries such as France and Germany. The risk of default* for bonds issued by these countries can be assumed to be negligible, and lower than the risk from a bank deposit. Ranking alongside these are the Supranationals, these being agencies such as the World Bank and the European Investment Bank which are guaranteed by their sovereign members.

Second to this are the second-line countries, and those experiencing some economic difficulty. Here we would give Italy and Japan as two examples. While these countries do not quite have the economic strength of some of their peers, it is fair to say that they have a low risk of default. This type of debt should not be confused with emerging market bonds, which may carry a much higher degree of risk. Recent events have propelled some of the more marginal sovereign credits into the highlights, with bonds issued by Greece trading wildly in the markets as investors consider the likely outcome of the country's dire financial situation.

Below this we have high quality non-governmental debt. Traditionally the highest scorers are the banks, some of which have credit quality to rival that of a government. However, this status quo has been impacted by the events post-2008

Finally we have **Corporate Bonds**. These are bonds issued by corporations, typically large quoted companies. The life of a company is full of ups and downs and it is fair to say that in most cases corporate bonds carry a greater risk than those issued by major governments or banks. Factors affecting a company's credit rating include cash flow, profitability, asset valuations and unforeseen events such as legal action, a takeover or a change of the trading environment. The yield on these bonds will normally be greater than that available on bank debt.

Other types of issuers: There are numerous bonds issued to fund mortgage loans, credit cards loans and other more complex financial transactions. These types of bonds, often known as mortgage-backed and asset-backed are not generally available to the investing public in the UK. We will be covering these types of asset in other articles in this series at a later date. The credit quality of these varies from excellent to poor, typically depending on their place within the "pecking order" of claims to the underlying assets. Secondary market liquidity is often poor.

**Note: risk of default should not be confused with market risk, or price volatility. A bond can be 100% guaranteed by all the governments in the world and still experience price swings between issuance and redemption, typically driven by changing interest rate volatility.*

Some sample issuers and their ratings.

Here we have taken a few of the popular issuers

AAA:

Germany, France. Supranational agencies such as the World Bank (also known as the IBRD). UK Gilts continue to enjoy a “triple A” status, although this is under review at the time of writing.

AA:

Sovereigns such as Japan (AA-). A few high quality banks and corporates

A:

Good quality corporates such as Tesco (A-). Lower rated banks.

BBB:

More speculative corporates such as Marks & Spencer (BBB-) and British Telecom (BBB-)

Note: These samples are based on the rating in force at March 2010, and are subject to change.

Frequently Asked Questions

So will a highly rated bond be less volatile than a lowly-rated bond? To a degree, yes. The perception of risk will tend to fluctuate less. However, the influence of interest rates, both in the present and to come will exert a similar influence on both highly and lowly rated bonds alike.

What are “junk bonds”?

The expression “junk” bond is a colloquialism for a non-investment grade bond, i.e. a bond that is rated below BBB-. In truth the term junk is often a rather harsh description and the majority of these bonds will live a useful and uneventful life, servicing both coupons and redemption payments. Nevertheless, a risk of default is implied in the name and caution should be applied when dealing in these assets. At the time of writing, examples of bonds with “junk” status in the Sterling markets include GKN, Manchester United and Cable & Wireless. As might be expected, these types of bonds offer a higher yield to compensate for the additional risk.

Can credit ratings change?

Yes, indeed they can. Although the ratings that we follow are described as “long term ratings” by the two main agencies, they can swing around quite quickly as perceptions change. An example of this was the sovereign state of South Korea, downgrade from a comfortable AA- to a worrying BBB- in the late 90s. Needless to say, Iceland was until quite recently rated AAA. Corporate bonds are even more subject to change as their issuers may be impacted by adverse trading conditions. Leveraged takeovers, in particular, can have sudden and disastrous impact on credit ratings.

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What are the risks?

