

## Reducing risk for defined benefit pension arrangements - some practical approaches

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### What do we mean by Risk?

When one looks in a dictionary for a definition of "risk", the options are somewhat frightening – 'hazard, danger, chance of loss or injury'.

One imagines Harrison Ford in action as Indiana Jones – or his Indian counterpart Akshay Kumar - pension schemes don't immediately spring to mind.

But we in the business understand 'risk' from the pension scheme's perspective – so we need to define what we mean.

The Pensions Management Institute defines risk as 'the likelihood of a return different to that expected and the possible extent of the difference' This would tend to limit the situation to investment, so perhaps a better definition is likelihood of an **outcome** different to that expected.

So not only do we need to limit this likelihood, but first we need to define, and manage, our expectations.

So what is the exposure to risk? If you were to ask an employer sponsor they would undoubtedly say that their chief concerns are volatility of funding level and the potential for a defined benefit scheme to cost more than had been expected. Now this may be due to adverse investment conditions appearing as either

- A fall in real and/or nominal bond yields, which decreases the net discount rate used to value liabilities ("interest rate risk")
- Growth assets (primarily equities) falling in value ("equity/market risk")
- Alternatively, assets providing inadequate future returns against targets
- Assets demonstrating more volatility than anticipated (see Appendix for charts showing the variability of returns over last 30+ years)
- Issues with manager failure ("investment manager risk")
- But there are other risks just as important:
  - that the pensions will cost more to provide because people are living longer ("longevity risk")
  - that starting levels of pensions will be more than anticipated because of higher salary rises than expected ("inflation risk"),
  - that starting pension levels will be higher due to inflation affecting revaluation of deferred pensions (again "inflation risk" - although this would usually be capped) These risks here are often tied in with the investment risks above, (see Appendix for charts showing the variability of price and salary inflation over last 30+ years)
- Similarly that inflation will impact on the levels of increases required to pensions in payment (although again this would usually be capped)
- that the sponsor is unable or unwilling to support current or future levels of contribution ("covenant risk")

That the trustees have powers to set the employer contributions and/or to demand full buy out funding with annuity policies ("operational risk")

Government prescribing that benefits have to be paid at a certain level, or the scheme must be run in a particular way ("legislative risk") The UK private sector pensions system is governed by EU legislation as well as domestic laws and EU employment law is not well suited to the UK pensions and social security system

That the scheme 'gets it wrong' by miscalculating the benefits, making unsuitable strategic decisions or making mistakes when setting the documentation – or that the company will be held responsible for action in this area ("reputation risk")

And all these risks need to be considered in the context of what effect they have on the employer – if the scheme is small compared to the company overall, then the company may be prepared to take a higher risk. The size of a funding deficit relative to the sponsor's business is relevant here. We have all heard it said the British Airways is a pension scheme that happens to fly aeroplanes!

It is clear that employers are increasingly seeing their defined benefit schemes as a significant business risk; particularly where the scheme is closed to new entrants or future accrual and the main focus is on a different pension arrangement which may be a low cost Defined Benefit scheme or more typically a Defined Contribution scheme.

A more recent phenomenon is the risk of Defined Benefit schemes becoming overfunded and having trapped surplus that the employer cannot recognise in its accounts.

There are various ways in which the risks can be addressed. The following comments are written from a UK perspective and focus on the limitations and requirements of UK legislation. However some of the concepts are equally valid in other environments – subject to any legislative or market constraints in those countries.

Broadly the activities can be split into managing the risks for the assets within the scheme, managing the risks for the assets outside the scheme, and managing the liabilities.

### **Managing Risks**

#### **Managing risks for the assets within the scheme**

If the employer bears the balance of the cost of the pension scheme, it is necessary to limit the investment risk that the scheme assets will not achieve the returns that had been anticipated when setting the funding figures, or that the benefits will cost more to provide at retirement. This splits broadly into

#### **Market risk and investment manager risk**

The main asset class held by most pension schemes in the UK is equities – both UK and overseas. But while equities are expected to generate good long term return (and hence keep the cost of the scheme down), they are volatile. A typical economic model might assume that equities generate returns average of say 8% pa, with volatility of 16-18%. What this means in practice is that there is over a 30% chance of negative performance in any single year.

When pension scheme asset values could be smoothed for valuation purposes, this was not a major problem. However now that pension schemes are marked to market (both from a funding and an accounting perspective), companies are finding such volatility unacceptable. The most obvious approach is to move away from equities to bonds – (one of the UK's large private sector schemes made a very high profile switch to 100% bonds in 2002) however doing so also gives up almost all of the expected future return above a risk-free rate. A more common approach is to diversify the pension scheme's growth assets, so that instead of holding solely equities the pension scheme holds a mix of, for example, equity, property, private equity, hedge funds (typically targeting absolute returns with low volatility) and other growth assets. Such a strategy can generate expected returns at a similar level to an equity portfolio (around 8% pa) but with volatility of less

than half – say 5-10%. Based on a volatility figure of 8%, this means that the chance of negative performance in any single year is down to 15%.

Of course, diversifying growth assets means that upside potential is reduced as well as downside risk. But given that the sponsor itself gets limited value from substantial out-performance, this is often felt to be acceptable.

However there are clearly costs involved in implementing such a change: advisor's fees, transition fees and management time within the pension scheme itself.

Even if the allocation of assets is set in order to minimise the risks, there is still the chance that the investment manager will not deliver the required returns. This risk can be managed by frequent reviews of the investment manager, setting tight criteria for success – or by passive investment management.

### **Interest rate risk and inflation risk**

The way that pension schemes are valued, whether for funding or accounting purposes, means that they are sensitive to changes in interest rates and inflation. Typically a 1% change in interest rates will change liabilities by around 20% but will only change the value of bond assets by around 10%. Changes in inflation have a similar impact.

This imbalance between the interest rate/ inflation sensitivity of assets and liabilities means that the scheme, and hence the sponsoring company, has significant unhedged interest rate and inflation exposures.

The conventional way of dealing with interest rate risk is to put more money into bonds. However this has two problems. Firstly, as mentioned above, purchasing bonds means giving up growth assets, which in turn means increasing the expected cost of the scheme. Secondly, even a 100% bond portfolio does not have as much interest rate sensitivity as the liabilities, due to the fact that very few bonds have as long duration as the liabilities.

A more sophisticated approach to interest rate risk, and one that is now in use even with relatively small schemes, is to maintain a growth portfolio but to then increase the hedging against interest rate and inflation sensitivity via swaps contracts, in which one party agrees to pay a fixed interest rate in return for receiving a variable rate from another party.

Although this is clearly a sophisticated investment strategy, it is one that is becoming common, and it can dramatically reduce interest rate risk to the point that the vast majority is removed.

