



Pension
Protection
Fund

Pension Protection Fund: Investment Strategy and LDI Survey

Results and KPMG Commentary

January 2008

INVESTMENT ADVISORY

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PPF: Investment Strategy and LDI Survey

Introduction



Pension Protection Fund

Background

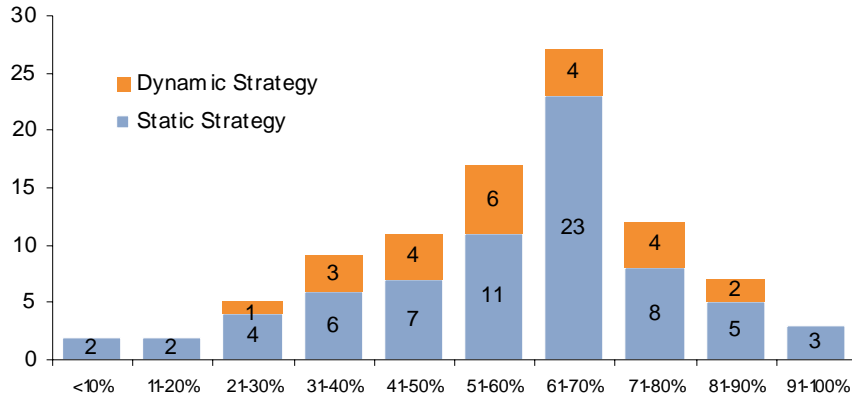
- Liability driven investing (LDI) in its loosest interpretation encompasses all pension fund investments. However, it is now generally accepted that LDI refers to investments where a certain degree of hedging of interest rate and/or inflation risks takes place. This may be achieved though either a portfolio of physical bonds or a portfolio of bonds/cash with a derivative overlay.
- With the advances in financial engineering, pension schemes are increasingly investing their assets in LDI arrangements in order to reduce the funding level volatility that they are exposed to as a result of interest rate and inflation changes.
- To assess the potential medium and long term trends in pension scheme investment policy, the PPF conducted a survey of a number of the large UK pension schemes.
- Responses were received from 95 pension schemes (predominantly the very large pension funds) with approximate assets totalling £191bn.
- The summary of the results of the survey are set out on the following pages with brief commentary and our views.

PPF: Investment Strategy and LDI Survey

Allocation to "Growth Assets"



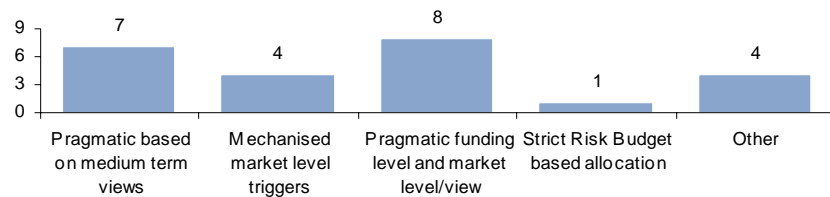
Distribution of allocation to "Growth" Assets



What the survey says

- As might be expected the majority of the pension funds have allocations of between 50% and 70% in growth (i.e. non-bond) assets. The distribution is slightly heavy on the high "growth" assets, compared to the distribution of all UK pension schemes. This is understandable, given the large (and very large) scheme bias in the survey.
- However, the distribution above is slightly distorted by trustees' increasing adoption of dynamic asset allocation strategies. In that the distribution of scheme assets including dynamics strategies differs from the distribution of static strategies only (without the orange bars)
- Over a quarter of the 95 pension funds opt for some form of dynamism in their asset allocation.

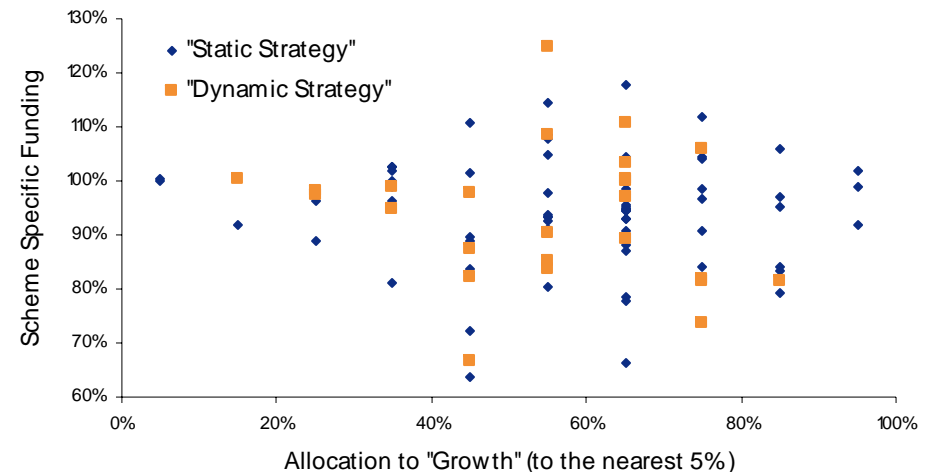
Distribution of dynamic strategies pursued