All investments involve risk, and bonds are no exception. Before we go on to consider the relative risk of the fixed income and equity asset classes, it is worth taking a moment to consider the different types of risk that an investor might face. Investment risk can be broken down into roughly four categories as follows:

Risk of default:

The risk that the investee may be unable to return all or some of the money advanced to him. In the bond markets this is known as a default. The equivalent in the equity market would be a company going bust and ceasing to trade.

Market risk:

The investor buys an asset at price “X”. This price will then fluctuate from day to day according to the balance of supply and demand in the market, creating a paper profit or loss. Thus, if the investor needs to sell the asset to raise funds, he faces a risk of capital loss.

Issue-specific risk.

Many bonds are issued with embedded features such as “calls”, which enable the issuer to repay the debt ahead of schedule. This can be disadvantageous to the holder. However, such features are clearly laid out in the bond prospectus, so careful investors can either avoid such issues, or make contingency plans.

Event and other risks:

This encompasses a variety of “operational” hazards such as brokerage charges, slippage or a shift to an unfavourable or punitive tax treatment. These types of risk can be reduced through careful planning and monitoring. Next we have “event risk”. An example of this would be the issuer of the bond becoming the target of a leveraged buyout, increasing the degree of risk of lending money to the company. Finally, we add to this list the risk of inflation, which can devalue the asset or portfolio over time.

Bonds vs equities

A common reaction to the subject of bonds from private investors is “lending money to companies.... sounds risky to me”. Yet, these same investors will happily buy shares in medium, small and start-up companies which pay no dividend and carry a real and present threat of total loss. Why would this be so? The answer is, I suspect, that the fanfare of potential great rewards from growth stocks drowns out the fear of capital loss. In the bond markets, where the upside may be more limited, a sober reality sets in and greed and fear strike more of balance.

So much for the emotion. How about the facts? These paint a different picture. Looking first at the **risk of default**, bonds emerge as the clear winner. For Gilts, the risk of default can be assumed to be nil, and the quality of the credit should be viewed as superior to that offered by a bank deposit. When buying senior bonds issued by banks, the credit quality should be viewed as the same as that of a bank deposit. Corporate bonds typically carry more risk. However, in the event of a company being placed into liquidation, bonds holders rank high amongst the creditors and will be paid out ahead of the equity shareholders.

We will now turn to our second category, namely **market risk**. Again, fixed income interest instruments emerge the winner. Bonds differ from equities in an important aspect. In order to realise your profit (or loss) on an equity, you must sell the instrument back to the market – at whatever price the market happens to be quoting. But with the vast majority of bonds, the redemption date and amount are fixed in advance, so reducing your reliance on fickle market sentiment or changing liquidity. This is a vital advantage for people who have excess cash to invest now but who know that, at a certain point in the future, they will want to spend it. Whether it is planning ahead for school or college fees, retirement, moving house or starting a new enterprise, bonds will keep your money growing. And you won't run the risk that the stock market will enter one of its unpredictable bear phases at the very time you need to convert your investments back into cash.

And what about market risk prior to the redemption date?

There is risk associated with this factor. The secondary market in bonds will be affected by future interest rate expectations and the perceived credit quality of the issuer. Longer-dated bonds typically exhibit greater price volatility than short dated issues.

We have examined the price history of three bonds over a 5 year period (the 5 years to Dec 2006). For comparison we show the price range of the equity of the same company. The period is a good one to study, given that it covers both a bear and bull phase of the stock market.

The range shown gives an indication of volatility, but this is of course a double edged sword. You can gain as well as lose! Perhaps a better illustration is the “worst case scenario” of maximum drawdown. This illustrates the loss an investor might face if he bought at the highest point and sold at the lowest subsequent low (which can well happen!).

