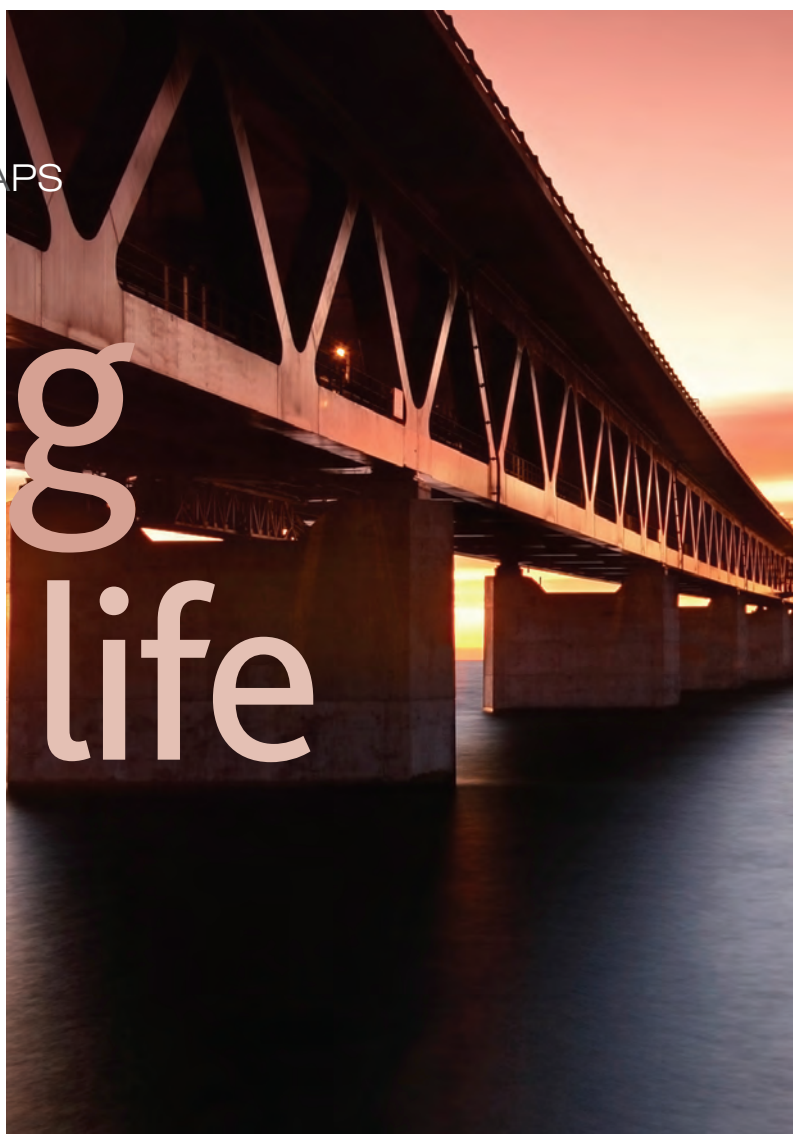


Costing the span of life



Increasing lifespans, while good news for pensioners, pose a problem for the companies financing defined benefit pension schemes. Life insurers have a similar risk with their annuity books.

In this article we concentrate on pension schemes; the principles apply correspondingly to annuity books.

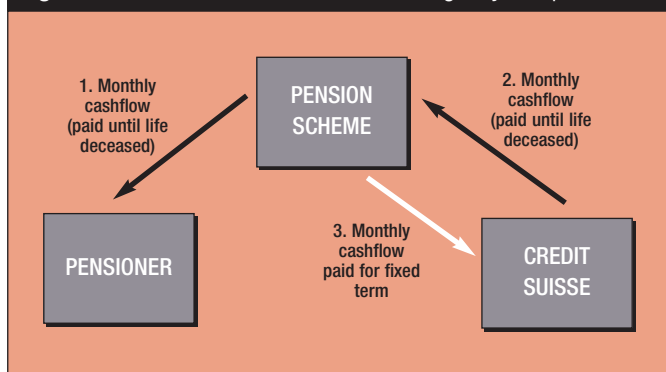
Under a pension scheme, a promise has been made to each member to pay a pension throughout his or her life, and often then to the member's dependant on the member's death. Under pensions legislation, trustees are tasked with funding in advance for these pensions on a "prudent basis". Whilst companies do their best to make realistic provision for expected lifespans (and in theory should be required by their trustees actually to over-estimate to meet legislative prudential requirements), there are so many different views of how long we will live for in the future it is difficult to judge what is prudent and what is not. And the consequences are very significant – the Pensions Regulator has said in its Purple Book that each additional year of life expectancy might add 2.5% to the value of a scheme's liabilities.