- Of the 24 pensions employing a dynamic strategy, only one adheres to a strict risk budget based allocation. This is where the trustees determine an appropriate risk budget and the allocation is kept in line with this risk budget as market expectations of risk evolve. Flexible (pragmatic) approaches are preferred over mechanical approaches.
- The four "other" approaches include:
 - a mechanical, quarterly move subject to market movements;
 - trustees perform annual investment strategy reviews; and
 - delegating a proportion of the scheme to the discretion of an active fund manager.
- The chart on the bottom right illustrates the relationship between scheme funding and the allocation to growth assets.
- One may expect and perhaps even desire that schemes with higher funding should adopt a less aggressive investment strategy (barring sponsor covenant strength). However, the results confirm no link between funding and the scheme's allocation to risky assets. Nor is there any link between funding and scheme adoption of dynamic asset allocation strategies.

- We performed a series of regression analyses which yielded no discernible correlation between any of the factors illustrated.

Funding levels by allocation to "Growth" Assets

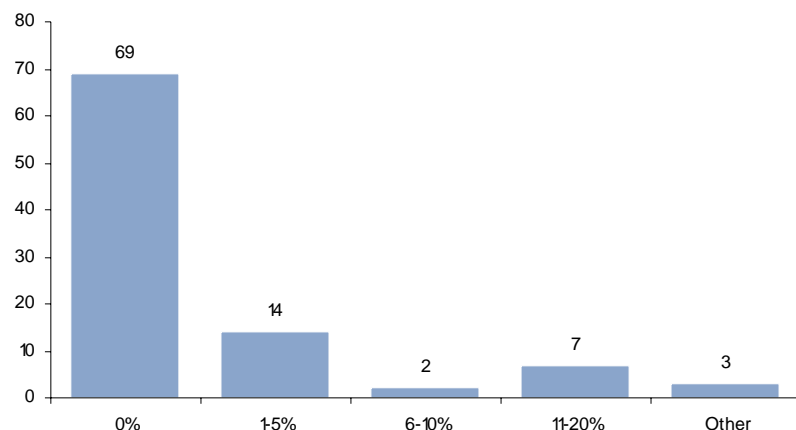


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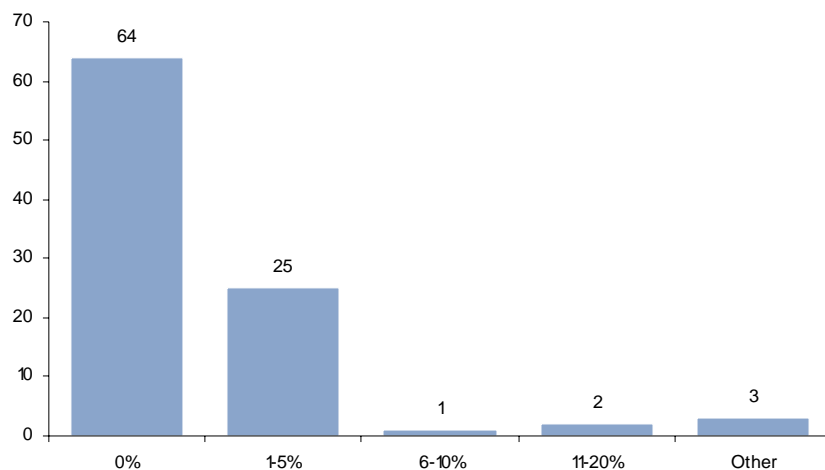
Allocation to “Growth Assets”



