

# Module K Unit 21

## PENSION LONGEVITY HEDGING

### Purpose

At the end of this unit the participant should be able to demonstrate an understanding as to why a pension scheme would set up a captive to engage in longevity hedging and what a typical longevity captive structure consists of.

### Assumed knowledge

None

<b>Summary of learning outcomes</b>
1. Explain the purpose of a pension and the difference between Defined Contribution and Defined Benefit schemes.
2. Describe the three key risks associated with the investment strategy of a pension fund.
3. Explain the benefits provided by a longevity hedge.
4. Explain the role of a captive in providing access to longevity hedging.
5. Explain the role of the insurance manager in managing the transaction.

# Module K Unit 21

## PENSION LONGEVITY HEDGING

### 21.0 INTRODUCTION TO PENSIONS

Throughout an individual's ("employee") working life it is common for the employee and the employer to contribute to a fund to ensure that the employee can draw upon a pension (in addition to the state pension) throughout their retired life. Saving for retirement helps to ensure that the employee does not fall on hard times after their working life and can continue to enjoy a standard of living to which they have become accustomed.

A common definition of a pension is: "a regular payment made during a person's retirement from an investment fund to which that person or their employer has contributed during their working life."

There are two distinct types of pension schemes:

- **Defined Contribution** – stipulates the contributions made by both employee and employer but does not guarantee the value of the pension fund at date of retirement or the value of payments to be received during retirement. The pensioner is entitled to receive regular payments spread over time up to the value of the fund. There is no risk of shortfall in funding by the employer as once the fund is exhausted, any obligations cease. The employee carries all of the risk that the fund is insufficient to deliver a reasonable income during retirement.
- **Defined Benefit** – stipulates what the pensioner will receive (depending on length of service) regardless of the amounts contributed throughout their working life or the value of the fund during retirement. If the fund is insufficient to meet the payment obligations to the pensioner then it is up to the employer to inject additional funding into the scheme to ensure that the pensioner and/or their dependents receive regular monthly payments to which they are entitled over the course of their remaining lifetime.

Trustees (the majority of whom are independent of the employer and the employee) are appointed to manage the pension funds to ensure that investment of the scheme's assets is protected from misappropriation and generates sufficient return over a long period of time to meet the pensioner payments in the future.

Investment strategies for defined benefit pension schemes are set based on assumptions in respect of the life expectancy of the pensioners, inflation, the perceived riskiness of the assets and the potential rate of return on these assets. The strategy is designed to generate adequate returns to ensure that there will be sufficient funds in the pension scheme to meet the payment obligations to the pensioners during the whole period of their retirement.

The Trustees are responsible for managing the risks associated with the investment strategy, which will include:

- **Interest rate risk** – the risk that on a change in interest rates, the movement in asset values will not match the change in the value of liabilities. The pension fund may seek to match the interest rate risk in its assets with that of its liabilities with long dated fixed interest investments and by the use of interest rate swaps.
- **Inflation risk** – annual pension increases are linked to inflation – the risk here is that inflationary increases in the annual pension payments may be higher than expected resulting in a shortfall in the pension fund. Pension fund investments may include index-linked assets which provide some hedging against inflation risk.
- **Longevity Risk** – In assessing the size the pension fund needs to be to meet its future payments, assumptions are made in respect of the average life expectancy of the people in the pension fund. If these people live longer than expected then the pension fund will have larger liabilities than initially envisaged, thus potentially resulting in a shortfall in funding.

## Module K Unit 21

### PENSION LONGEVITY HEDGING

A pension scheme may purchase a 'buy-in' policy from an insurer whereby the insurer agrees to pay all the benefits for a given group of pension scheme members, thereby transferring interest rate, inflation and longevity risk to the insurer. The pension scheme retains the ultimate responsibility for the pension payments but the insurance policy ensures that there will always be sufficient funds available.

A pension 'buy-out' transfers the responsibility for meeting scheme members' benefits to the insurer, completely removing the risk and related liability from the trustees and sponsoring employer. When a pension scheme undertakes a buy-out, the insurer will then issue individual annuity policies to each member and should the scheme have transferred all the liabilities for its current and deferred pensioners, it will be in a position to be wound up and any surplus funds distributed.

Trustees that have adopted an investment strategy to manage the interest rate and inflation risk of the pension fund may also look at managing the longevity risk separately by buying a longevity hedging contract from an insurer.

#### 21.1 HOW LONGEVITY HEDGING CONTRACTS WORK

The Trustees of the Pension Scheme enter into a contract of longevity insurance with an insurer.