Issuer	Bond	5-yr high/low	% from high	Max drawdown	Price at end of period
ICI	7.625% Aug 2007	109-101	7.9%	7.9%	101.15
Marks & Spencer	6.375% Nov 2011	111.5- 90	19.3%	19.3%	102.4
Toyota Motor Credit	6.25% Dec 2006	109.8-100.75	8.2%	8.2%	100.75

Equity	Class	5-yr high/low	% from high	Max drawdown	Price at end of period
ICI	Ordinary shares	452-100p	78%	71%	452p
Marks & Spencer	Ordinary shares	717-250p	65%	39%	717p
Toyota (Yen)	Ordinary shares	Y7960-2466	69%	48%	Y7960

The tables show that these equities have traded wide ranges over the past five years. This has been, on balance, to the benefit of investors. However, the maximum drawdown shows that the equities have provided a far rockier ride. The bonds have proved less volatile.

Frequently asked questions

Are bonds more, or less risky than equities?

It is fair to say that bonds are less risky than equities. Bond holders are senior creditors in the event of a company defaulting or going bankrupt. This means that they will generally receive some or even all of their money back in the event of liquidation. Price volatility in bonds is generally lower than that seen in equities. Risk adverse investors should restrict themselves to investment grade bonds and run a diversified portfolio.

So are some bonds more risky than others?

Yes. Some issuers are more credit worthy than others. For more on this subject see the article “Credit rating explained”. Also consider that the longer the bond, the more you are a hostage to the future movement of interest rates and inflation.

What happens if the issuer of the bonds goes bust?

In this event the bond holder may be unable to pay the coupons or the principle. However, the bond holders will have at least some priority over the assets of the issuer, ahead of the holders of ordinary shares. It is worth bearing in mind that the incidence of this event amongst investment grade bonds is very low.

Are there any other risks that I should be aware of?

Inflation is a major risk. Over longer periods of time this may erode the return of a bond portfolio, causing the value to fall in real terms.

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Bonds in your Portfolio

The last four decades have seen the emergence, growth and eventually the almost total domination of the “cult of the equity”. Prior to this, pension funds had invested mainly in bonds, the view being that fixed income securities were a logical and safe home for the money. All this was to change in the 1950’s, in a move largely credited to the then fund manager of Imperial Tobacco, George Ross Goobey. Ross Goobey, an actuary by profession, reached the conclusion that equities were undervalued and started switching the fund into the then unfashionable stock market.

He was right. Over the coming decades, inflation destroyed the real return from fixed income securities and equities proved the place to be. This view, sometimes known as the “cult of the equity” is now almost a universal panacea with equities widely considered to be the first choice for investment.

But is this the whole story? When an investment approach is almost universally adopted, it’s often time to worry. Certainly, the bear market in the early 2000 s eroded the longer-term outperformance of stocks, undermining the theory that bonds are simply an antiquated asset class, suitable for only the most unadventurous or complacent investors. Before we move on to consider the potential risks and rewards of different types of bonds, here are the five reasons why every portfolio should contain bonds:

- **Security:** Government bonds offer the investor unparalleled security. The risk of the UK or other major governments being unable to repay its debts is low and government bonds should be considered superior in credit quality to a bank deposit. High-grade, multi-national government agencies (such as the World Bank) also offer an extremely safe home for the investor holding bonds to maturity. Of course, not all bonds are issued by governments. Many bonds are issued by companies and other organisations whose ability to service the debt may be less certain. However, even corporate debt can be considered a safer investment than the company’s equity. In the event of bankruptcy, bondholders are ranked above shareholders in their claim on the company’s assets.
- **Return of capital:** Bonds also differ from equities in one other very important aspect. In order to realise your profit (or loss) on an equity, you are wholly dependent on the ability to sell the instrument back to the market. When an investor buys a bond, the redemption date is fixed in advance, reducing the investor’s reliance on the uncertainties of future market sentiment or liquidity.
- **Income:** With an ageing population in most developed countries, income becomes an increasingly valuable aspect for any portfolio. Income available from bonds is generally higher than that available from equities. Also, future income payments are a known quantity, unlike dividends from equities, which may be reduced or withheld entirely in times of low profitability. This makes bonds ideal for investors who wish to secure future income over a defined period of time. With bonds paying annually, semi-annually or sometimes quarterly, a carefully chosen bond portfolio with six or more holding can produce a reliable monthly income. Remember also that most bonds pay their coupons gross, without withholding tax. Investors can take advantage of this by holding qualifying bonds within an ISA, producing a tax free income.
- **Diversification:** A well managed portfolio should contain a variety of different assets classes. Equities, government bonds, index-linked bonds, corporate bonds, property and alternative assets all have their role to play. This simple approach, also known as “not keeping all your eggs in one basket” is one of the most effective strategies for reducing risk in a portfolio. In certain economic scenarios, such as a recession, bonds will generally show an inverse correlation in price movements to equities. Note that in the 200-2003 period, when the FTSE100 declined by nearly half from the millennium highs, longer dated gilts saw prices rise over the same period.
- **Benefit from falling interest rates:** When an investor buys a fixed coupon bond, he or she locks in interest rates for a defined period. Because of this, falling interest rates will cause the market value of the bond to rise. Investors who buy bonds in falling interest rate scenarios will receive the double benefit of a secure income and capital appreciation of their asset.
- **Speculation:** any financial instrument offers the potential to speculate on future price movements, and bonds are no exception. Liquid government bonds are often used by traders speculating on future interest rates while corporate bonds can see sharp price movements from changes in the perceived credit quality of the issuer.