Distribution of allocation to Hedge Funds



Distribution of allocation to active currency



What the survey says

- The majority of schemes surveyed do not have an allocation to hedge funds. Only 26 of the 95 employ hedge funds. The popular choice is an allocation of no more than 5%. There are 7 schemes that have an allocation between 11% and 20%. Those in the other category, on the whole, have the allocation to hedge funds delegated to one of the scheme’s active fund managers, as part of an overall risk/return target on a tranche of assets.
- Active currency is slightly more popular than hedge funds, but still remains an investment vehicle for the minority of the schemes. Although, we should note that a number of aggressive bond managers depend quite heavily on the currency markets in generating their added value. Therefore for some schemes it may be quite natural to avoid additional currency exposure through a separate active currency manager. Where trustees employ a specialist currency manager it is rarely for more than 5% of the scheme assets.

KPMG View

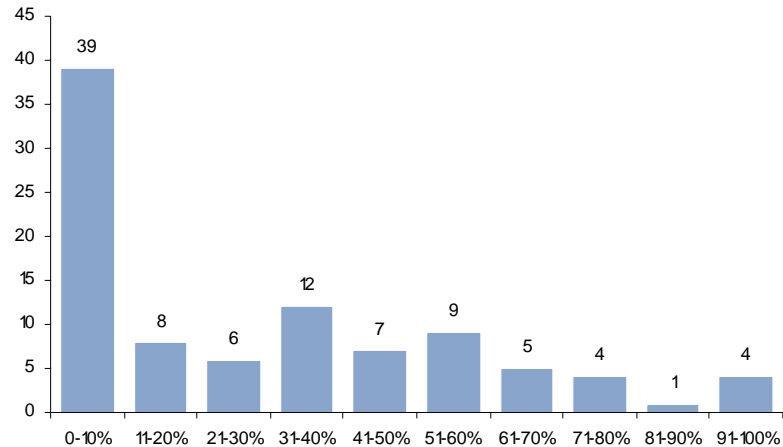
- The survey responses in this and the previous page largely accord with our experience.
- Given the survey of the very large pension funds, we should perhaps have expected a slightly higher proportion of schemes adopting a dynamic approach in their asset allocation. However, it is possible that the larger pension funds are reviewing investment strategy more frequently i.e. annually rather than triennially.
- In our experience a pragmatic approach is preferred by trustees who have the resources to monitor the many potential variables of interest. A pragmatic approach allows the trustees to take account of market conditions in their exposure. Although, trustees need to be disciplined in their approach for this to be a success i.e. avoid being overwhelmed by regret.
- We should expect an increase in active risks (the likes of hedge funds) as pension schemes reduce exposures to certain systematic risks. Hedge funds in particular become an attractive proposition to many trustees once the scheme has hedged its exposure to interest rates and inflation. Until that occurs hedge funds and other active vehicles may be seen as relatively high risk in the presence pension fund liabilities.

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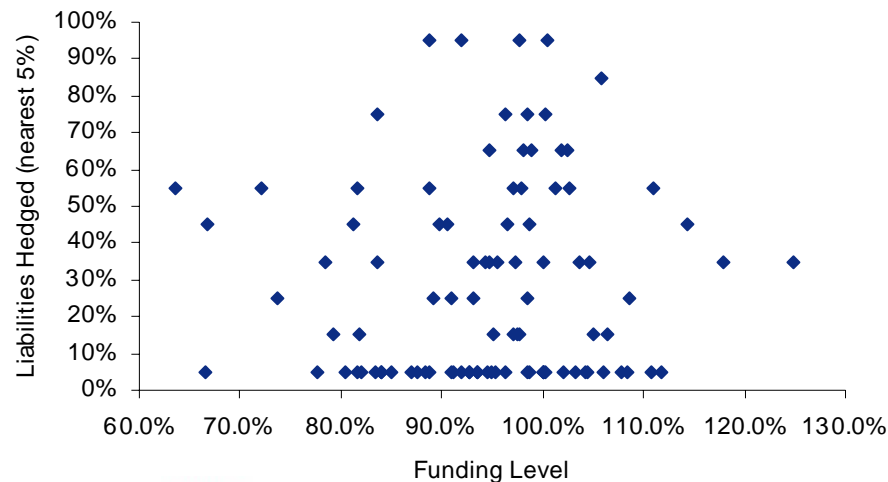
Liability Hedging



Distribution of proportion of liabilities hedged



Funding levels and proportion of Liabilities Hedged



What the survey says

- The majority of the schemes estimate that only a small proportion of the scheme liabilities have been immunised/matched or hedged by investments in bonds (and/or derivative overlays).
- The chart on the bottom illustrates the relationship between scheme funding and the proportion of liabilities hedged. Where a scheme hedges a large proportion of the liabilities, funding tends to be nearer the 100%. With funding significantly above and below 100%, the proportion hedged is significantly lower.

