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## **Inflation and Defined Benefit pension schemes**

31<sup>st</sup> October 2011

October saw the release of notably high inflation figures – a two year peak for CPI and a twenty year peak for RPI – coinciding with the setting of pension increases for UK defined benefit pension schemes with September year-end.

We provided a brief update at the time of release<sup>1</sup> but here present a more detailed paper on the direct and indirect impacts of inflation on these schemes. Inflation provides a good example of a crucial factor that affects both sides of the DB scheme balance sheet and our response as pension professionals should therefore bear in mind that the scheme's raison d'être is not primarily the maximisation of investment value but to pay benefits as they fall due – at an affordable cost to the sponsor. This means that a comprehensive view must take into account inflation effects on liabilities as well as on assets.

In this paper, we review liability implications, investment assets and other products available and the possible impact on the employer covenant. Finally, in the Appendices, we touch on recent Government initiatives on indexation and provide a simple analysis of Consumer vs. Retail Price Inflation.

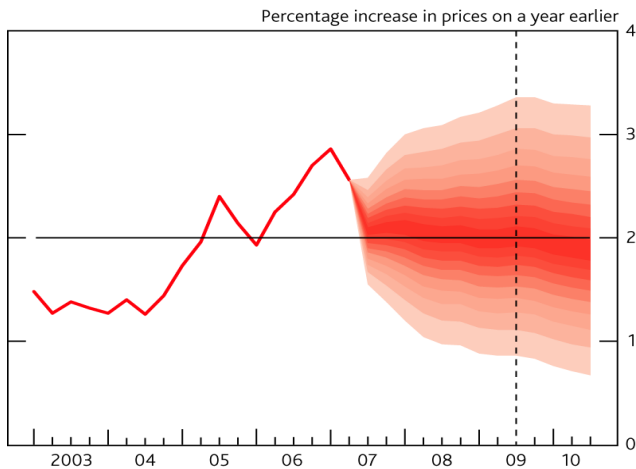
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<sup>1</sup> UK Inflation Update – September 2011, Veasey Associates Ltd, <http://www.veaseyassociates.co.uk/2011/10/uk-inflation-update-september-2011/>

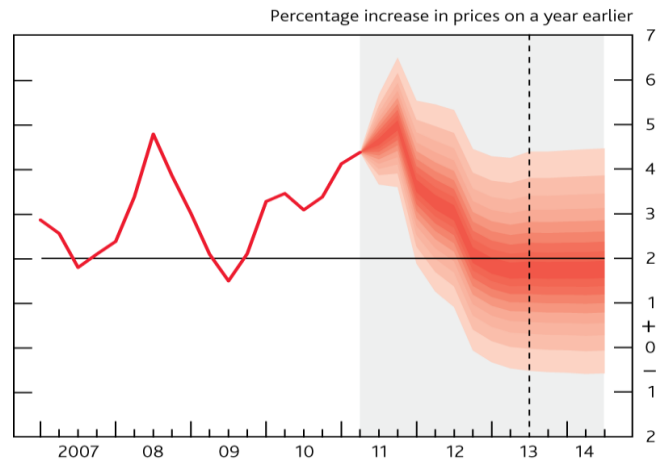


With the exception of in late 2009, the UK broadly has suffered consumer price inflation in excess of the 2% target given to the Bank of England since 2006. Additionally, the volatility of forward inflation projections has increased: a reader of the August 2007 Bank of England Inflation Report<sup>2</sup> would have noted that the spread of their 2 year forecast covered a range of uncertainty of just over 2%. The equivalent August 2011 document has an equivalent range of almost 5%:

**August 2007**



**August 2011**



Source: respective Bank of England Inflation Reports

Whilst it is expected that current inflation levels will fall over the next few months as the impact of the January 2011 VAT increase, current energy price increases fall away and anaemic UK business growth bites, it is clear that inflation is by no means a thing of the past – it is currently running at an uncomfortably high level and we should expect significant ongoing volatility.

