

## LDi-lemma: is now the right time?

November 2009

One of the key risks faced by pension scheme trustees is chasing a moving target – the cost of benefits, which are impacted by changes in interest rates, inflation and other factors such as how long people live and changes in regulation and the law.

One way of stabilising this moving target is to implement a liability hedge but the million dollar question is “is now the right time?”

This note discusses both the rationale behind liability hedging and how the current market environment might affect a pension scheme’s default hedge position.

Importantly, we do not consider here what the appropriate level of hedging might be since this is something that is specific to each individual pension scheme.

### Lessons learnt from the last two years

The last two years has been a time of worry and uncertainty for the vast majority of pension scheme trustees. Trouble began in the first half of 2007 when defaults amongst sub prime mortgage holders in the US started to rise.

The contagion of these sub prime losses permeated through global financial markets causing asset prices to spiral downwards and ultimately lead to a significant drop in the value of most pension scheme assets.

As a result of falling asset prices and general uncertainty in the market, investors panicked and there was a flight to quality, with investors piling their money into risk free assets, i.e. Government bonds, at the expense of risky assets. This drove the price of Government bonds up and yield on long term bonds fell, leading to an increase in the value of pension scheme liabilities.

The combined effect of falling asset prices and declining long term yields meant that the funding positions of most pension schemes deteriorated significantly.

The credit crisis has highlighted to pension scheme trustees the need to manage risk; particularly risks which pension schemes are not rewarded for taking. i.e. liability risk. Trustees should therefore look at ways of managing this risk by either reducing it or removing it.

### Why do we want to hedge liability risk?

It is often argued that liability risk is “unrewarded” but what does this really mean?

A rewarded risk can be defined as a risk where the party accepting the risk expects to be compensated for bearing the risk. Likewise an unrewarded risk is where the party is not compensated for bearing the risk.

To understand why liability risk is unrewarded we need to consider what most pension scheme trustees are trying to achieve: stable funding level progression to a fully funded position.

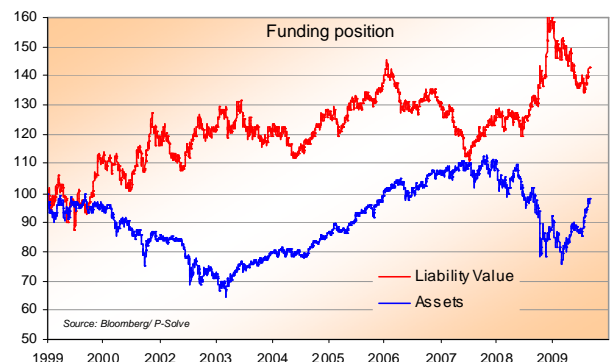
The diagram opposite illustrates fluctuations in both the value of the liabilities and the assets, which together contribute towards instability in the funding position of a scheme.

It is very difficult for pension scheme trustees to change the liabilities of a pension scheme, and the changes in the value of

### In brief:

- The last two years have highlighted that not managing liability risk is a dangerous approach for pension scheme trustees to take as it unnecessarily exposes the funding level to volatility.
- As liability risk can be considered to be “unrewarded” the default position pension schemes should adopt is to hedge interest rates and inflation as far as is practical.
- However, there may be some value in the short term of not adopting this default position. This is where our dilemma in relation to Liability Driven Investing lies.

these liabilities add to the volatility of the funding position. This makes it more difficult to achieve funding level stability.



Next, let's look at the factors that drive asset and liability values.

- **Asset prices** are predominantly driven by economic growth, for example, positive economic growth is normally associated with rising equity prices; whereas
- **Liability prices** are predominantly driven by long term interest rates, inflation and life expectancy rates and although these can change over time, there is no reason to expect interest rates or inflation to move in one direction or the other.

Whilst it is clear that the factors driving asset prices would lead to asset risk being rewarded, this is less clear for liability risk.

**Therefore our starting position would be to remove liability risk (as it is unrewarded) by hedging both interest rate risk and inflation risk as far as practically possible.**

The market for hedging longevity risk is still immature and this is not covered any further in this note.

**When might we consider not hedging both interest rate risk and inflation risk as far as practically possible?**

To answer this question, let's first look at when is the best time to hedge interest rates and inflation.

Liability hedging involves locking into prevailing market rates so ideally we want to hedge when interest rates are high and inflation is low, to lock into liabilities when they are lower in value. If

interest rates turn out to be higher (or inflation lower) than expected, trustees may “regret” hedging (although the risk benefits still stand) so the timing of implementing a liability hedge is important.