KPMG View

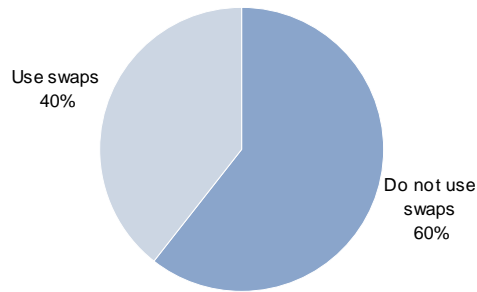
- We are somewhat surprised by the large number of the low proportion of liabilities hedged by the surveyed pension schemes. This may be due to the fact that scheme liabilities are multi-dimensional i.e. nature (fixed/real), term etc. However, most schemes hold only fixed income bonds, and perhaps far lower duration than the aggregate liabilities, but may nonetheless hedge a specific tranche of the liabilities. For example, a scheme of £1bn might have £300m of fixed pension liabilities of duration 13years (but total liability duration of 26years) whilst holding £300m in bonds with approximate duration of 13years. In this case the proportion of liabilities hedged should be 30% of total liabilities. However, some may calculate the hedged proportion to be only 15% - the argument being that bonds have only half duration of total liabilities thus this segment only half hedges the total liabilities. We should therefore argue that the figures illustrated on the top-left chart are in some cases potential underestimates, along the line of the argument above.
- The bottom chart appears to be loosely in accord with the belief many pragmatic trustees have that where: funding is high the scheme, although can afford to take investment risks but need not do so, and where funding is severely low the schemes needs to take a certain degree of investment risk to help get back to full funding, given the PPF is insuring a certain level of benefits. We believe employer covenant should be key in the funding and investment policy.

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Hedging Exposure to Interest Rates and Inflation



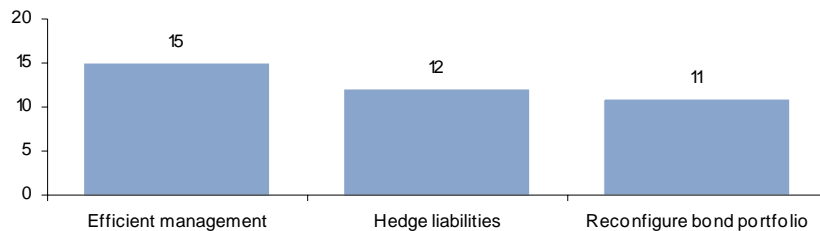
Number of funds that use interest rate or inflation swaps



What the survey says

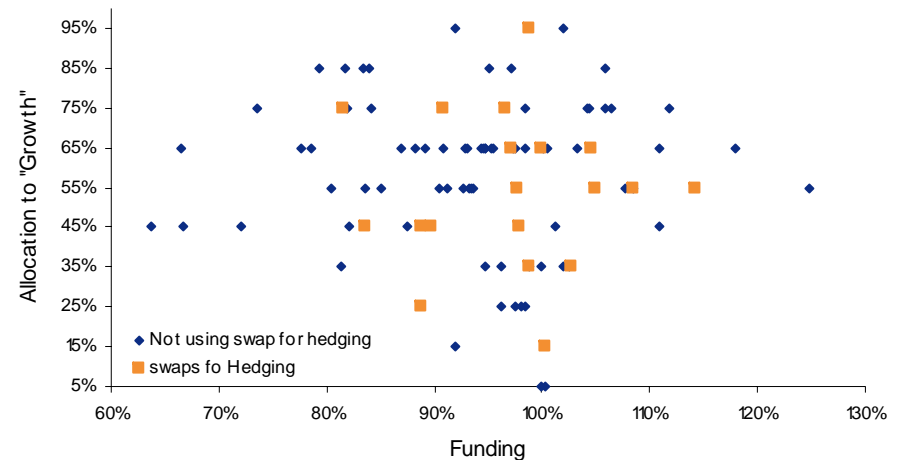
- Of the 95 schemes surveyed 38 employ swaps in their portfolios.
- Of these, around a half (15 of the 38) simply allow their active bond manager the freedom to enter into swaps to better manage their bond portfolio.
- A further 11 schemes only use swaps to reconfigure (typically extend the duration of their) bond portfolios.
- Only 12 of the 38 employ swaps to specifically hedge interest rates and inflation risks.

