

# Managing annuity conversion risk



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In this paper we discuss:

- What is annuity conversion risk?
- How traditional lifestyling can partially manage this risk – and the drawbacks of this approach.
- How the tools of liability driven investment (LDI) used by many Defined Benefit pension schemes – in particular swaps, can be used by Defined Contribution schemes to manage annuity conversion risk more effectively.

In Defined Contribution (DC) pension schemes, members bear the majority of the investment risk. Increasingly trustees are looking for ways in which they can manage some of these risks on their members' behalf. To this end lifestyle strategies, which gradually reduce the allocation to growth assets as members approach retirement, are now offered by most DC schemes.

However lifestyle strategies are only partially effective at managing investment risk. In particular, they leave members exposed to a significant amount of “annuity conversion risk” – the risk that annuity rates rise, reducing the pension members can buy with their accumulated pension pot.

### What is annuity conversion risk?

In a DC pension scheme members build up a pension pot with a combination of employee and employer contributions and investment returns. At retirement they then exchange this pot for a pension (or “annuity”), usually from a life insurance company (see figure 1). However the terms under which this exchange is made (“annuity rates”) depend on a number of factors, some of which are outside of the member's control.

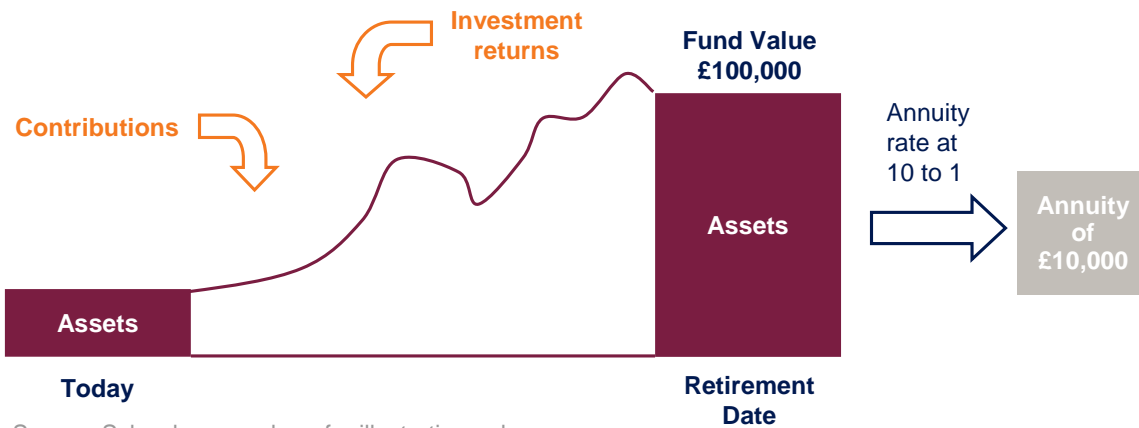
For example, annuity rates depend on:

- The age and sex of the member
- The type of pension bought (e.g. flat or inflation linked)
- How long the insurer thinks the member will live (and so how long they think they will have to pay the pension for)
- Interest rates at the time (which determine how much money the insurer will have to put aside in advance to cover the cost of paying the member's pension in the future)
- How competitive the market is at the time

The last three factors above lead to “annuity conversion risk” – the risk that members have to exchange their pension pot for a pension that is less than expected.