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Types of Bonds

Bonds are securities representing the debt of a government, company or other organisation. Effectively they are loan stock, or “IOUs” issued by these organisations and bought by investors such as banks, insurance companies and fund managers.

Investors are often heard to say “I don’t understand bonds”, but the truth is that these instruments are much simpler than equities. The key factors can be broken down as follows:

- **The issuer:** This is the entity which is borrowing the money. For instance, £500 million will be borrowed, and £500 million of securities will be issued. Typically these will be sold at “par” or 100p in the pound
- **The coupon:** The issuer commits to pay a rate of interest of “X” % per year. This coupon will generally be a fixed amount and is paid annually or semi-annually.
- **The maturity:** A date is set for the repayment of the money. This is known as the redemption date. The bonds will be redeemed at “par” or 100p in the pound (with some rare exceptions)

At launch, bonds are sold to investors via an investment bank or broker. This is known as the primary market. Gilt issues are also offered directly to the general public. After this primary phase, bonds are then free to trade between investors and/or market counterparties. However, unlike equities that trade through a centralised stock exchange, bonds generally trade on a peer-to-peer basis from one institution (such as an investment bank) to another (such as broker).

This global market in bonds is enormous. Figures released by the International Monetary Authority in 2002 estimated the total amount of debt securities as around 43 trillion US Dollars. At the time this was nearly twice the total of the world’s stock market capitalisation. The number of bonds in circulation is considerable, and a large and regular issuer such as the European Investment Bank may have several hundred issues trading at any one time. These bonds will be issued in a variety of currencies and may differ greatly from each other in terms of coupon or coupon type, date of maturity and other features such as embedded puts and call.

This website is aimed at Sterling-based investors, and thus deals primarily in GBP-denominated bonds. With this in mind we monitor a restricted “universe” of around 200-300 bonds selected on the grounds of liquidity and ease-of dealing for the private investor. Our focus is also towards “investment grade” bonds, ie those with higher credit ratings which are likely to offer a lower risk profile.

The table below provides further information about the various types of bonds on this website.

Gilts or UK Government bonds:

These are bonds issued by the UK government in order to finance public spending. UK Gilts are rated AAA by all the major credit ratings agencies and can be viewed as effectively risk-free from the point of view of default. The price of these instruments will fluctuate from day-to-day in the market, depending on the outlook for interest rates but investors who buy at par or below, and hold the bonds to maturity can be certain that interest and principal will be repaid in full.

Conventional Gilts:

The majority of Gilts are of a conventional nature, paying a fixed coupon (generally twice a year) and maturing at a set date. The life of these instruments will vary from a few months out to as much as fifty years. The most popular Gilts for private investors are maturities between two and ten years. Some gilts have more complex features such as “calls”, which enable the government to retire the debt ahead of time. Before purchasing a Gilt, it is worth checking the full details of the issue. Please note, prospectus for Gilt issues can be obtained at the website of the government Debt Management Office.