Use of Swaps



- As with the hedging of liabilities the chart below illustrates the propensity of the funded and near funded schemes to hedge interest rates and inflation risks.

Funding level, level of "Growth" Assets and the use of swaps



KPMG View

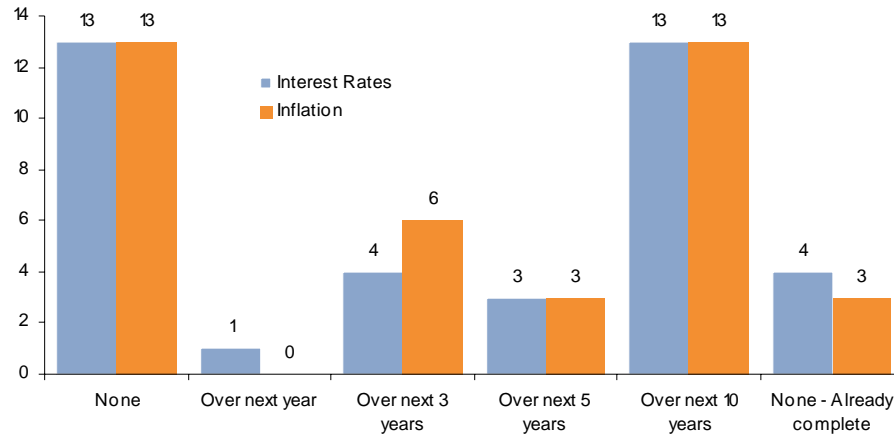
- Swaps and derivatives in general are almost commonplace in terms of active managed portfolios of bonds. However, the use of swaps in hedging interest rates and inflation remains in the minority.
- This deterrents of the wider use of swaps are:
 - Aware of the severe supply demand issues with regards long interest rates and inflation.
 - Trustees remember long interest rates in the near 10% mark.
 - Alternative means of reducing scheme risk – diversifying.
 - Belief in equities as the long-term asset class.
 - Fearful of complexity
 - Inertia (seen as a transaction the trustees can do without)

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Future Hedging of Exposure to Interest Rates and Inflation



Future plans on hedging Interest Rates and Inflation



What the survey says

- Of the 95 schemes surveyed, 38 have formally considered the use of swaps in managing their fund's exposure to interest rates and inflation.
- 13 of the 38 have no plans for future programmes of hedging interest rates and inflation using swaps. One of the responses stated that they thought the fund was too large to implement any meaningful hedge over a meaningful time horizon due to supply constraints.
- The majority of the schemes planning further programs of hedging envisage completion in 10 or more years. Only one scheme planned to hedge within the next year, for interest rates only, being a highly liquid market compared with the inflation market.
- The above response illustrates that pension funds are happy to consider interest rate hedging and inflation separately.
- The results also suggest that pension schemes have implemented a larger portion of the interest rate hedge than the inflation hedge. This is consistent with supply/demand issues and the consequential pricing levels.

KPMG View

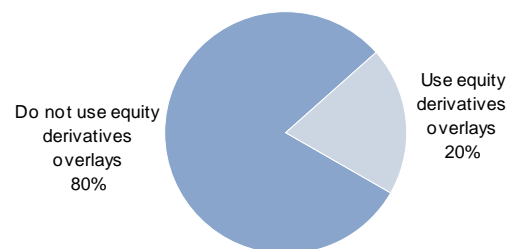
- The survey confirms that there are a large number pensions schemes who have not fully considered their investment strategy in the light of all the financial tools they have available to them.
- To date, based on information we have received from a number of the major banks involved in the UK inflation market, we have deduced the following:
 - 2004: c£5bn of real liabilities hedged
 - 2005: c£10bn of real liabilities hedged
 - 2006: c£20bn of real liabilities hedged
 - 2007: c£25bn of real liabilities hedged
- Thus we should expect around £60bn of real pension liabilities has been hedged using derivatives. There are also indications that a further £30bn of fixed pension fund liabilities has been hedged with the help of derivatives.
- In terms of market capacity, the UK government generally issues a third of gilts in index linked form, which equates to £15bn per year currently. Over the last two years there have also been £15bn inflation linked bonds from corporates, utilities, PFIs and structured deals. This has helped enormously in providing supply of inflation and long rates to pension funds, over the last two years. However, this has almost come to halt under the current market conditions. So supply may be half what pension schemes have become accustomed to over the coming year.
- However, in the long term we should see return of supply from these providers. But even then it is unlikely the UK market will support more than £30bn per annum without a large change in rates offered. Therefore it might be 12 to 15 years before the £400bn or so of pension liabilities (that remain unhedged in terms interest rates and inflation) to be hedged, in any ordered manner, without deepening the supply demand imbalance. But then not all pension schemes will wish to hedge interest rates and inflation.