Again there are costs in any change of investment strategy: advisory fees, the work involved in getting the right structure in place, the implementation costs itself (which mainly reflect the spread on the investments) and the annual management of the contracts. Finally, there are implications in relation to the funding of the scheme, as a change in the underlying assets will usually have implications for the assumptions that are used to value the scheme, either on a funding or accounting basis (putting in place such protection, to remove most of the inflation and interest rate from the scheme, might cost up to 10% of the scheme's accounting liabilities, depending on the profile of the scheme).

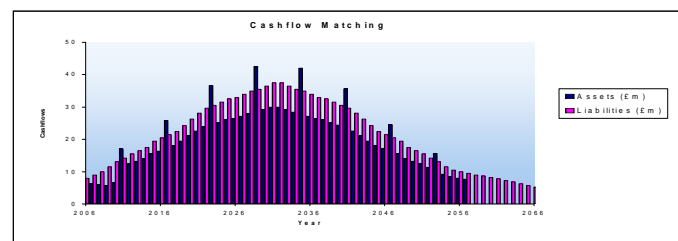
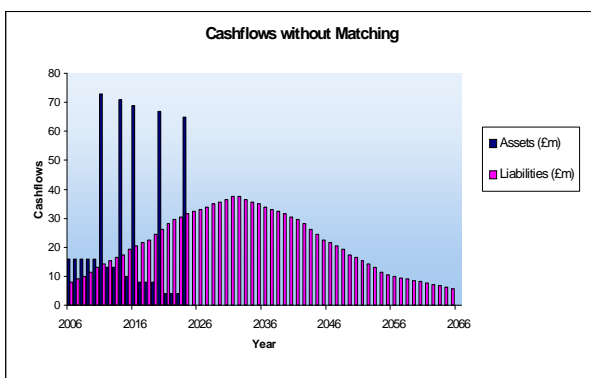
### **Tools for reducing investment risks**

Within both of these, asset-liability modelling tools can be used to demonstrate the effect of different investment strategies, different economic scenarios and different funding strategies on the funding level and contribution rate for the scheme. Trustees and employers can then see the volatility in these variables and understand the risks inherent in their strategy. This has been refined yet further using Liability Driven Investment (LDI) strategies, so that pension schemes can identify, mitigate and reward risk more efficiently.

The starting point is to construct an asset-liability model (ALM) of the scheme and use this model to derive an allocation to each asset class considered, looking at the required cash flows.

In order to implement the strategy, a benchmark needs to be set for each asset class; and managers hired to invest with respect to the chosen benchmarks. At this stage schemes typically revert to *manager* benchmarks for each asset class based on published indices. These indices may not provide a good approximation to the scheme liabilities and so, as inflation and bond yields change, the liabilities and index behave differently. This is known as a “tracking error” between the assets and liabilities and is often unwanted risk. Under LDI, once the liabilities are understood and the suitable benchmark created, a risk tolerance will be set against this benchmark, and then a portfolio will be created of return-seeking assets using swaps and other financial instruments to remove any unwanted risks.

**Bespoke Portfolio.** The simplest approach is to draw up a bespoke portfolio of bonds. However it is not possible to achieve a perfect match; because bond portfolios are typically shorter-term than the liabilities and the cash flows are distorted by the redemption payments.



The charts above show a typical schedule of cashflows from the liabilities and the assets, before and after a matching exercise. However it can still be seen that the liability cash flows extend beyond those of the assets.

**Intermediate Benchmark.** The next level is to overlay the bespoke portfolio with a portfolio of interest rate swaps that extend the term and reduce the “lumpiness” of the asset income. The fund manager will still be asked to manage against the bespoke portfolio.. The aim is to minimize unwanted risk and give trustees a framework to take risk explicitly, measured against a more tailored scheme liability benchmark.

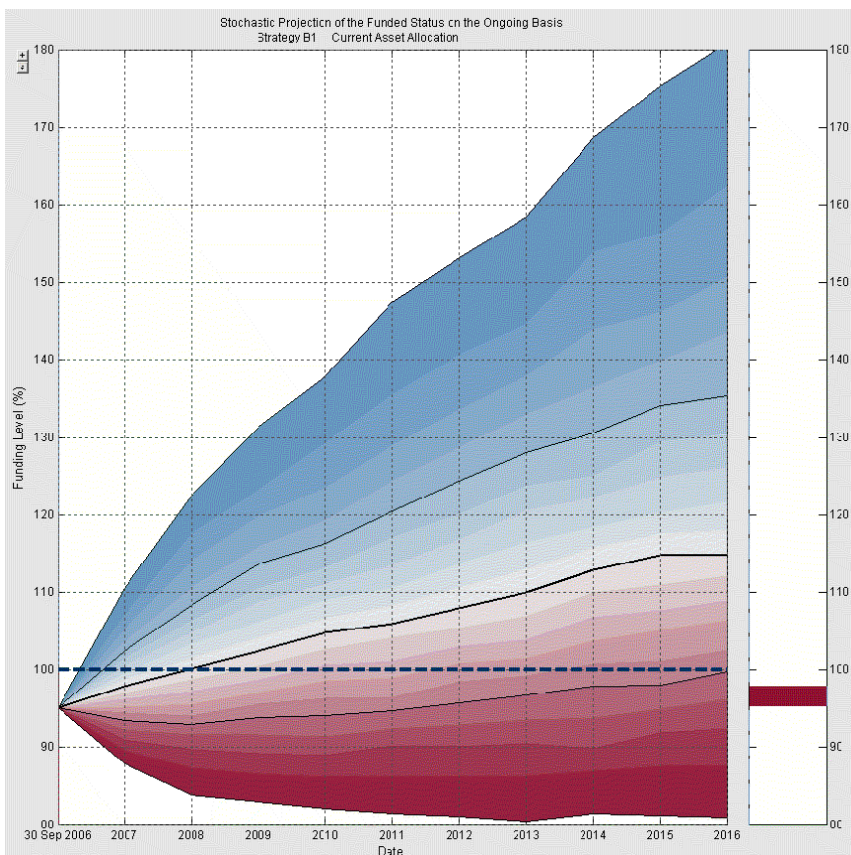
**Cash Plus Swaps.** Rather than starting with a bond portfolio, a third approach involves building a swaps portfolio that will pay a precise match for the projected scheme payments in return for payments linked to interest on cash. This leaves a large part of the scheme’s cash intact, a proportion of which can then be invested in search of extra returns. The fund manager’s performance target is then to outperform interest on cash by x%. This has the advantages of being simple to understand and monitor, as well as enabling a wide range of investments to be employed including, for example, absolute return funds.