<sup>2</sup> <http://www.bankofengland.co.uk/publications/inflationreport/index.htm>



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### Impact on Liabilities

In August this year, the Daily Mirror ran a story suggesting that pensioners could lose up to 60% of their pension income over the next 20 years<sup>3</sup>. This was based on an extrapolation of the most recent three year history of Age UK's 'Silver RPI' index<sup>4</sup> which, at 4.6% per annum, would indeed lead to that level of erosion. Lest this be seen as sensationalist, the reporting is not inconsistent with the most recent twenty year history of the Retail Price Index which would have led to a 43% erosion in the period up to September 2011.

It is clear that extended periods of time can permit the effects of inflation to build up and, particularly in the light of extensions to longevity, we should consider who is burdened with this cost and risk.

Defined benefit schemes generally retain this risk within the scheme and hence, ultimately, with the sponsoring employer and it is no surprise that many sponsors and schemes have been keen to eliminate inflation – and other risks - and budget the cost at a known level via various hedging and management strategies:

1. The first step is for the scheme to ensure complete familiarity with the terms applying to benefit payment and indexation, down to a individual case-by-case basis. This is generally carried out as part of the actuarial valuation process but can also be combined into a more general data cleansing project. Particular attention should be paid to scheme mergers, where index linkages may be subtly different and where members may retain entitlement to superior legacy arrangements<sup>5</sup>
2. Many sponsoring companies have sought to manage costs by closing schemes or restricting future accruals. Some have also explored cost reduction via restriction of applicability of subsequent salary increases into the final X/60<sup>th</sup> year service calculation. This has sometimes received a poor reception from members and unions but may sometimes be presented as an alternative to closing an otherwise good scheme to future accrual

<sup>3</sup> <http://www.mirror.co.uk/advice/money/news/2011/08/31/bleak-future-pensioners-to-lose-up-to-60-of-income-over-the-next-20-years-115875-23384227/>

<sup>4</sup> <http://www.ageuk.org.uk/latest-press/archive/silver-rpi-impact-of-inflation-for-those-in-later-life/>

<sup>5</sup> The Government's recent intervention (see Appendix) has forced attention on trust deed wording: CPI vs RPI vs statutory indexing. Beneficiaries might also be entitled to a variety of exposures to index increases: uncapped, maximum increase capped at x% pa, minimum increase floored at y% and so forth



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3. Some companies are implementing 'enhanced transfer value exercises' where members are offered the opportunity of switching their pension pot out from the DB scheme into another, usually DC, offering. The Pensions Regulator has indicated that scheme trustees should start from the presumption that such transfers are not in the members' interests<sup>6</sup> and it is clear that any successful program should be entirely transparent, have first-rate communications and include arrangements for the provision of appropriate independent financial advice
4. Many DB pensions provide benefits considerably greater than those required by legislation and some sponsors have worked on 'pension increase exchange' proposals. Beneficiaries are retained within the scheme but agree to a modification of terms of benefit: typically they would receive a higher initial pension but a lower subsequent indexation. Again, transparency, communication and advice are all key considerations

### Investment Assets

For many people inflation protected assets means inflation-linked gilts. These were first traded in 1981 with issues linked to the RPI; CPI was not introduced as a measure until the late 1980s by which time the RPI market was well established.

Index linked gilts pay a fixed percentage coupon but the notional value of the bond is scaled by changes in the RPI on a six-monthly schedule – thus establishing the inflation linkage. Earlier issues had a lag built into the inflation calculation of eight months<sup>7</sup> but this was reduced to three months in 2005.

There are some £300bn of index-linked gilts in issue at the current time<sup>8</sup>. Gilts are straightforward to deal in and sufficiently liquid to cover reasonable market requirements. However they, being fully funded, are cash-intensive and tended to have had modest returns during the 2000s 'Great Moderation', though more recent returns have been very strong. It is worth noting that the UK Debt Management Office has just concluded a consultation period to

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<sup>6</sup> e.g. <http://www.thepensionsregulator.gov.uk/docs/transfer-values-joint-statement-july-2010.pdf>

<sup>7</sup> So the inflation print taken to link a gilt in (e.g.) December 2004 would be for the period ending April 2004. This was put in place so that both the current and next notionals and coupon payments could be known to today's purchasers. It goes without saying that this provided no easy ride for institutions seeking (vainly) to protect themselves from inflation shocks in the near past as the value of this lag was readily priced into the bond

<sup>8</sup> <http://www.dmo.gov.uk/reportView.aspx?rptCode=D1D&rptName=92255225&reportpage=D1D>



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determine participants' views as to whether a parallel market in CPI index-linked gilts should be established<sup>9</sup>.