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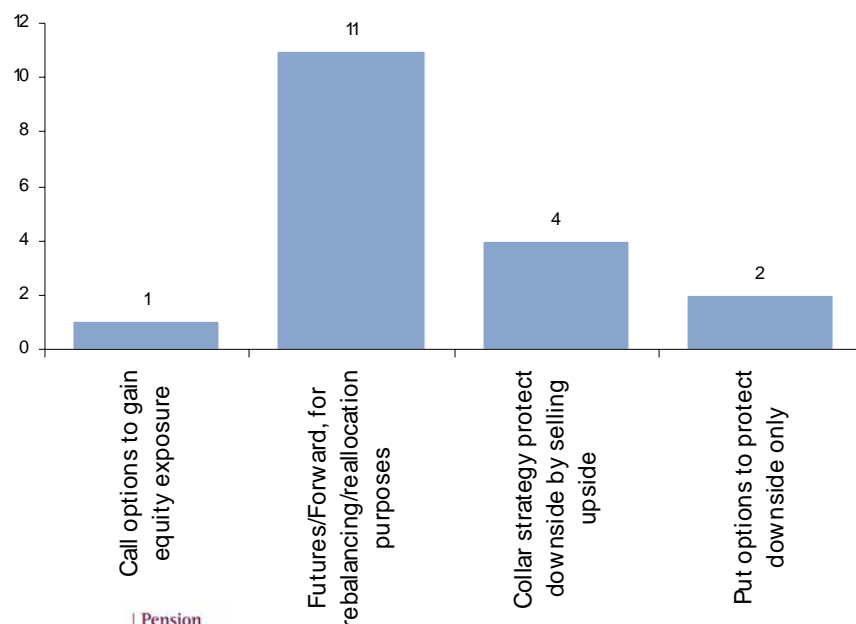
Hedging Exposure to Equity Risks



Pension funds and equity derivatives



Use of equity derivatives



What the survey says

- The majority of pension funds do not directly employ equity derivatives in the portfolios.
- Of the 18 schemes that do employ them, the vast majority (11) use only forwards and futures in rebalancing portfolios. Two schemes have bought protective put options to hedge against a certain level of equity downside. Four schemes have implemented a collar i.e. sold a certain level of upside to purchase some down-side protection. One scheme has bought a call option to take advantage of potential equity outperformance.

KPMG View

- In our experience the use of equity derivatives, in all but transitions and rebalancing, is rare. However, their use is becoming increasingly appropriate.
- The banks with pensions solutions teams believe that they have collectively implemented around £20bn of equity options over the last 2 to 3 years. However, that number may involve some double counting – schemes need to purchase a £10bn equity put option and sell £10bn of equity call option to place a collar on £10bn of equities. Hence, the banks' estimate of £20bn may translate to £10bn of equity collars. Although, not all schemes opting for an equity options strategy will necessarily opt for a collar.
- Equity hedging strategies may not make much sense in a pension funding framework without also the hedging of interest rates and inflation. This may well be one of the deterrents of the wider use of equity options, the others are:
 - Cost of options, particularly at current levels (a year or two ago, prices were quite attractive, many of the transactions seen in 2006 and early 2007 was a results of attractive/opportune pricing). Although, current high pricing may suggest some value in selling excess return through the sale of a out-of-the-money call option. This effectively puts a ceiling on equity returns and generates an additional Contribution (option premium).
 - Alternative means of reducing scheme risk – reduce reliance on equities for additional returns.
 - Belief in equities as the long-term asset class.
 - Fearful of complexity
 - Inertia (seen as a transaction can do without)
- We therefore do not envisage widespread use of these tools.