The Scheme pays fixed premiums to the insurer which broadly reflect the ongoing pension payments that would be expected, based upon the longevity experience to be paid out. The fixed premium is calculated based on actuarial assumptions agreed by all parties and will be payable monthly or quarterly until the date of the final expected pension payment, which could be as long as in 50 years' time.

In return, the insurer pays monthly or quarterly floating benefits to the Scheme, representing the value of actual monthly pension payments to the Scheme members. This obligation on the insurer continues until the death of the last pensioner or their dependent. In effect the insurance is a hedge against adverse cash flow.

The Scheme retains the ultimate responsibility for the pension payments but it transfers to the insurer the volatility and uncertainty in respect of the level of pension payments it will have to make in the future, because its premiums are fixed in value and in duration.

- If pensioners live longer than expected overall, then the insurer has to pay the extra associated pension costs;
- If pensioners die earlier than expected overall, then the insurer will pay less in floating benefits than it receives in fixed premiums - but the Scheme still has certainty over the amount it has to pay;
- If the longevity experience of the Scheme is in line with actuarial expectations then the fixed premium will be equal to the floating benefits.

A risk fee is usually added to the fixed premium; this may be calculated as a percentage of the fixed premium and represents the insurer's reward for taking on the risk that the pensioners will live longer than expected.

The fixed premiums less the floating benefits are settled monthly or quarterly on a net payment basis. If fixed premiums plus risk fee are greater than floating benefits for a given month or quarter then the Scheme makes a net monthly payment to the insurer; if floating benefits are greater than fixed premiums plus risk fee, then the insurer makes a net payment to the Scheme.

# Module K Unit 21

## PENSION LONGEVITY HEDGING

### 21.2 TRANSACTION STRUCTURE AND SERVICE PROVIDERS

The life reinsurance market offers cover for longevity risk, which is usually cheaper than products offered by mainstream insurers, but reinsurers cannot issue contracts of insurance directly to the Scheme.

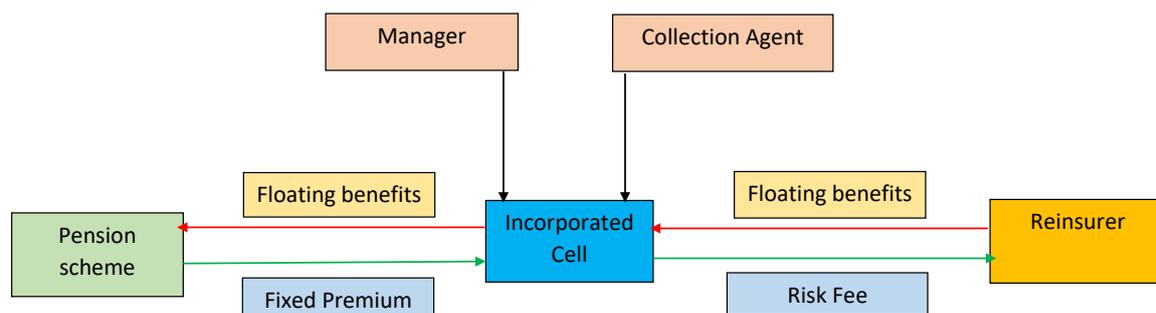
In order to deal with the life reinsurance market, pension schemes can establish their own captive insurance company. The captive insurer can then insure the Scheme, and reinsure the risk with a life reinsurer on a back-to-back basis such that the captive retains no underwriting risk. The captive transforms the risk from insurance to reinsurance thereby allowing the life reinsurers to participate.

Whilst there is a cost associated with setting up, owning and running a captive, this cost is often far outweighed by the savings in dealing directly with the reinsurance market compared with that via the mainstream insurance market. The mainstream insurance market would, in all likelihood, reinsure its longevity risks with the same life reinsurers but it will also add its own margin and costs, resulting in a higher level of premium and/or risk fee being charged to the Scheme.

Pension schemes tend to either set up their own ICC and Incorporated Cells (ICs) or use one or more ICs in a 'host' ICC facility provided by an Insurance Manager. A Scheme may be using more than one reinsurer for a particular transaction, or it may enter into new longevity transactions for different cohorts of the pension scheme, for example where mergers and acquisitions of corporates have resulted in there being more than one pension scheme under the Trustees' management.

The IC structure enables the Scheme to segregate the assets and liabilities of a transaction for one part of the Scheme with a reinsurer from another transaction undertaken on behalf of either another part of the Scheme or with another reinsurer. This gives assurance to all parties that the collateral assets for one longevity transaction cannot be seized by the parties to a different transaction in the event of default or some other breach of the agreement.