To date, the sophisticated solutions have only been an option for the bigger schemes that can afford the luxury of a bespoke solution. But fund managers are starting to provide pooled funds that will open up the market to smaller clients (e.g. a minimum allocation of only £1m).

**Managing risks using assets outside the scheme**

While risk can be reduced (or its impact lessened) for a scheme by putting money into the fund, this may not be attractive due to the fact that the funds will then be trapped in the scheme with little prospect of return if they turn out not to be needed. It also may not be possible due to cash flow constraints.

In particular there are a growing number of schemes which already have an unrecognisable accounting surplus (ie one which cannot be used by the employer and therefore does not feature as an asset in the accounts) and many employers are becoming aware of the possibility of 'trapped surplus'. The increase in the number of Asset Liability Modelling exercises, and the increase in the interest being shown in their results by sponsoring employers, highlights the issue of trapped surplus. Take the following "funnel of doubt" derived from an Asset Liability Modelling exercise:



This shows that for the scheme in question, which is funded on a rather prudent basis, the chance of being fully funded in 10 years time is 75%, but there is also a 25% chance of being over 135% funded.

However one way to improve the funding position of the scheme, while still retaining control of the funds, is to use contingent assets.

In broad terms, a contingent asset is a financial arrangement whereby the pension scheme receives a cash (or similar) injection in the event of certain trigger events arising. Often the trigger event will be the insolvency of the sponsor, but other triggers will be possible, for example, changes to the funding level or changes to the corporate strength or structure of the sponsor.

Using contingent assets helps to minimise the “operational risk” of a scheme building up a surplus which cannot be returned to the employer unless stringent conditions are met. This device also helps to reduce the “covenant risk” by demonstrating the willingness of the employer to put funds towards the pension scheme (even if not in the scheme itself) and partly meeting the trustees’ demands for funding.

Such assets do not technically increase the assets of the scheme and therefore the deficit remains unchanged. However, they do increase the security for members and as a result are taken into account (subject to certain criteria) by the trustees, Pensions Regulator and the Board of the Pension Protection Fund.

Contingent assets can therefore be used in a funding strategy, to benefit both the employer and trustees.

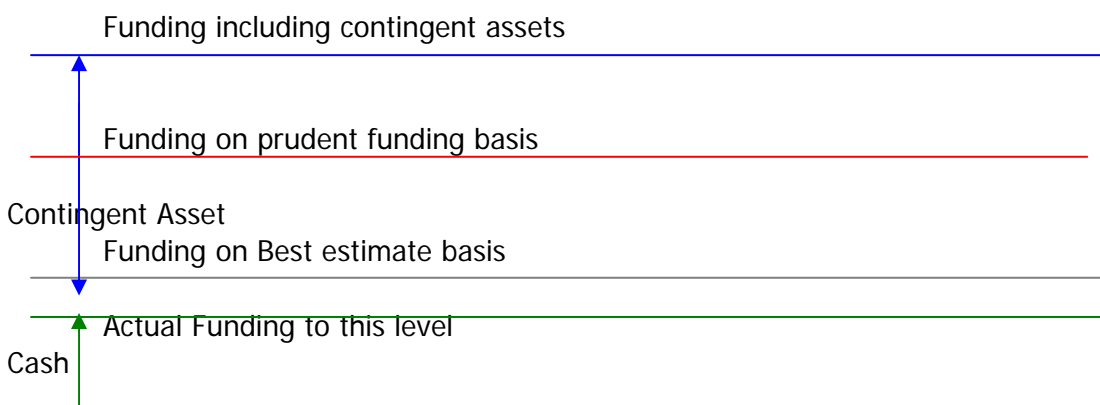
Let us take a scheme with no contingent assets:

<b>Trustees:</b>	Prudent funding basis	<b>Employer:</b>
P (Success): 70%	—————	P (Surplus): 70%
P (Failure): 30%		P (Trapped Surplus): 50%

From the Trustees’ viewpoint, ‘success’ means the scheme being fully funded in 10 years time. From the employer viewpoint, that full funding means there is a no deficit which has to be met out of company profits.

In this case the scheme is funded on a prudent funding basis and whilst the trustees may be happy to suggest a contribution strategy such that an ALM indicates a 70% chance of being fully funded, in 10 years time the employer may not be happy if there is a substantial trapped surplus.

So what about the trustees agreeing to less prudent funding if the employer puts in place some contingent assets?



From the trustees’ perspective, if they take account of cash plus contingent asset the probability of success is higher. From the employer’s perspective the probability of there being a trapped surplus falls. However various parties to the scheme will have different views on where the lines of funding should be.

There are a number of ways in which the trustees can get to where they want to be:

- The trustees could start with the premise that they want to fund to buyout – and then agree to move from this point in negotiations, by substituting the desired cash with contingent assets down to an agreed level. This may be appropriate for schemes with a very poor employer covenant.
- Alternatively the trustees could present the employer with a number of suggestions for funding.
- As covered in the Regulator's guidance on the use of contingent assets, the trustees could stick to a more prudent funding target, but accept a longer recovery period, provided there are contingent assets to support the contributions.

There are various types of contingent asset, from those that closely resemble cash (eg escrow accounts, charges on assets and collateralised letters of credit) to others that are premium based (eg insurance contracts and credit default swaps). Some examples, including a charge over a property, insolvency insurance, or a parent company guarantee, may involve the parent company committing to make a certain payment in the event that the normal sponsoring employer is unable to make that payment. If the contingent assets are to be used as part of the scheme funding strategy, the Regulator's guidance must be considered.

There have also been developments in how such vehicles are financed – for example, in conjunction with the insurance market, a Letter of Credit has been developed which is suitable for UK pension schemes (including being recognised by the PPF) but is backed by insurance premiums rather than tying up capital or loan facilities.

The most appropriate type of asset is not usually determined by the nature of the pension scheme, but by the nature of the sponsoring employer, and which type of asset best suits the business. The clear benefit to both trustees and companies of such funding strategies mean that contingent funding is likely to become more common over time. The costs of putting such a strategy in place depend greatly on the type of asset being used. The benefits of the strategy would usually be lower cash contributions to the pension scheme.

### **Managing the liabilities**

As an alternative to managing the risk via the assets or managing the funding of the benefit, the risks can be reduced by managing the liabilities or the cost of providing them.