POSSIBLE SOLUTIONS What are the solutions available to mitigate the risks from increasing lifespans? The traditional approach has been to buy a bulk annuity from an insurer authorised by the Financial Services Authority (FSA) – either as an asset of the scheme or fully transferring all of a scheme's liabilities to the insurer. In principle this can remove all risks relating to the pensions bought out (subject to

Executive summary

- Andrew Reid works in Credit Suisse's Life Finance Group, a desk of nearly 100 professionals that originates, structures and trades products related to mortality risk. Andrew's responsibilities include working with UK clients to hedge their longevity exposure.
- Credit Suisse writes customised, specific life longevity swaps for UK pension schemes and insurers for a swap duration of 50 years. Andrew explains how this product can assist companies in pension scheme and annuity book risk management.

Figure 1: Credit Suisse individual life longevity swap



the credit risk on the provider and any compensation scheme). A number of providers will provide a similar solution outside the FSA authorised insurance space.

The bulk annuity route is a well-trodden path. However, some clients view it as too expensive (at the current stage in a scheme's life cycle), unaffordable or they think they can undertake the risk management component themselves (via alternative means). They might also like the prospect of keeping the assets in the scheme and enjoying any benefits of asset outperformance. For such clients, a longevity swap may be (part of) the answer.

A longevity swap for a portfolio of pensioners works like this: it is an exchange, a "swap", of payments between the pension scheme and the swap provider each month or quarter (see Figure 1).

- The scheme pays to the provider a fixed schedule of payments agreed at outset – the "fixed leg" (payment 3 in Figure 1). Thus, no

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would be "collateralised". Under this, in essence, whichever side is making net payments would put assets ("collateral") in a bank account to cover its future expected payments to the other side. For example, if the provider were expected to make net payments of 2 each month to the scheme for the rest of the life of the swap, then the provider would post "collateral" equal to the value of those payments. This would cover the scheme should something happen to the provider.

The payments from the provider, the floating leg, can take one of two formats:

- "Customised" (also known as an "specific life", "individual life", or "tailored"): the floating leg payments back to the scheme are based on the actual lives in the scheme. For example, if there are 100 lives covered, and all 100 are alive in 10 years' time, then year 10's floating leg would make payments to cover all 100.
- "Indexed": the floating leg payments are based on the mortality experience of a pool of lives ("the index"), which is different from the scheme's lives. The floating leg would make payments assuming the scheme had experienced mortality in line with the lives in the index. Typically the index would be based on population mortality.

Consider the case of the 100 lives example, where all 100 are alive in 10 years' time. Under an indexed swap, year 10's floating leg payment to the scheme would typically be based on the proportion that would have been alive if the scheme had experienced mortality in line with the population – probably less than 100. Thus there is a risk the scheme would not be fully covered. This risk – the difference between the hedge needed to match the scheme and what the swap pays – is known as "basis risk".

USEFUL TOOLS A longevity swap enables a scheme to pass the risk of its pensioners living longer than budgeted to a third party. Such products are very useful tools for a scheme that wants to do its own risk management, and/or one that wants to keep the assets and benefit from the upside, perhaps on a route to buy out in 10 or 20 years' time. It has been seen as a substantive "give" to trustees in funding or "corporate event" discussions (M&A, payment of what the trustees regards as a big dividend, etc). Finally, it would let a sponsoring company agree with everyone else that the next announcement on increasing life expectancy is a good thing.

WHY A LONGEVITY SWAP MAY BE AN ANSWER TO MITIGATING THE PENSION PROBLEM OF INCREASING LIFESPANS.

matter how long members live, the scheme knows what it has to pay for the duration of the swap.

- The provider pays to the scheme the pension payments the scheme makes to the particular portfolio of pensioners – the "floating leg" (payment 2 in Figure 1). So if the membership lives longer than expected, the provider would continue its payments to the scheme, which would cover the scheme's obligation to its members.

The exact terms of the swap would be set by the scheme and agreed by the provider. For example, the scheme may not want inflation protection as it may have hedged it elsewhere or wish to retain that risk. If the scheme wants its obligation to members (payment 1 in Figure 1) matched exactly, then the floating leg of the swap paid by the provider (payment 2) would be equal to the scheme's obligation to members (payment 1).

A BIT MORE DETAIL In practice, the payments to and from the scheme under the swap would be "netted off" (so if the scheme owes the provider 100, and the provider owes the scheme 101, then the scheme would pay nothing and the provider would pay the scheme 1).

A common question clients have is: are we exposed if the provider gets into difficulty and cannot make its payments? There are commonly two solutions to this:

- The product could be written as an insurance contract, and would be covered by the Financial Services Compensation Scheme in the UK, which is intended to meet 90% of the payments should the provider default.
- If the swap were written as a derivative, then usually the swap

Andrew Reid
andrew.c.reid@credit-suisse.com
020 7888 1705
www.credit-suisse.com

