The real drivers of pension scheme liabilities

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In this paper we analyse a significant cause in the movement of UK pension scheme liabilities – index-linked gilt yields; also known as real yields. Real yields have increased by over 0.6% per annum from April to September of this year. This has resulted in typical pension scheme liabilities decreasing by around 12% over this period.

The real yield on an index-linked gilt is a measure of its future rate of return, stripping out the effect of future inflation. We find that it is possible to explain the changes in real yields by considering a number of factors. In this paper we describe how these factors affect real yields and how in particular Quantitative Easing (QE) is currently affecting them.

Our analysis shows that yields could further increase by as much as 0.5% per annum when QE is finally fully reversed. This in turn could decrease pension scheme liabilities by another 10%. To benefit from this, pension schemes should consider putting in place ‘Flight Path’ approaches to de-risk. Flight Paths could allow pension schemes to capture potential improved funding levels as the opportunity arises.

Why are pension scheme liabilities driven by real yields?

The real yields on index-linked gilts are commonly used by scheme actuaries to place a value on pension scheme liabilities. This is because economically, the payments made to the holder of an index-linked gilt are similar to the inflation linked benefits paid by defined benefit pension schemes.

The holder of an index-linked gilt receives coupon and redemption payments during the instrument’s life which increase with experienced RPI inflation. To place a value on the gilt, the payments are projected forward using expectations of future inflation and discounted back using future expected interest rates. The net effect is that future index-linked gilt payments are discounted at a real yield.

Economically many of the benefits paid by defined benefit pension schemes sound similar to this. They too commonly increase with inflation both in members’ retirement and deferment, as defined by the pension scheme’s particular rules. Typically 70-80% of pension scheme liabilities are inflation linked. The scheme actuary is required to discount these benefits to place a liability value on them. Given the economic similarity, scheme actuaries commonly base their discount rate upon the real yields of index-linked gilts.
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The strong link between real yields and pension scheme liabilities is shown in Figure 1. As real yields have decreased in recent years the value of UK private sector defined benefit pension liabilities has increased.

Figure 1: The link between real yields and UK private sector defined benefit pension liabilities

The drivers of real yields

To gain an understanding about what has historically driven real yields, it is possible to analyse which factors may have caused this. We analysed whether 15 year UK real yields can be approximated by a simple model using a number of different factors.

Figure 2 shows that real yield levels can be approximated reasonably well using a model based on the factors: the GDP growth rate, the change in realised inflation, inflation volatility, inflation forecasts and the UK base interest rate. Other more complex factors can also be analysed and conclusions drawn as to how they affect real yields. However this analysis gives us a simple tool to assess possible drivers of real yields. 15 year real yields have been analysed as they are generally reflective of the type of yield used by scheme actuaries to discount inflation-linked pension scheme liabilities.

Figure 2: Analysis of factors affecting 15 year index-linked gilts yields

The modelled factors allow rational reasons to be put forward to explain why real yields are currently so low:

- **Economic growth** – The most significant factors over the long term are economic growth rates and base interest rates. In periods of low growth real yields are expected to be lower in order to help revive the economy. Investors tend to expect the real rate of return on their investments to be lower in this type of environment.

- **Inflation uncertainty** – When the rate of inflation changes and is volatile, investors become concerned that their investments could be eroded by potential future inflation. This can cause the demand for index-linked gilts to go up and therefore real yields to fall.
Inflation expectations – When inflation and expected inflation are high, such as in the 1980s, investors tend to demand higher real yields. In this environment economies tend to grow at a faster rate justifying investors’ demands for higher returns. However when inflation is lower, such as where the world is today, investors have come to accept lower real yields on their investments. In stagflationary environments inflation that is too high can hinder economic growth, and consequently real yields.

The modelled real yields differ from those actually experienced at various points in Figure 2. A few other factors can therefore be put forward to explain these differentials:

- Opportunity costs – When returns from other markets, in particular equities, are outpacing bonds (with little risk) such as in 1995-1998 there is a tendency for some investors to switch out of bonds and into equities to chase returns. This reduction in demand for bonds can cause real yields to be somewhat higher in reality than those output by the model in Figure 2.
- Equity uncertainty – When there are shocks to equity markets, such as in 2008, a flight to the safety of gilts can drive real yields lower than those anticipated by the model.
- Quantitative Easing – In response to the financial crisis the Bank of England, like many other central banks, embarked on a policy of purchasing gilts known as Quantitative Easing (QE). One of the consequences of this was that this extra demand for gilts pushed prices up and consequently real yields down. This effect can be seen coming through towards the end of the chart in Figure 2, most notably after 2010.