#### Longevity risk

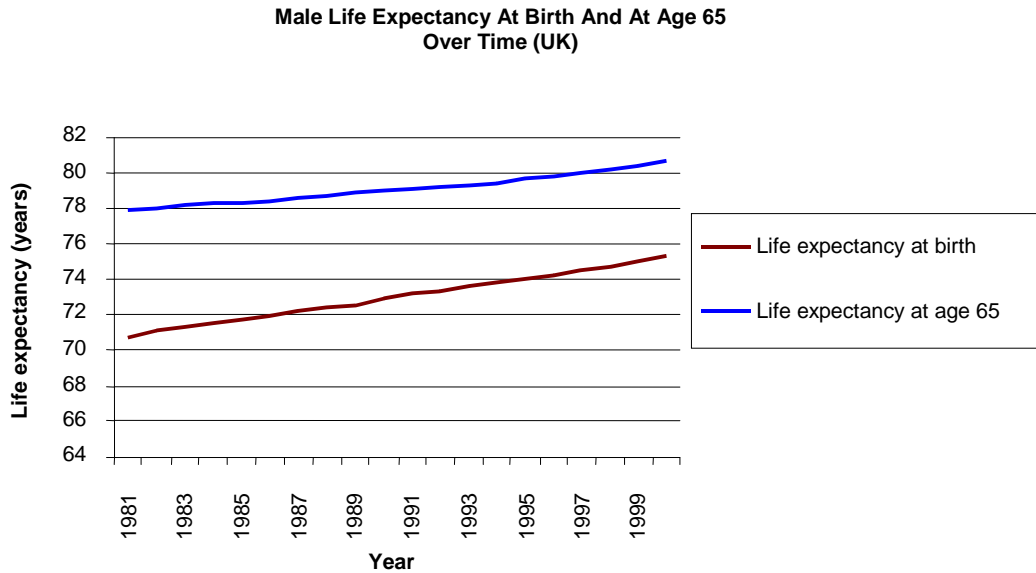
Although the results of the various actuarial studies on longevity differ, the main message is that there is a general shift upwards in life expectancy over time with significant variability between different groups of people.

To date, the mortality assumptions for actuarial valuations have typically been set with reference to tables derived from insurance company data. This is expected to provide a closer match to the experience of occupational pension schemes than the UK population as a whole. The survey of occupational pension schemes is still in its infancy, and so sufficient data is not yet available to enable a new standard mortality table to be established, although it does supplement the information available from the other studies.

For many schemes where there is insufficient experience to support scheme-specific mortality assumptions, reliance must be placed on the standard tables. When considering mortality assumptions, it is necessary to consider both the base mortality table (i.e. that assumed to apply at the current time) plus the allowance for future improvements. The latter, in particular, is subject to a large degree of uncertainty and hence risk. During the later part of the 20th century (and particularly observed in the 1990s) there was a rapid increase to life expectancy in the UK

population. Although substantial increases had been forecast, the extent of the change means that pensioners are living even longer than previously expected, thus significantly increasing pension costs.

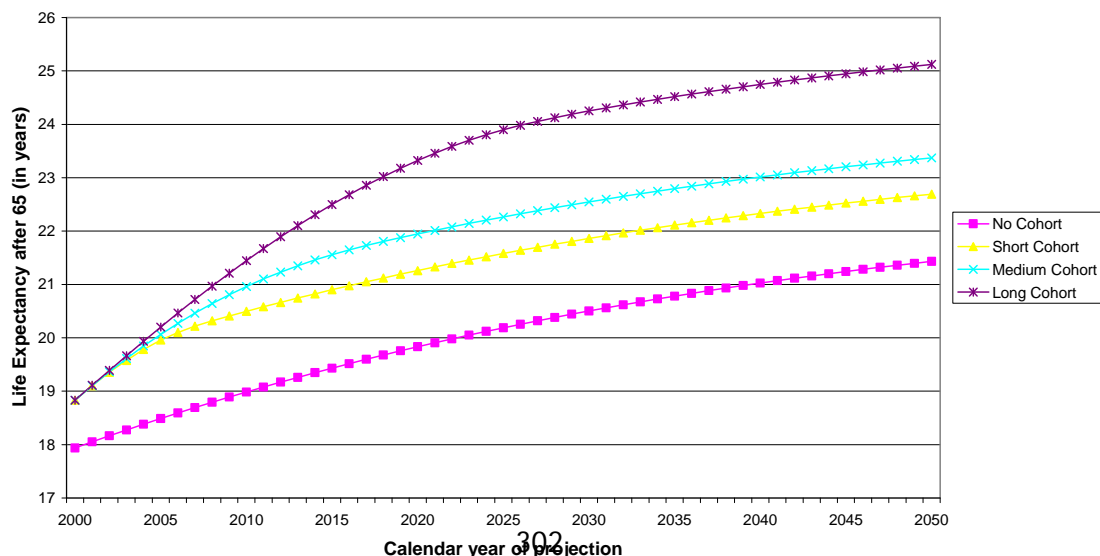
The graph demonstrates changes to male life expectancy over the last 20 years. The blue line indicates that males in the population retiring at age 65 in 2000 were expected to live for 15.6 years; a 20% increase compared to 1980.



Analysis of the underlying trends during the 20th century shows that the main reason for the improvement was the reduced effect on mortality from heart disease, cancer and strokes. There is strong evidence to link this to changes in smoking behaviour, medical advances, diet and the introduction of the welfare state. The combination of these factors acting on a generation born between 1920 and 1950 has seen life expectancy increase rapidly. This group has been dubbed the “healthy generation” and the increase in improvement is being referred to as the “Cohort Effect”.

The graph below illustrates the projected future improvements to life expectancy due to the Cohort Effect, depending on whether the effect lasts for a shorter, medium or longer period (10, 20 or 40 years).