This difficulty with index-linked gilts as a return seeking asset along with their relatively inflexible maturity profile, has led investment consultants to propose the use of inflation swaps alongside conventional interest rate swaps in bespoke liability-driven investment solutions. A swap can be written at up to long maturities and is unfunded at point of purchase, so scheme assets can therefore be redeployed elsewhere for investment purposes.

The key to the emergence of the inflation swap market lay in 1996 with the introduction a the gilt repo market which allowed participants easily to borrow and lend gilts and so investment banks could hedge their exposures. Until 2008 the inflation swap market had generally traded at a discount (i.e. cheaper) than the index-linked market, however the credit crunch brought great turmoil to this market pushing swaps to a premium which has generally persisted since then for reasons of demand, liquidity and credit. At least one US investment bank has now introduced CPI-linked inflation swaps to their product range in the light of the CPI / RPI discussion, however there has been limited take-up by other market participants so the market is rather thin.

The early adopters of inflation and interest rate swaps found themselves having to work in an operationally intensive environment juggling derivatives documentation and collateral, albeit with the help of advisers and LDI managers. There is now the increased availability of pooled vehicles that permit schemes with a lower governance budget and resourcing also to hedge, which permits access to smaller to mid-size schemes.

The UK Treasury is not the only entity that has issued UK index-linked bonds. Many supranationals – for instance the EBRD, EIB and IBRD – first came to market in 2000 to issue AAA-rated sterling denominated bonds with RPI inflation linkages in answer to increased demand from insurance companies and pension schemes. They have now been joined by entities such as Network Rail, who issue index-linked bonds with maturities tightly coupled to equivalent UK index-linked bonds. Network Rail's debt issuance is covered by a financial indemnity issued by the Secretary of State for Transport yet the bonds do at times still trade at a significant beneficial yield spread.

Some commentators – particularly those keen to promote individual investment strategies – have highlighted implicit or explicit inflation linkages embedded within equities, commodities, real estate and infrastructure investment. The strongest links are those where i) inflation is

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<sup>9</sup> [http://www.dmo.gov.uk/index.aspx?page=Gilts/Consultation\\_Papers](http://www.dmo.gov.uk/index.aspx?page=Gilts/Consultation_Papers)





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contractually embedded within the terms of the investment and ii) investment returns are dominated by those terms rather than by capital gains on resale, so we would expect the linkage in infrastructure debt (though probably not equity) to be rather stronger than in equities or commodities (where the link might be via statistical correlation. For the purpose of asset-liability management, the preferred asset would be one whose sensitivity to inflation could be more precisely estimated and set against the scheme's liability sensitivity.

### **Mismatching Assets and Liabilities**

One potential issue often not considered is that the investment asset market products – gilts, supranationals, quasi-governments and inflation swaps – have uncapped and unfloored inflation sensitivity: asset returns will increase unboundedly in periods of high inflation and negative returns are possible in deflationary scenarios. However, annual increases in many scheme liabilities are capped and benefit entitlements are not likely to be reduced in a deflationary environment.

As a consequence, simple liability driven investment programs based on gilts, bonds and swaps may risk over-hedging on inflation upside and under-hedging on deflation downside – and the recent increase in perceived volatility of inflation exacerbates this risk. It is possible for the more sophisticated LDI managers to build in mitigatory or optimisation strategies based around option products but, be warned, these are not straightforward in either understanding or execution.