Liability hedging is a tool to manage risks, rather than for generating return necessarily. However, it is preferable to:

- Hedge more interest rates when interest rates are high and expected to decrease; and,
- Hedge more inflation when inflation is low and expected to rise.

**Therefore from a tactical perspective there may be some occasions where there is value in not hedging interest rates to the full extent i.e. when they are low and not hedging inflation to the full extent i.e. when inflation rates are high.**

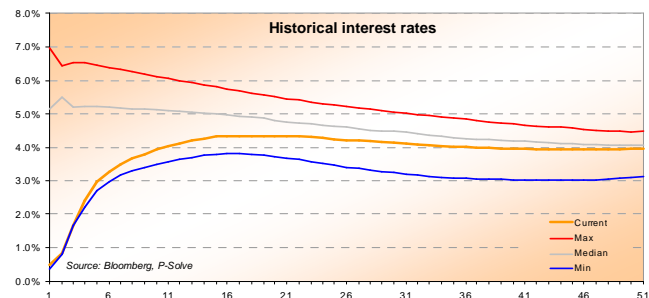
In order to allow pension schemes to take advantage of the relative value in interest rates and/or inflation, these two risks should be looked at separately.

Whilst hedging both interest rates and inflation is designed to control volatility in the scheme’s funding position, expected inflation impacts on the actual cost of providing benefits (e.g. through pension increases). Conversely, interest rates are a reporting risk, and although they can contribute significantly to funding level volatility, they do not affect the actual cost of pensions paid out. This distinction is useful when considering trustees’ objectives and which risks are more important to remove.

### What do current market conditions tell us?

Our next consideration: is now the right time to hedge?

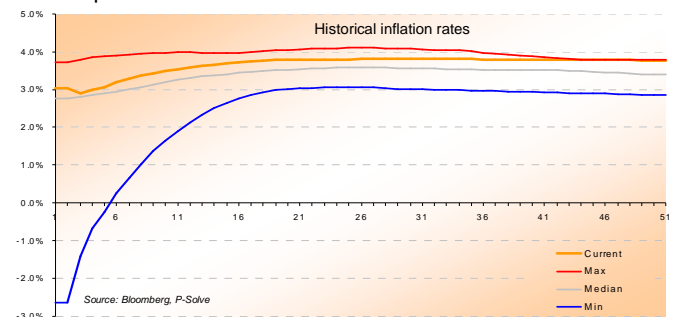
For this we consider historical interest rate and inflation rate levels over the last 3 years for terms up to 50 years. Plotting this on a chart shows us where interest rates and inflation rates currently lie (orange line) relative to the maximum, average and minimum levels. We can use this to then judge whether relative rates can be considered high, low or average.



The chart shows that interest rates are fairly low relative to recent historical levels particularly at the shorter terms. There is still a risk that interest rates fall from here so some interest rate hedging is sensible. However, from these relatively low levels, interest rates could be considered more likely to go up than to fall further.

So tactically, there may be some value for pension schemes with

a full interest rate hedge to reduce the level of their hedge to benefit from rising interest rates. Also, for pension scheme trustees now putting in place a liability hedge there may be some value in setting up partial hedge rather than a full hedge for the same reason. A phased approach using trigger points could be used to avoid pension schemes “forgetting” to hedge as interest rates rise. Another option pension scheme trustees could consider is the use of derivatives such as swaptions which can be used to generate additional income over the time period when a full hedge is not in place.



On the other hand, relative to recent history, long term inflation rates are on the high side. However, with the extension of quantitative easing, and the high levels of government debt, we believe rising inflation still poses a significant risk in the future. Coupled with the fact that inflation is a real cost to pension schemes, our neutral position would be to prioritise the consideration of hedging inflation rate risk.

Our current dilemma lies in interest rate hedging:

**Strategically pension scheme trustees should hedge both interest rate risk and inflation risk as far as practically possible. However, in the current environment, short-term underhedging of interest rates could be beneficial for pension schemes.**

### What proportion of interest rates should pension schemes hedge?

There is no set proportion for all pension schemes. Instead the appropriate hedging level should be considered on an individual scheme basis and will depend on factors such as the risk appetite of the trustees and the strength of the sponsor covenant. To further this discussion, please contact your P-Solve adviser.

### Summary

For pension schemes, the last two years have highlighted the importance of managing risk. Liability risk can be considered to be “unrewarded” and therefore fully hedging both interest rates and inflation should be the default position for pension schemes. However, from a tactical perspective, there may be some value in partially hedging interest rates as in the current environment interest rates would seem more likely to go up than down.

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