**Projected improvements to life expectancy for male aged 65 vs Year of projection**



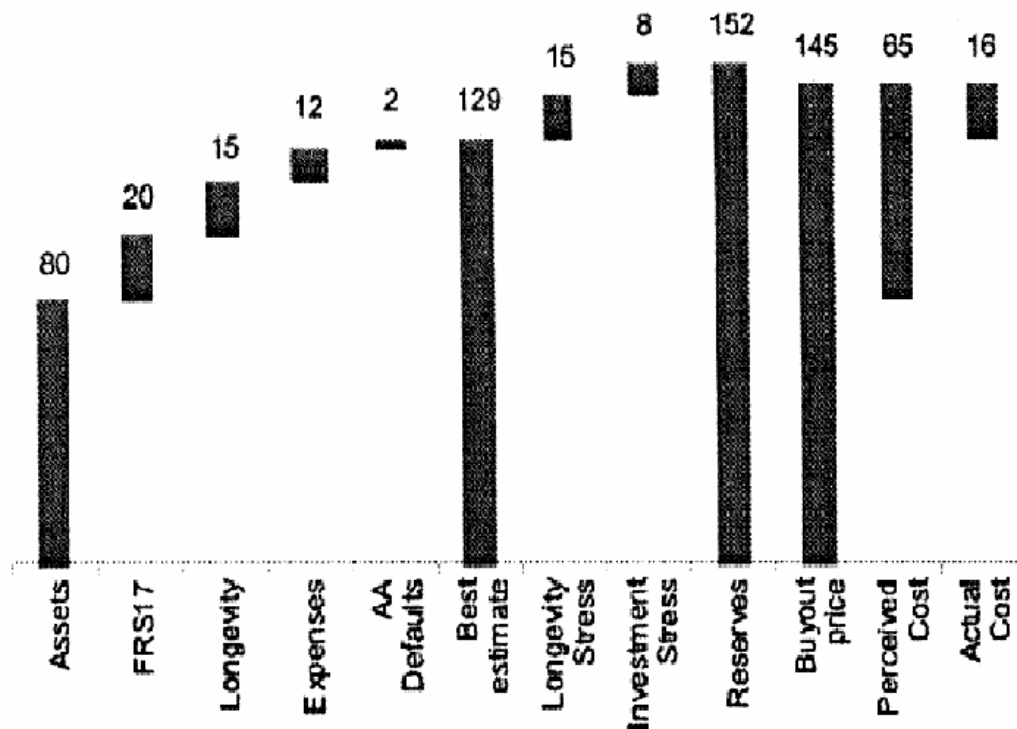


Note that all of the cohort projections assume that annual improvements in mortality will fall back to the 1992 series projections, i.e. the large improvements in mortality will not remain at the level of improvements experienced by the “healthy generation”. However increased pressure is being put on schemes to build in further underpins to their mortality improvements over the future. Naturally these assumptions impact on the cost to schemes – moving from the ‘1992’ table mortality to the ‘00’ series with long cohort can increase the liabilities by some 12%. Schemes are coming under increasing pressure from the Pensions Regulator and accounting requirements etc to take account of the projected improvements and are therefore keen to minimise the risk that the pensions cost will be increased yet further by this.

### Managing longevity risk by using insured solutions

Clearly one way of minimising this risk is to purchase annuities for some or all of the membership – although this has its costs and the insurers are taking the same prudent line on mortality assumptions and building in their profit and reserving margins. Buy-out solutions can also be used to minimise the investment risks by locking into favourable conditions – although they clearly have a cost.

The chart below shows the typical make-up of the buyout cost, compared to the accounting cost and best estimate costs – this shows the additional cash which would be required to complete a buyout exercise. In the chart the buyout cost is some 145% of the accounting cost, although more recently the difference between the two has narrowed.



The number of new players in the buy-out market is causing more competition, with the result that trustees and their sponsors might negotiate acceptable terms with those taking on the risk, and there may be an increased appetite for buyout as a risk management tool. Within the buy-out

market there is also much talk of different insurance solutions, including partial buyouts, shared risk solutions and phased buyouts.

There has always been activity in schemes seeking quotations for buyouts, but the actual costs quoted have often resulted in the annuity purchase not going ahead. The increased competition is now resulting in more quotations being converted into actual business, and can mean that the final buyout cost is lower than companies/trustees were anticipating when they first considered the issue, especially for larger (£50m+) cases.

Full buyout may be of interest to companies:

- where the Defined Benefit scheme is seen as a barrier to corporate activity
- where there is an overseas parent who is interested in clearing off the exposure
- where the cost of buying out is relatively small in the context of the business, and the company is in a healthy state

Because full buyout will normally have a negative balance sheet and cashflow impact, and many schemes remain open to future accrual, full buyout is not necessarily going to appeal to all, but others may still be interested in partial buyouts, with pensioners being the preferred category. This tends to be because the balance sheet impact is likely to be small (buyout costs for deferreds are much higher relative to accounting liability than is the case for pensioners), and because this can be done whilst accrual continues.

In fact the impact in terms of reducing the risk in the scheme may not be that great (if the scheme already holds bonds against the liability), but from the company's and trustees' points of view it may still be viewed as a positive step.

### **Further developments in the market?**

Annuity providers might also choose to replace traditional non-participating annuities with participating contracts that pass part of the exposure to longevity risk on to the purchaser. For example rather than set the price of an annuity policy based on mortality rates predicted at the time of purchase, the price would be based on mortality rates within the pool of annuitants, with a bonus or survivor credit paid to take account of actual experience.

### **Non-Insured Solutions**

In addition to buy-out activity, there is also a trend towards considering settling the benefits in ways other than by purchase of insurances. However as this will reduce the security of the member's benefits (and possibly increase the likelihood that the Pension Protection Fund will have to pick up the bill for their benefits), the Pensions Regulator has taken an interest in any possible cases, and negotiations have involved setting additional security for the schemes involved. The key question is to what extent these non-insured solutions are likely to be available to other companies wishing to settle their pension liabilities, and whether this is achievable at a lower cost than insured buyout. Non-insured solutions are most likely to be appropriate for schemes with some or all of the following characteristics:

- Closed (or able to be closed) to future accrual.
- Relatively weak Principal Employer (although this could be a subsidiary within a strong group).
- Scheme well funded (or additional funding available to achieve this).
- Relatively mature (ie liabilities weighted towards pensioners).
- Reasonably large fund (certainly until more "standard" approaches become available).

### **Mortality swaps and securities**

For some time the market has been trying to commoditise life expectancy or mortality, but to date has been unsuccessful for a number of reasons, key amongst which are the lack of any natural buyer and the major uncertainty about future improvements in life expectancy. However while pension schemes are interested in minimising their exposure to those living longer, insurers may be equally keen to capture that risk – so an arrangement which brings these two risks together would be welcomed by both parties.

The markets continue to look at these ideas, and there have been a number of small, but important, steps taken in recent months, including the creation of a mortality index. It is increasingly felt that there will be some form of mortality swap available in the market within the next 5 years, at which point pension schemes and companies may be able to remove further risk on a broad brush basis. At the moment there are a number of providers (including some banks) who claim to be able to offer this type of insurance already. However in practice the costs are typically prohibitive.

Alternatively, pension schemes can enter into a variety of forms of reinsurance to share some or all of the downside of longevity risk with the reinsurer, or manage the risk using mortality-linked securities, such as longevity bonds

The longevity bonds themselves can take different forms – for example bonds where the investor risks losing all or part of the amount invested if the relevant mortality trigger occurs, or those where the invested amount is secure but the regular payments are mortality-dependent, or combinations of these.

Again the market here is in its infancy but different solutions are being explored.

### **Managing liabilities via benefit design**

An obvious way of limiting the employer's risk is to change the benefit design to reduce the cost to the employer or the variability of that cost. In many cases this just passes the risks onto the members of the scheme, but the employer can justify this by saying that pensions are part of the overall benefits package, and therefore the employee should take some share of the risks.