It is not essential that an IC is used but this has become the accepted norm for these transactions and this structure does provide for flexibility, in particular where multiple transactions are contemplated,



It can take up to 18-24 months to structure a deal. This process involves reinsurers, consultants and legal advisors and can be a costly project to complete so there needs to be sufficient savings and certainty generated throughout the lifetime of the transaction to justify the initial sizeable outlay. Given the material size of the liabilities (typically over £500m and more likely several £billion) small margins on transaction costs can lead to significant financial efficiencies over the lifetime of the transaction.

Fees would also be paid to the captive by the Scheme to cover the administrative services involved with the transaction, including actuarial, reinsurance placing, collateral management and captive management.

## Module K Unit 21

### PENSION LONGEVITY HEDGING

It is key to ensure that the Incorporated Cell (IC) retains no risk so that it is only required to maintain a low level of capital as a Category 6 insurer. Retaining even a tiny percentage of residual risk could translate into the need to inject capital into the IC.

In order to ensure that there is total risk transfer out of the Scheme to the Reinsurer via the IC, with no financial risk retained by the IC, a fundamental part of the structuring of the transaction is to ensure that the insurance agreement (between the Scheme and the IC) is “back to back” with the reinsurance agreement between the IC and the Reinsurer. It is therefore critical that the agreements are properly reviewed to ensure that all obligations taken on by the IC are passed in their entirety to another party. Lawyers will typically draft a “matched rights position” document which on one column lists of the obligations taken by the IC through the various agreements and on the other column details how each of these rights/obligations is addressed or transferred elsewhere.

As no risk is retained by the IC then no net premiums or claims are retained by the IC either, so every penny of premiums and risk fee received from the Scheme by the captive is paid to the Reinsurer and every penny of claims paid to the captive by the Reinsurer is paid onto the Scheme. As premium, risk fee and claims are paid at the same time each month or quarter, this is typically settled as a net payment either from the Reinsurer (if claims exceed premiums and risk fee) or from the Scheme (if premiums plus risk fee exceed claims).

Given the very long term nature of the transactions entered into, a key aspect of their structure is the security of both the Scheme and the Reinsurer. Both are expected to remain in existence and honour their contractual obligations potentially up to a period of 50 years, if not longer. The Trustees will certainly take account of the long term financial strength of the Reinsurer by looking at its credit ratings, solvency and analysis of other strategic and financial factors. However, this will not fully mitigate the counterparty risk as financial strength can change over time.

Therefore, typically both parties agree to offer up security in the form of collateral to each other depending on which party is in a net paying position under the contract.

At the beginning of the contract the value of expected fixed premiums and modelled floating benefits over the whole life of the contract will be the same, as the fixed premiums are based on the expected benefits. The only collateral therefore that will be required initially is for the net present value of the risk fee payable over the term of the contract, to secure the Reinsurer’s entitlement to the risk fee in the event that the Scheme breaches or terminates the contract. This is referred to as the Risk Fee Collateral.

As the contract progresses, the floating benefit payments may diverge from the fixed premiums, as actual longevity experience will inevitably differ from the original projections upon which the premiums were based. The net present value (NPV) of the floating benefits payable in the future will be recalculated regularly and compared with the NPV of the fixed premiums payable in the future. If the NPV of floating benefits is higher than the NPV of fixed premiums, then the Reinsurer will be required to post ‘Experience Collateral’; if the NPV of fixed premiums is higher than the NPV of floating benefits then the Scheme will be required to post Experience Collateral.

The captive is not required to post any collateral as it is not retaining any risk.

Collateral can take many forms but the typical form of collateral is an asset such as cash or investment grade investments which are placed with a secure independent institution (such as a bank) which holds the assets by the net payer under the contract. These assets are then pledged for the benefit of the net receiver of payments under the contract. If at any stage the net payer defaults on their obligations, the net receiver of the payments can then draw down on what is due to them from the assets held by the independent institution.

The IC will be classified as a Category 6 insurer by the GFSC because it retains no insurance risk, and minimal counterparty risk.

## Module K Unit 21

### PENSION LONGEVITY HEDGING

All parties to the contract typically enter into a Framework Agreement. This agreement describes the roles, obligations and responsibilities of each party on an ongoing basis and what actions each party should take when certain events take place – such as errors in reporting or defaults in payments.

From the captive's point of view there are two key service providers, being the Insurance Manager and the Calculation Agent.

The role of the Insurance Manager is set out below.