### **A Word on the Covenant**

One item often neglected in asset-liability modelling is the employer covenant and its interaction with the scheme Recovery Plan. The Plan can form a very significant part of scheme assets – this increasing in significance if the covenant weakens and trustees de-risk the investment strategy – and the impact of inflation on the prospects and health of the employer should also be considered.

This analysis is complicated by the fact that inflation is a dependent output driven by the state of the economy rather than a fundamental driving variable. Deflation might well be seen as a good thing – as it restricts growth in unhedged liabilities – but would likely be associated with a period of corporate stagnation. Some moderate inflation would be seen as helpful to the company, if associated with strong growth as in the early 2000s, but the current form of high inflation coupled with low to no growth is not beneficial.

Trustees are encouraged to engage with the sponsoring company on this and to take investment, actuarial and covenant advice.



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### APPENDICES

#### Indexation Developments

Readers will recall that the Government announced in 2010 that CPI was to replace RPI for the calculation of indexation of most forms of public sector pensions and that this was followed by the announcement of a 2011 parallel initiative to cover private sector pensions by way of a change to the methodology of statutory indexation.

These changes have the effect of harmonising the UK against general European practice in this area, with CPI being our equivalent of the European Central Bank's Harmonised Index of Consumer Prices measure. However, coverage was given to the differences in index composition and calculation methodology and the implication of a likely reduction in the indexation level of ongoing pensions with a consequent cost saving to schemes and sponsors.

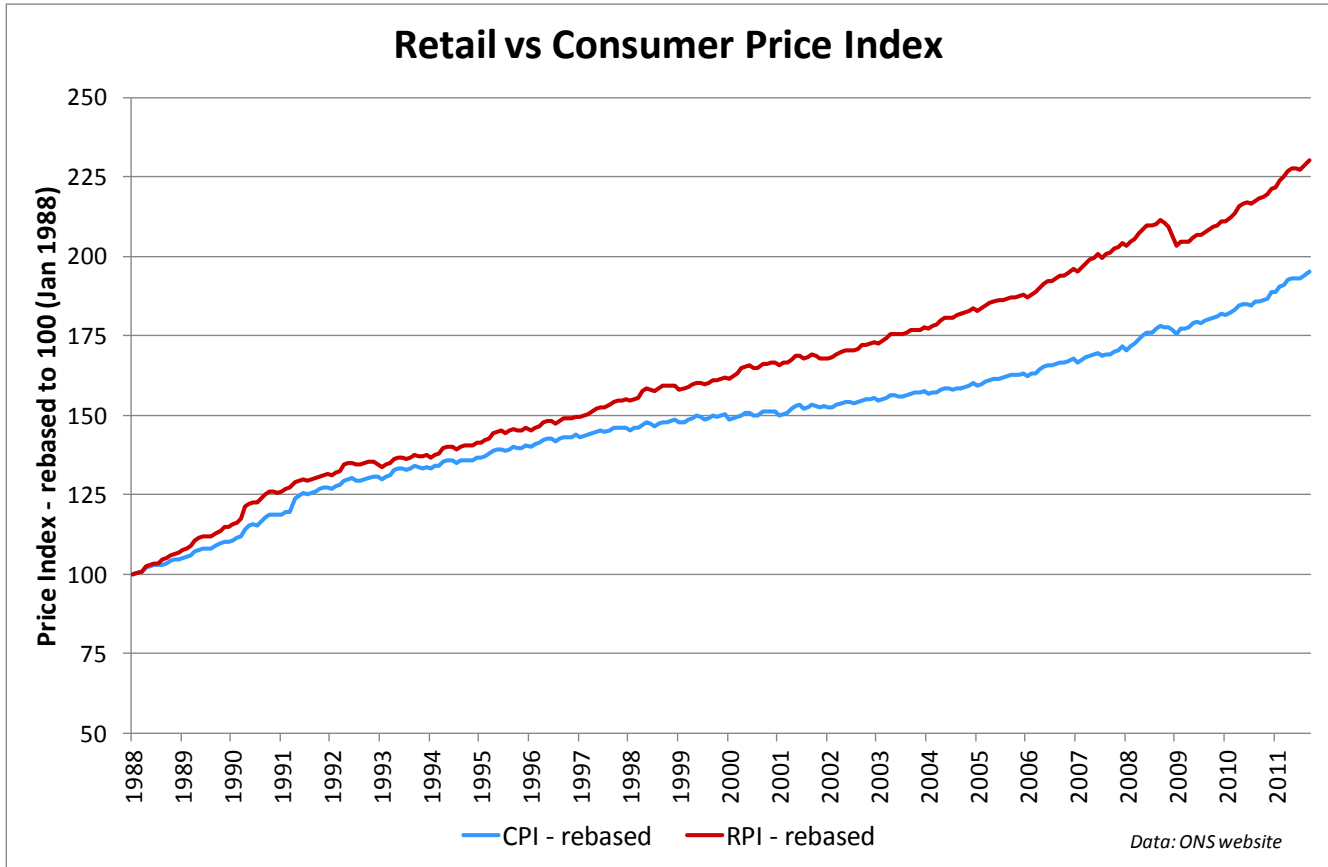
For a brief period, the effective impact on private sector schemes was rather uncertain as the Government's intent on the scope of these changes had not been made fully clear, until it later emerged that the change was to be restricted to a variation in the definition of statutory indexation and the wilder speculations concerning possible legislative overrides to provisions in scheme deeds would not be on the cards.