In many cases the risks for the employer will still be there, but the impact will be lessened if the benefits and the residual cost will be reduced or adjusted. (If benefits move to money purchase entirely most of the risks pass entirely to the employee – although the employer will want to set the contributions so that the risks to the members can be carried at an acceptable level, and legislation/operational risks will still remain. In addition, arguably, the overall risk is increased because the employee is tied to the annuity rates applicable at his retirement date)

In recent years many employers have cut back occupational scheme benefits or closed completely (perhaps moving to personal pensions or leaving members with nothing apart from the stakeholder pension scheme or their own arrangements). Even those who have retained occupational schemes may have moved from defined benefit to defined contribution, either for future joiners or for all future accrual.

The introduction of rules whereby employers will have to automatically include their employees in pension schemes (although those employees will then be able to opt out) will increase the number of employees in respect of whom employers will have to make some contribution – but might also have the impact of levelling down the existing arrangements for other companies. This cannot be good news either for members, or for advisers.

Set out below are some possibilities for benefit design changes which aim to cope with the recent and future changes, and which aim to retain at least some defined benefit but promote the pension arrangements within the scheme as a joint venture between the employer and the members (whether active, deferred or pensioner).

The suggestions cover only changes to benefits for future service. In most of the examples one would assume that past service benefits are retained (in the UK adjustments to past service benefits would be subject to consent or actuarial certification, or scheme rule restrictions), although some of the options do cover possibilities for past service.

Clearly it is easier to implement changes for new joiners – the employer can start with a blank sheet of paper for these (probably contracted in, higher retirement age or lower Defined Benefit accrual, or DC). But then the overall arrangements become complex with different levels applying to different groups.

The assumption is that the 'starting point' is a final salary scheme (say 60<sup>th</sup>s accrual), contracted out of the state additional pension, and still open to future accrual. This can be promoted as 'best of breed' among pension arrangements, although this needs to be communicated well to members so they appreciate full value. Early/ill-health retirement and death in service pensions can be provided. However it has a clear cost to the employer, and the long-term cost is unknown and volatile. The risk is almost entirely with employers.

### **Contribution adjustments**

The employer may wish to retain the current benefit design but use the member contributions to help reduce his risks. He may choose to increase the required member contributions by a flat rate (subject to consultation etc) but if the scheme is contracted out, then it must ensure that members are getting 'value for money' compared to the state additional pension benefit they are giving up. In addition increased member contributions may not be tax/NI efficient – it may be better to use 'salary sacrifice' with the member formally giving up salary in exchange for that amount being paid into the scheme. Or the employer may introduce age-related employee contributions to reflect the increased cost and hence risk of providing benefits to older members.

One option is to set up a 'shared cost' scheme – where the members and employer each pay a proportion of the cost of the accruing benefits, and if the cost of those benefits increases, both parties have to increase their contributions. However this cannot deal with the risks relating to past service (which may not be anything to do with the current membership so it would be inappropriate to pass the bill on to those current members).

A further alternative is to set member contribution rates which vary according to some longevity index – so that the members are sharing the risk that their benefits will cost more to provide over the future. Again this does not address the liability in respect of those who have already left the scheme (although those who are still active might be able to bear some share of that cost as part of the contribution adjustment).

So what are the options for adjusting the benefits? The employer may choose just to cut back benefit accrual but if the scheme is contracted out, then it must ensure that it continues to meet the reference scheme test.

In 'descending' order of risk, other options for retaining at least some defined benefit but reducing risk might be:

### **Contract back in, keep target benefit same but offset state additional benefit against scheme benefit**

This will give members the same benefit, and may save some costs for the employer, who will no longer have to compare the cost of the offset benefit against the rebate given by the government. However it will lead to extremely complex benefit design, and will be difficult to administer and communicate to members. The employer will also need to adjust contributions, taking account of NI and tax. This still keeps the risk entirely with the employers, and the benefit is impacted by any future changes in the state pensions that are being offset.

**Contract back in with simpler design, aimed at producing overall the same target benefit**

This is less dependent on future government policy in the area of state benefits, although if the members are told they will get a total benefit more or less equal to that offered by the original scheme, if there is a change in pension policy the scheme will be obliged to adjust its benefits again. There would be winners and losers in any simplification of design, and again the risk is almost entirely with employers.

**Career average revalued earnings 'CARE' schemes.**

This has the advantage that employers are not exposed to such volatility of costs associated with final salary benefits. Costs will decrease (possibly significantly depending on method of revaluation). The emerging pension is more closely related to contributions than it is under the final salary method and the pension is better matched to the assets since both will be related to average inflation. This method is also perceived as fairer to those with only steady pay rises up to retirement (or those whose pay actually falls near to retirement).

However it will clearly result in lower overall benefits for employees, hence dissatisfaction. The size of the difference between CARE and final salary benefits depends on to what extent a member's salary rises above inflation between now and retirement. Members whose salary increases significantly just before retirement will not derive as much benefit from this design as from a final salary scheme (less of a problem in workforces where most employees receive a relatively stable wage throughout their employment).

And the risk is still with employers, although salary risk is lessened. Both future benefits and the accrued benefits to date could be converted into CARE benefits, and essentially rise in line with inflation rather than each individual's salary.

**Cash balance plans**

US employers are increasingly using cash balance plans. There are various types – for example DC (with or without matching employer contributions) but with guaranteed return on the fund (effectively this is a CARE accrual but providing a lump sum which can be exchanged for pension) or final salary-type accrual but capitalised into a pension value for each year's accrual. Whichever approach is used, the resulting fund at retirement is converted into benefit for member.

The advantage of this approach is that the longevity risk for the employer is removed (compared to Defined Benefit) unless scheme guarantees the conversion rate. The company will still retain the investment risk.

**Other options for benefit design**

**Hybrid 'best of' scheme**

This would involve a final salary benefit with money purchase underpin, or vice versa. This would be easier to sell to members (and may be a suitable compromise between full moving to Defined Contribution – ie move to Defined Contribution with a modest Defined Benefit underpin so that employees don't feel they have completely lost out). However from the employer's viewpoint it is likely to cost more than just Defined Benefit or just Defined Contribution and hence would not be attractive unless combined with overall benefit reduction. Administration is more complicated.

### **Hybrid 'tiered scheme' (eg Defined Benefit up to certain amount, Defined Contribution above that or vice versa).**

In the UK such schemes would be restricted by the age discrimination legislation which in some cases prevents different accrual of benefits being given to different salary levels (any maximum salary is permitted for benefit accrual, but if the scheme wants to apply a minimum salary or offset, the legislation restricts this). Any option here would have to take account of what is permissible under the legislation.