The Calculation Agent is an actuary who is responsible for calculating the future estimated liabilities of the Scheme (claims paid by the Reinsurer) which is then compared to the future estimated premiums payable by the Scheme – the difference being the amount of collateral required by either party. The Calculation Agent is also responsible for calculating the monthly/quarterly premiums and claims settlement while also tracking the performance of the contract and reporting to the captive board on the performance of the insurance and reinsurance agreements.

#### 21.3 INSURANCE MANAGER'S OPERATIONAL ROLE AND ISSUES

The Insurance Manager provides all of the other operational services to the IC such as:

1. Set up of the captive entity
2. Monitor and report on performance of monthly/quarterly/annual tasks by the Scheme, Calculation Agent, Collateral Holder and Reinsurer to ensure that they are being carried out in compliance with the transaction documents.
3. Accounting
4. Company Secretarial
5. Compliance & Corporate Governance
6. General Representative with GFSC
7. Administration
8. Treasury
9. Provide facilities for holding board meetings.

These services are laid out in a management agreement that is signed by the Manager, the IC and the IC owner (the Scheme).

During the set up phase of the transaction, the Insurance Manager will review the transaction documents to ensure that it fully understands the structure and is able to service the obligations of the captive, which will be acting as a go-between in all matters between the Scheme and the Reinsurer in terms of making payments between the parties, monitoring collateral, receiving information from the Scheme and reporting it on to the Reinsurer.

A key consideration is therefore ensuring that all of the quarterly/monthly transaction activity is coordinated so that each party has sufficient time to perform each task in advance of the next dependent task including the settlement of payments and collateral.

The key ongoing operational responsibility of the Manager is the oversight of all of the key service providers and ensuring each party is performing its duties according to the agreements entered into with the captive. Operational reports including KPIs are submitted to the board of the captive at each meeting. Failure on the part of any service provider should be identified and rectified quickly to avoid it leading to an event of default by one of the parties to the agreements.

The Insurance Manager is also responsible for keeping up to date with all local legal, regulatory and tax and accounting developments to ensure that the captive entity continues to remain compliant in an ever-changing environment.

## **Module K Unit 21**

### **PENSION LONGEVITY HEDGING**

#### **21.4 EXIT STRATEGIES**

While longevity transactions are structured to last for up to 50 years if not longer, it is possible that during this period the Scheme finds a better long-term solution for ensuring the Pension Fund can meet its obligations to its pensioners, such a buy-in or a buy-out.

If a Scheme is already committed to a longevity hedging transaction it will need to exit this transaction in order to pursue the alternative route.

Typical longevity insurance and reinsurance transaction agreements now contain exit clauses that allow the Scheme to terminate the transaction with the payment of exit fees to compensate the Reinsurer for the loss of future income from the transaction.

Exit clauses also involve the potential to novate (or transfer) the rights and obligations under the longevity transaction to another party, which means that the buy-in or buy-out insurer gains the benefit of the longevity insurance provided by the Reinsurer, and the Scheme and the captive will no longer be involved in the longevity transaction.

Finally, even where agreements do not contain exit clauses all parties can still exit the agreements if all parties agree to such an event.

#### **21.5 FUTURE DEVELOPMENTS**

Typically these longevity transactions have been undertaken by the UK's largest pension schemes with potential future liabilities of over £10bn. As the captive IC structure is more widely adopted and has become more efficient and cost effective, smaller schemes are starting to see this risk transfer route as a viable option.

Time will tell if pension schemes with liabilities of under £1bn will evaluate the captive route as viable. One option for these schemes is the consolidator/aggregator model – where multiple small schemes are aggregated together and their combined size provides cost efficiencies and greater investment and bargaining power. These aggregated schemes could in time see the captive route as a viable longevity risk transfer route.

# Module K Unit 21

## PENSION LONGEVITY HEDGING

### Self-test questions

Answering these questions will remind the participant as to what has been learnt. Once completed, please check your answers against the relevant text.

1. What is a Defined Benefit pension scheme?
2. What is longevity risk?
3. When a longevity hedge is in place who is responsible for making payments to the pensioners?
4. How does a longevity hedge protect the pension scheme against adverse cash flows?
5. Why do pension schemes need to create a captive to access longevity hedges?
6. What is the purpose of a matched rights position?
7. What is the purpose of Experience Collateral?

### Summary of learning outcomes

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| 1. Explain the purpose of a pension and the difference between Defined Contribution and Defined Benefit schemes. |
| 2. Describe the three key risks associated with the investment strategy of a pension fund.                       |
| 3. Explain the benefits provided by a longevity hedge.   |
| 4. Explain the role of a captive in providing access to longevity hedging.                                       |
| 5. Explain the role of the insurance manager in managing the transaction.  |