The story has not yet run its full course. As at the time of writing, six public sector trade unions were in the process of taking action in the High Court to challenge the Government's switch from RPI to CPI in the public sector. Depending on grounds, any success here might risk potentially also re-opening the discussion for the private sector.



## Consumer vs. Retail Price Index Comparison

RPI has been in calculation since 1947, whereas CPI was only introduced in 1988. Consequently, we have taken ONS<sup>10</sup> data for both and rebased as at January 1988.



Market wisdom seems to be that RPI inflation should, on average, come in between 0.5% to 1.0% higher than CPI per year. This is borne out by this data which shows an average difference of some 0.7% per year over this period.

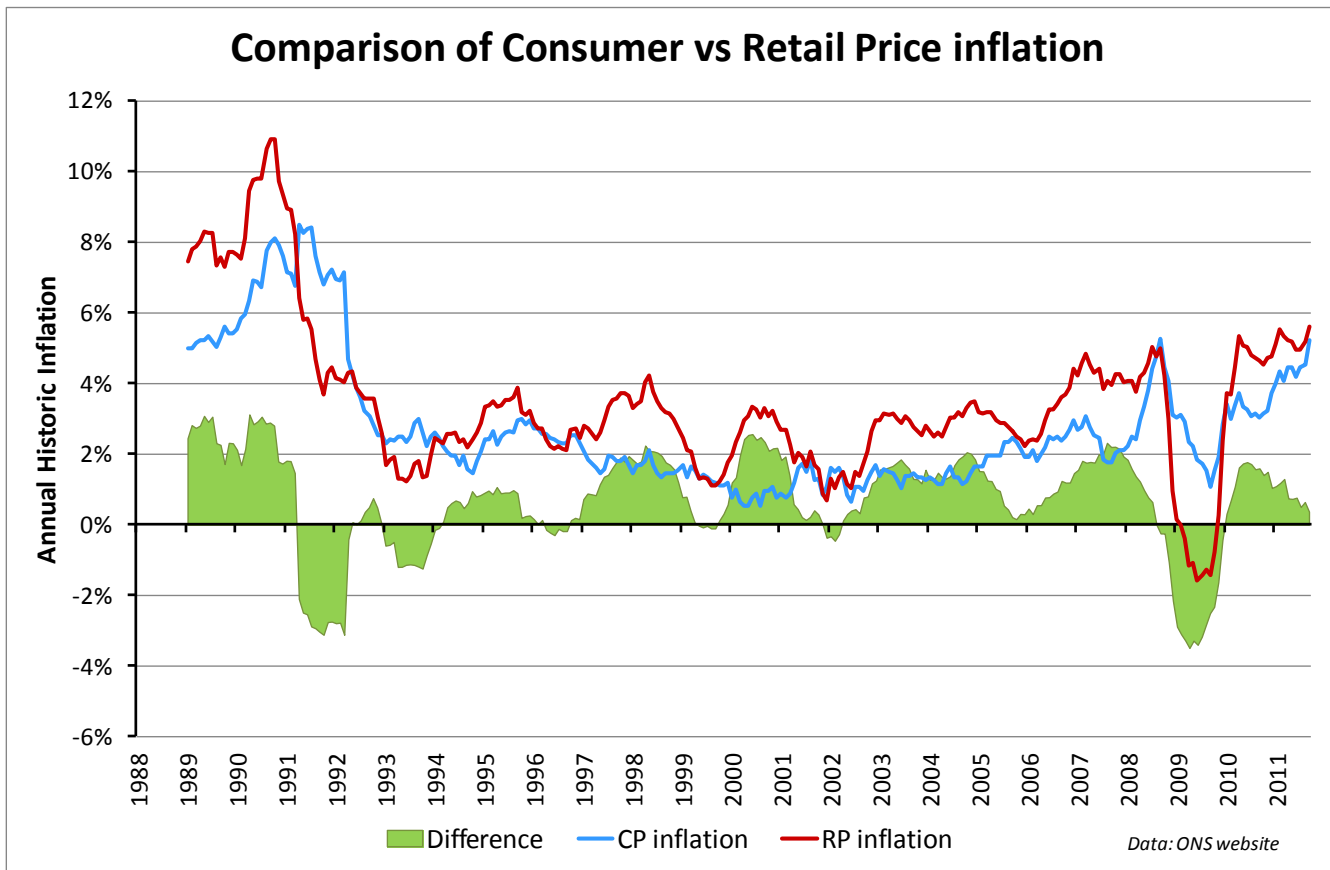
<sup>10</sup> Office for National Statistics, <http://www.ons.gov.uk/ons/index.html>