However the advantage is that it may be able to target benefit changes at particular categories of membership, protecting lower earners.

It does represent sharing of risk, with the employer taking the Defined Benefit risks, limited to a lower level than at present, and employees taking the Defined Contribution risk at the residual benefit levels. Members can benefit from better Pension Protection Fund protection (the PPF cap is unlikely to be relevant for the defined benefits, but Defined Contribution benefits then come on top).

The simplest example is to cut back Defined Benefit accrual to 120ths, but replace (or partly replace) lost Defined Benefit accrual by Defined Contribution.

#### Option 2 - example

Replace 60ths by 120ths and impose a certain salary limit for Defined Benefit but also provide Defined Contribution benefit on all salary (or salary less the largest offset acceptable under age discrimination). The Defined Contribution benefit would be targeted to replace the lost 120ths accrual, but above the salary cut-off point the benefit is effectively halved.

May be able to adjust the upper Defined Benefit salary limit over time - subject to consultation.

A less severe Defined Benefit cutback (eg 60<sup>th</sup>s to 80ths) could be set (the Defined Contribution benefit would then be targeted to replace the lost 240ths accrual) – but salary limit would need to be raised because benefit accrual over the salary limit would be severely cut back, to the targeted 1/240ths.

#### Option 3 – example

Replace 60ths by 120ths for all salary (or salary less the largest offset acceptable under age discrimination) but also provide Defined Contribution benefit up to a certain salary limit – again the Defined Contribution benefit would be targeted to replace the lost 120ths accrual, but above the salary cut-off point the benefit is effectively halved.

Less severe Defined Benefit cutback (eg 60<sup>th</sup>s to 80ths) could be set – Defined Contribution accrual would only replace the lost 240ths Defined Benefit accrual at the lower salary rates up to the Defined Contribution salary limit. High earners would then not get Defined Contribution at the higher salary levels, but overall they will not see such a large fall in benefit.

The disadvantages are that such an arrangement is more complex to administer. Would need to ensure for example that age discrimination restrictions are complied with – it is possible to have maximum salary for benefit accrual, but there are restrictions relating to any minimum salary.

This may be hard to sell to members if it represents large cutback in benefit for certain members.

### **Risk sharing schemes**

These have been proposed by the UK Association of Consulting Actuaries, but currently the legislation prohibits the plans – revaluation on deferred benefits must always be given, as must indexation.

The proposal is that pensions would be based on the member's average pensionable earnings during the period of scheme membership. Pension earned for each year of service would be Defined Benefit but the revaluation given from that year to the date of retirement would not be guaranteed but instead be targeted, supported by a funding reserve based on prudent actuarial assumptions. Pension increases would be given when in payment (up to the 2.5% pa indexation cap in current legislation) but these would also be on a targeted basis.

As each year passes, the year's revaluation and pension increase would then automatically become a Defined Benefit provided that the funding position of the scheme does not show a past service funding shortfall at that time.

The employer would have flexibility to:

- not grant a year's revaluation or pension increase if a past service funding shortfall emerged (but reinstating the revaluation if a surplus emerged in the future (as stated above this is not currently allowed by legislation))
- reduce the rate of future service pension accrual (this is allowed subject to consultation)
- increase normal pension age for active and deferred members to take account of increasing life expectancy (this is allowed for future service subject to consultation, but past service would need consent)
- wind up the scheme without providing full future revaluation and full future increases to pensions in payment (again unless sufficient past service funding surplus had been built up to secure the potential future revaluations and pension increases – again this is not allowed).

The advantage of such an approach if permitted is that employers can control costs into the future even if there are down swings in investment returns and continued improvements in mortality. For members, benefits are more stable than Defined Contribution. However (even apart from the current prohibition in legislation) there are disadvantages in that such a scheme might not qualify as suitable for an alternative to Personal Accounts, and although various options would be available to limit cost and risk, in practice, there may be pressure on the employer to make additional contributions rather than rely on those options.

However this approach could be modified to fit with the current legislation constraints. For example a Career Average scheme could be set up, with no promised revaluation on each year's accrual (revaluation could be added each year based on results of actuarial funding valuation – once added it would not be removed but there would be no right to revaluation on the next tranche of benefit accrued).

- Pension increases would be given when in payment (up to the 2.5% pa indexation cap in current legislation)
- The employer would always have flexibility to reduce the rate of future service pension accrual, subject to consultation.
- Similarly the employer would be able to increase normal retirement age for future service to take account of increasing life expectancy, subject to consultation
- If the employer wanted to increase normal retirement age for past service of active and deferred members to take account of increasing life expectancy, this would need to be with consent (clearly actuarial equivalence could not be satisfied). Members might be willing to accept the change if the alternative would result in cessation or reduction of future accrual.

For example could members agree to accept an agreed staged increase in normal retirement age at the outset (eg 65 – 67 over 5 years, affecting all members born after year x, for all service), if

sufficient information is given for them to give their consent? This might be presented as an immediate 1-year increase in normal retirement age for all members (except those already over current normal retirement age), in 5 years time all those under the new normal retirement age will have a further 1-year increase in normal retirement age. Members would need to agree to this, but if they don't, the employer can state that accrual will stop (or be heavily cut back) for those members. This would be difficult to achieve for current deferreds (but if scheme doesn't allow opters out to rejoin this will limit any members abusing the rules).

This approach would have similar advantages to the basic risk sharing approach. From the member's perspective, although the benefits will be reducing over the future, members will be aware of this at the outset and can plan accordingly.

The disadvantages are that the scheme is complicated and possibly subject to resistance by members. It would need careful consideration and legal advice to deal with contractual issues and ensure that age discrimination does not occur. And again such a scheme would not be able to qualify as an alternative to Personal Accounts (so the employer would have to participate in the Personal Account scheme and auto-enrol his members, who could then decide to opt out again and remain in the defined benefit scheme if those benefits cost more than the Personal Account level).

### **Managing liabilities via inducements**

A number of companies in the past few years have taken the approach of making offers to members to take some or all their benefits elsewhere. The theory is that an offer can be made which is attractive both to the member (in that their likely benefit is higher, or the shape or flexibility of that benefit is more attractive) and to the Company (in that liability and risk is extinguished at a rate which is lower than would otherwise be possible).

These offers are most commonly made to deferred pensioners, by way of an enhancement to the transfer value (paid through the scheme) or an inducement to transfer (with the additional amount being paid and taxed outside of the scheme). However offers are also being made to active members and pensioners, with the latter involving cashing in non-statutory pension increases.