**Figure 1: The lifecycle of a DC scheme**



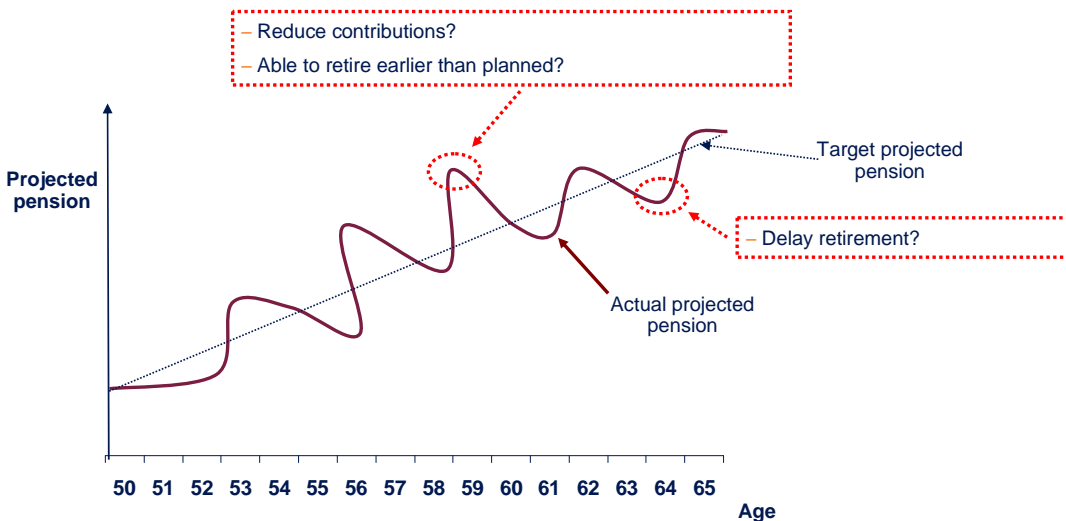
Source: Schroders, numbers for illustration only

**Why annuity conversion risk matters?**

Annuity conversion risk is important for two reasons. Firstly, it means that members are exposed to the risk of a significantly worse pension than they hoped for on retirement. This is particularly true for members who do not actively engage in retirement planning until shortly before retirement, and for whom it might be too late to make up the shortfall with additional contributions.

Secondly, annuity conversion risk makes planning for retirement harder. Members of DC schemes receive projections of the pension they will receive upon retirement at least annually. These projections will be, in part, based on annuity rates at the time. As illustrated in figure 2, pension projections that vary considerably from year to year can make it hard for members to plan for retirement.

**Figure 2: Volatile projections make retirement planning difficult**



Source: Schroders, for illustration only

### The traditional strategy for managing annuity conversion risk – lifestyling

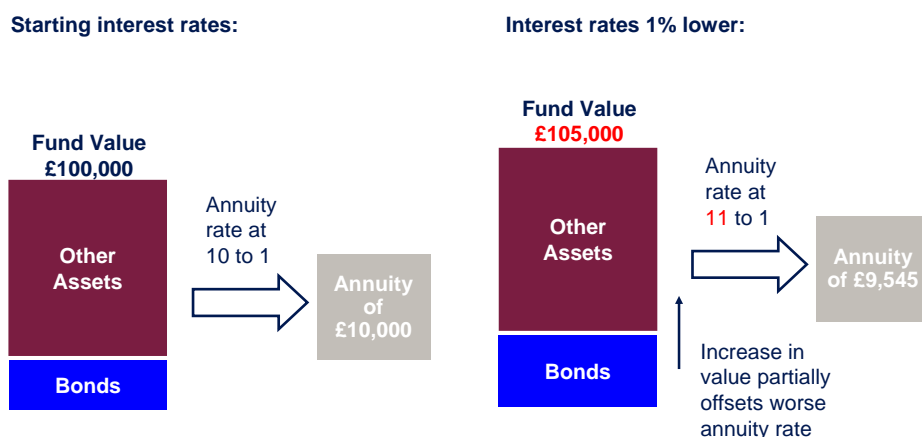
The most common strategy employed by DC schemes to manage annuity conversion risk (as well as growth asset risk) is lifestyling. This is a strategy whereby the member’s pension pot is gradually switched out of growth assets and into less risky assets, such as bonds and cash in the years leading up to retirement.