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However, there is very significant volatility in the inflation measures and in the spread between them:



The most significant difference in scope between the two indices is that the CPI excludes some housing costs (for instance: mortgage interest, household insurance and council tax) that are included in the RPI. This difference is a major contributor to the volatility in relative levels shown above.

It is also well known that the indices are also calculated somewhat differently with RPI utilising a straightforward form of arithmetic averaging<sup>11</sup> for the aggregation of price data whereas the approach used for CPI is rather more complex and, in order to understand this, we do need to explore the construction of the price index baskets a little further.

<sup>11</sup> Use the familiar formula for averaging: add all the items and divide by the number of items



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Both indices are constructed in a three-stage process, with a top-level broad division of categories, a second-level sub-division within each category and finally a third-level breakout into specific purchases. For example (from the 2011 CPI taxonomy<sup>12</sup>):

### 01.1 Food

#### 01.1.1 Bread and Cereals

*Large white loaves - sliced and unsliced*  
*Large wholemeal loaf*  
*Bread rolls*  
*Rice ...*

#### 01.1.2 Meat

*Beef*  
*Rump steak*  
*Braising steak ...*

#### 01.1.3 Fish ...

### 02.1 Alcoholic Beverages ...

Whilst RPI uses a simple average in combining all items, CPI uses a different averaging technique (“geometric averaging<sup>13</sup>”) in combining prices at the lowest level – e.g. Beef vs. Rump steak vs. Braising steak. Combination at higher levels uses the RPI arithmetic average method.

The rationale for this is that the geometric averaging model better simulates consumer behaviour in the substitution of purchases: for instance if the price of rump steak increases, at least some buyers will switch to braising steak instead. This is more consistent with the behaviour of the geometric as compared to arithmetic average calculation as it generally produces slightly lower and less volatile results. Product substitution is a much lesser effect at higher levels of category aggregation and so the use of the arithmetic average is retained.

<sup>12</sup> <http://www.ons.gov.uk/ons/rel/cpi/cpi-rpi-basket/2011/index.html>

<sup>13</sup> Geometric averaging involves multiplying the items together and taking the ‘nth root’



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