Before quantifying the potential impact of such an exercise it would be necessary to understand more about the nature of the scheme liabilities. However the following is an example of an outcome which could result from such an exercise:

- 3,000 offers to members of which 1,000 taken up
- £2.5m cash required to fund the offers accepted
- £6.5m accounting gain from those offers, resulting in a net gain of £4.5m
- Cost of exercise estimated at over £300,000 (of which the majority is personalised communication to the members showing the impact of the offer)

The Pensions Regulator has recently issued guidance on such offers, warning companies and trustees to take care. However the consensus in the industry is that they are a valid approach to liability management, although care does need to be taken to ensure that they are conducted properly.

### **Conclusion**

- Although pension arrangements present many risks to the sponsoring employer there are various actions that can be taken to mitigate those risks:
- Increasing bond allocation, generally diversifying assets and using derivatives or structured products to limit equity downside exposure: manages equity/market risk and manager risk



- Increasing bond allocation or executing interest rate and inflation swaps: manages interest rate and inflation risks
- Providing contingent asset or parent company support to the scheme: manages the covenant risk and possibly any operational/legislative risk associated with the trustees' powers or the danger of trapped surplus
- Buying out all or part of the liabilities with an insurer or using a non-insured approach: manages interest rate, equity/market and longevity risks and may also reduce the covenant risk (although care needs to be taken with any non-insured approach that no residual operational/legislation or reputational risk remains)
- Exploring mortality swaps and bonds: reduces longevity risk
- Managing liabilities by benefit design or inducements: manages covenant risk and may reduce effect of equity, legislative etc risks (however this can increase the \*reputational risk of the scheme or the employer)

### Note \*:

Reputational risks can be reduced by ensuring that the best and most suitable advisers are appointed to the scheme, and that the employer and trustees analyse their advice fully and ask the right questions. In order to do this, the trustees need the appropriate knowledge and understanding of the scheme, and similarly the employer needs to understand all the aspects. Appropriate systems of controls and management/reporting also need to be set up to ensure best practice and efficient processes.

Appendix – charts showing volatility of UK price inflation, salary inflation and investment returns since 1971 (1983 in the case of index linked gilts)

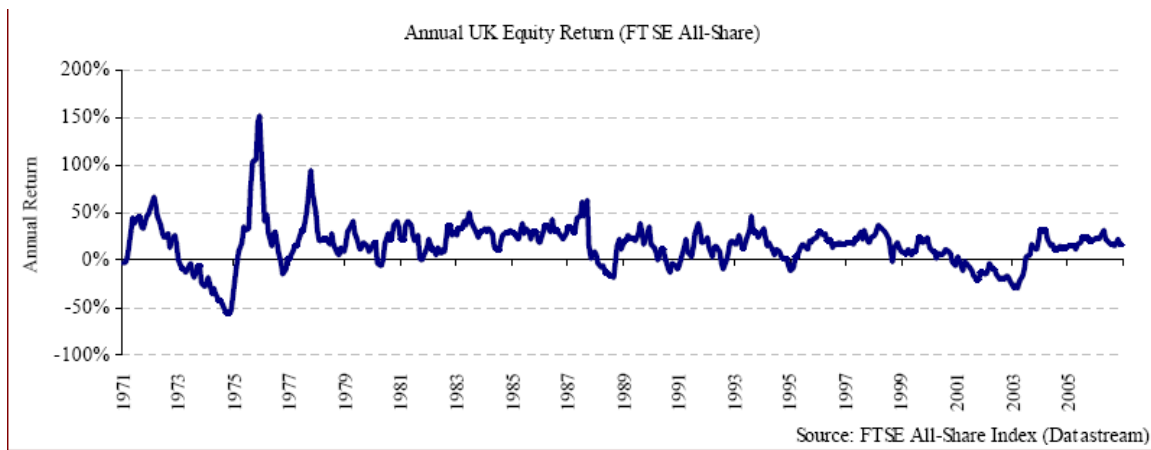
### 1 UK price inflation



2 UK salary inflation



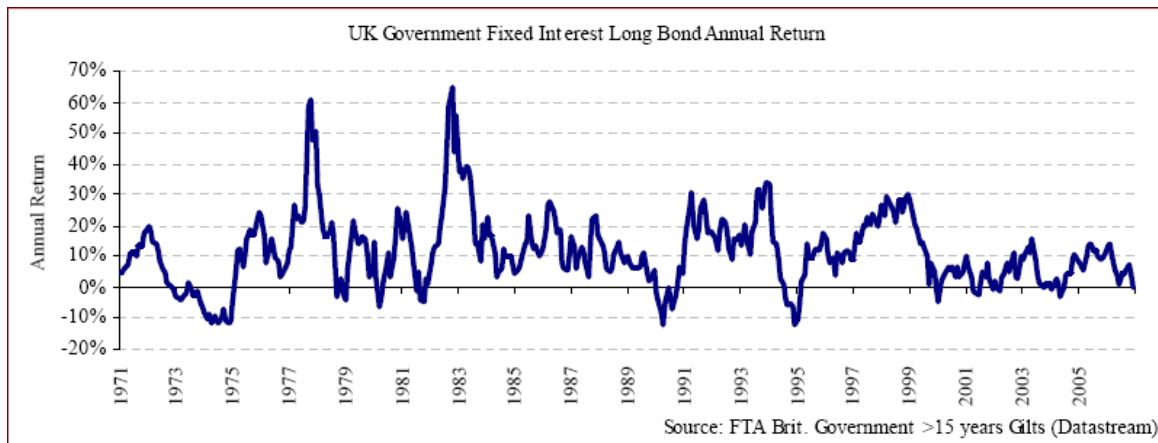
3 UK Equity return



4 return on UK index linked gilts



5 return on long-term UK gilts



**About the Author**

**Oliver Rowlands BSc FIA,  
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Oliver is a consulting actuary and principal at Aon Consulting, one of the leading global actuarial advisers. He is based in London in the UK. He qualified as an actuary with Clay & Partners in 1990.

His current role within Aon is Head of Retirement for the UK/EMEA region. Previously he acted as Director of Professional Practices, Commercial Director and Head of London office. He currently sits on the main Board of the UK company, and is chair of Aon's Retirement Global Practice Council.

During 2007, Aon Consulting embarked on an ambitious project to offshore certain actuarial roles to a captive company based in Bangalore. It is expected that the team supporting the UK business will grow to 40 during 2008, and the global ambition is for the team to expand to 150 people. Oliver has supported the creation of the team including recruiting the management at the start of 2007.

Oliver continues to act as an actuarial adviser to some of the UK's largest companies and sees this as a necessary complement to his internal Aon roles.

Oliver is married with a daughter, and enjoys travelling, most sporting activities and is an avid supporter of Cambridge United Football Club.

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