Allocating to bonds helps to reduce annuity conversion risk because bond prices and annuity rates react in similar ways to changes in interest rates. A reduction in interest rates will increase the annuity rate and therefore the cost of purchasing a pension, but it will also increase the value of the bonds. Therefore, holding bonds hedges the interest rate risk component of annuity conversion risk to a certain extent.

However traditional lifestyling only provides a partial interest rate hedge. This is because the level of protection is limited by the amount of growth assets we are willing to sacrifice to purchase the bonds and by the fact that bonds are usually less sensitive to changes in interest rates than annuities.

This is shown in figure 3. A 1% fall in interest rates increases the cost of purchasing a pension by around 10% in this example, but only increases the value of the pension pot by 5%. This results in a net decrease in the pension the member is able to buy.

**Figure 3: Allocating to bonds as part of a lifestyling strategy only partially hedges annuity conversion risk**



Source: Schroders, numbers for illustration only

### Using swaps to manage annuity conversion risk more effectively

Swaps react to changes in interest rates in a similar way to bonds – a fall in interest rates will increase the value of a swap portfolio. Therefore swaps can also be used to hedge the interest rate component of annuity conversion risk.

However, crucially, a hedge constructed with swaps requires a much lower capital commitment than an equivalent hedge constructed with bonds. This is because, with swaps, schemes only need to put aside enough capital to be sure of meeting any cash calls that fall due as a result of the daily profit and loss taking with swaps. (A swap’s value is adjusted up and down daily as interest rates rise and fall. This results in cash being passed between the two counterparties to the swap contract (“collateral”) each day to cover their respective profit or loss.)

Furthermore, the bespoke nature of swaps means that a more accurate hedge can be constructed than with bonds.

**Swaps**

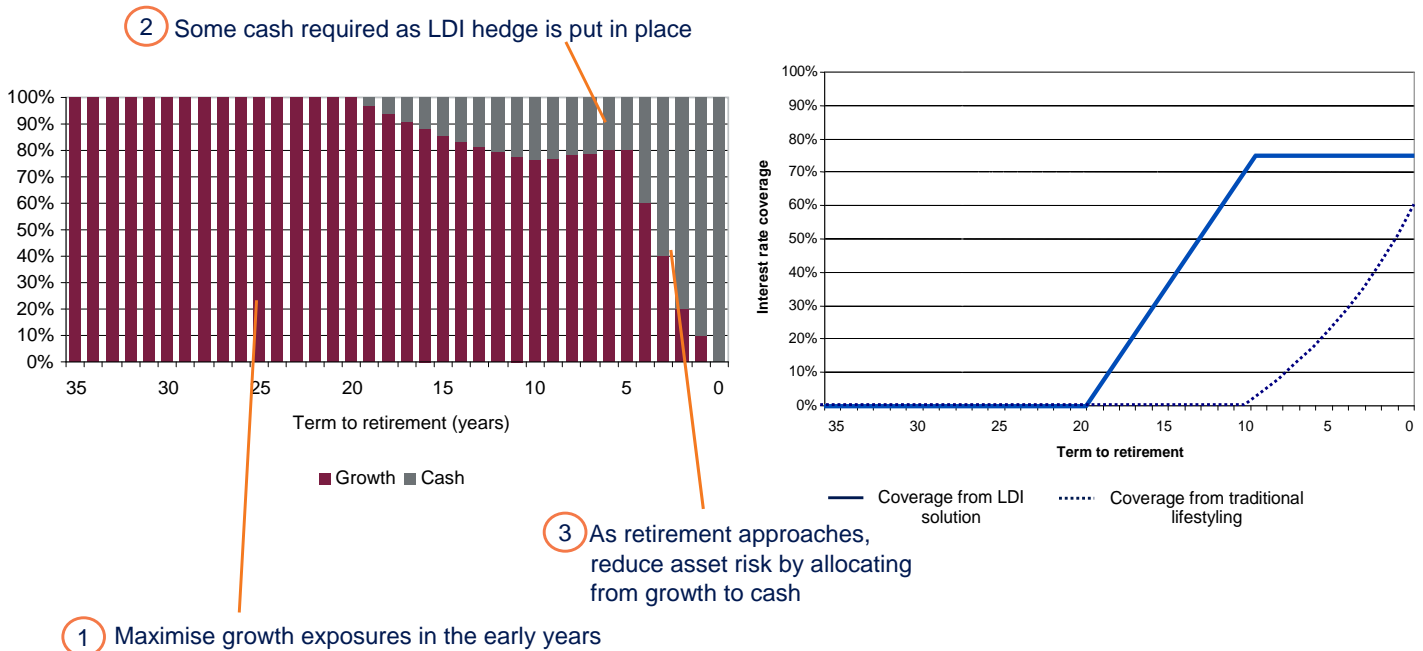
A swap is a contract between two counterparties, e.g. a pension scheme and a bank, to exchange a series of cashflows according to some pre-agreed arrangement. Under an interest rate swap one party (in this case the member of the DC scheme) makes payments based on a floating rate of interest and receives payments based on a pre-agreed fixed rate of interest. The value of this contract to the member changes in line with interest rates. As interest rates rise, the value of the contract to the member falls as the value of the fixed payment they would receive would be discounted more heavily. As interest rates fall, the value of the contract to the member increases. In practice, the exchange of payments specified in the contract does not take place. This is due to the daily collateralisation process described above.