Index-linked Gilts: These instruments were first issued in 1981. Rather than pay a fixed coupon and amount on redemption Index-linked gilts differ from conventional gilts in that the semi-annual coupon payments and the principal are indexed to the UK Retail Prices Index (RPI). It is worth noting that there is a time lag on the RPI used to calculate the coupon and redemption period, however these instruments do offer a hedge against inflation.

Because of the inflation-linking aspect of these bonds, Index Linked Gilts may show wider movement of price over time.

Undated or perpetual Gilts:

These instruments differ from conventional Gilts as they have no set maturity date. They may (or may not!) be paid back at a time of the government's choosing. Because of this the holder is reliant on the market price to liquidate his investment, and as such they should be viewed as more risky than conventional Gilts. The most well known amongst this group is the UK 3.5% War Loan.

These instruments are more volatile than conventional Gilts (which inevitably trend towards par).

Sterling denominated non-Gilt:

These are the biggest group of bonds on this website, and covers the majority of GBP-denominated bonds other than UK Gilts. These securities are often known as corporate bonds, although they may be issued by a range of types of organisations, not all of whom are strictly "corporations".

These bonds may be issued by a variety of different types of issuers, ranging from foreign governments and their agencies, through UK Banks and all the way down to medium-sized companies. As with Gilts, the prices of these bonds will move alongside the market's expectations for interest rates. However, the price (and thus the yield) will also be affected by the perception of the credit quality of the issuer. If this is thought to be deteriorating, the price of the bond will fall.

The best way to determine the relative value of a bond is to compare the "spread" or incremental yield offered over a Gilt of the same maturity. The investor will then be comparing "like with like" and a value judgement can be made regarding the balance of risk to any additional reward. Thus, at the time of writing, five-year Gilts offer a yield of 2.9%. The Segro 6.25% Sept 2015 bond offers 4.9%, a "spread" of 2% (also known as 200 basis points) over the Gilt. This should then be compared to other bonds of similar maturities.

PIBS: or Permanent Interest Bearing Shares:

These are a type of instrument issued by UK building societies. Technically they are not bonds, but a type of risk capital, being subordinated to deposits and other senior obligations of the society. The events of 2009 demonstrated that this subordination is a real risk for investors and holders of PIBS in many building societies and ex-building societies have been adversely effected.

Because of their fixed coupons. PIBS behave in a manner similar to bonds and offer investors a long-term income stream and these securities remain popular with private investors.

Individual issues vary greatly in coupon, price, yield and other features such as calls.

Other types of bonds**Floating rate notes:**

These are bonds where the coupon is not fixed, but based on a reference rate, typically LIBOR. They do not exhibit the same degree of interest rate sensitivity as conventional bonds. The majority of FRNs will be issued with maturities between two and ten years and will be senior debt. However, there is a class of perpetual floating rate notes which you may encounter from time to time. The majority of these are subordinated debt.

Convertible bonds:

These are bonds where the holder may convert his redemption proceeds into the equity of the issuing company. These are known as "equity convertibles" and can offer a combination of yield and growth for investors. These instruments may see their price driven higher by a rise in the company's equity. Risk, however, is generally higher.

In some cases, bonds may be issued with the option to convert into other bonds. These are a rather different kettle of fish and should not be confused with the "equity convertibles" above.

Subordinated bonds:

The majority of bonds issued are “senior debt”, meaning that the holder has a priority claim on the company’s assets, ahead of that of the shareholders. Some bonds are issued with “subordinated” status. This means that the buyer of the bonds accepts a lower claim on the company’s assets, below the senior debt holders, but above the equity holders. Because of the additional risk, a higher yield will be offered. These bonds are also more volatile and show greater sensitivity to shifts in the perceived credit quality of the issuer.

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