Implications for pension schemes

The Quantitative Easing effect strongly suggests that real yields are currently lower than where they may ordinarily be expected to be. As at the time of writing real yields had increased by approximately 0.6% per annum from the lows of April 2013 of -0.5% per annum. Figure 2 shows that UK real yields could increase further from where they are today by as much as 0.5% per annum when QE is fully reversed. For a scheme with a duration of 20 years this could mean that the liabilities may fall by around 10% when this happens. These findings agree with the Bank of England’s own analysis that quantifies the full impact of QE on long dated yields at around 1.2% per annum.

Mark Carney, Governor of the Bank of England recently indicated that the reversal of QE, in the UK at least, may not happen any time soon. In his view interest rates would not be increased, and QE would not be reduced, before the UK rate of unemployment fell to a level of 7%. In most people’s estimation this is at least a couple of years away. Indeed the negative real rates that we have today are viewed by many as a necessity for the UK economy to heal.

The UK experienced negative real rates after World War II which helped the country reduce its debt burden. The country is again in a position where the level of debt is high and negative real yields would indeed help. Rates of inflation that are higher than the rates of interest that the UK government must pay on its nominal debt can help the UK reduce the real value of its debt over time. Of course it is in the government’s advantage to be in this position, but this is clearly not the case for savers whose assets are eroded by inflation. The post-war and financial crisis have therefore been characterised as periods of ‘financial repression’.

During these periods when governments, households and corporates reduce their debt there tends to be an increase in saving. John Maynard Keynes argued that in this type of environment an increased demand to save can cause interest rates, and real yields, to reduce.

Figure 3 shows that negative real yields occurred both after World War II and the more recent financial crisis. The UK also experienced negative real rates in the 1970s but for the differing reason that inflation escalated out of hand to high levels which were above nominal interest rates.

http://www.bankofengland.co.uk/publications/Documents/workingpapers/wp466.pdf
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Figure 3: UK short term real rates (\%pa)

Source: Schroders, Bloomberg, the Bank of England, the Office for National Statistics. The UK base rate net of the annual rate of RPI inflation is shown, September 2013

When QE does eventually reverse, pension schemes can position themselves to potentially benefit from this scenario. Flight Path approaches can be adopted so that when real yields rise and liabilities fall pension schemes have suitable plans in place to de-risk. Schemes can match their liabilities with relevant fixed income assets to help protect their potentially improved funding levels. A simple example of a Flight Path based on real yield triggers is shown in Figure 4. Triggers are set up for the pension scheme to automatically de-risk at, and protect possible funding level gains, when the improved yields are reached.

Figure 4: An example of a possible Flight Path

Source: Schroders, the Bank of England, September 2013

It should be noted that the future reversal of QE may not all be all good news for pension schemes. One of the intentions of QE has been to increase people’s perception of wealth in an effort to kick-start the economy. QE has achieved this. It has raised the value of people’s assets invested in both equity and bond markets, but unfortunately it has also raised the value of pension scheme liabilities. Whilst a future reversal of QE may cause liabilities to fall pension schemes could potentially also see the value of their equities and growth assets decline. The reversal of QE could potentially be a double edged sword.
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Summary

In this paper we have identified factors that cause real yields, and consequently pension scheme liabilities, to change. These factors are economic growth rates, inflation uncertainty, inflation expectations, interest rates, opportunity costs of investing in other assets, equity uncertainty and Quantitative Easing.

In the current economic environment it is pertinent to consider QE as this is notably reducing real yields. Whilst real yields have increased in recent months analysis shows that they have further to go as QE is fully reversed. Pension scheme trustees should consider putting Flight Path approaches in place so that when QE is unwound and liabilities fall they may be in a position for their schemes to benefit.

If you would like to discuss any of the issues raised in this paper, please contact your Client Director or a member of the UK Strategic Solutions team.

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