This capital efficiency and improved matching can be exploited by DC schemes. For example, a member following a lifestyling strategy may purchase cash instead of bonds as they approach retirement. This cash can then be used as collateral against swap contracts that hedge the sensitivity to interest rate changes in annuity rates. For the reasons given above, the level of coverage that is possible under this strategy would be greater than with a traditional bonds based lifestyling strategy.

Figure 4 shows how a lifestyling strategy may progress using swaps and cash instead of bonds. The chart on the left shows the member's allocation to growth assets and cash as they approach retirement. The chart on the right shows the interest rate coverage that would be possible with this strategy compared to a more traditional lifestyling strategy using bonds.

Swaps can be used to hedge interest rate risk sooner and to a greater overall extent than is possible with traditional lifestyling. As a result, the member experiences less volatility in their pension projections and more certainty in their outcome on retirement.

**Figure 4: Using swaps instead of bonds in a lifestyling strategy increases interest rate coverage and therefore reduces annuity conversion risk**



Source: Schroders, for illustration only

Traditional lifestyling strategy is assumed to switch linearly from growth assets to bonds from 10 years before retirement. Only 75% interest rate coverage is targeted in both strategies to allow for 25% tax free cash.

## Implementing an LDI solution for DC

DC schemes could create an LDI solution for their members using a pooled fund approach. This is similar to how many defined benefit schemes have created their LDI solution.

Under such an approach, the scheme could purchase units in a selection of pooled swap funds on the member's behalf to build up an appropriate interest rate hedge. This process could potentially be administered using schemes' existing systems for buying and selling member's assets.

## Conclusion

A significant risk to members of DC schemes is annuity conversion risk. This is the risk that the cost of purchasing a pension on retirement increases due to unfavourable changes in market conditions, such as falling interest rates.

Traditional lifestyling reduces annuity conversion risk to a certain extent as bonds act as a partial hedge to falling interest rates. However, the level of protection possible is restricted by the amount of growth assets we are willing to sacrifice in order to purchase the bonds.

Swaps offer DC schemes a way of overcoming this limitation as they require a much lower capital commitment than bonds to achieve the same level of interest rate protection. Swaps can also be used to construct a more accurate hedge than bonds.

Therefore, members investing in a swaps based strategy would be less exposed to annuity conversion risk than those investing in a traditional lifestyling strategy. Potentially, this would mean that they experience less volatility in their pension projections and a more certain outcome on retirement.

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