Pensions Management Institute
ACHIEVING PENSIONS EXCELLENCE

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# Core Unit 4 – Financing and Investing for Retirement Provision

## Assignment 2 Notes

*(Part 2 – Risk Management)*
*Recommended Time: 1 hour*

1. **If interest rates fall, what happens to the value of a defined benefit scheme liability? If there are two such liabilities with durations of 10 and 20 years respectively, which is most impacted by the change in interest rates and why?**

**5 marks**

The amount needed now to provide for a given future liability will depend on the investment return achieved; the higher the investment return the less money will be needed now because there will be more investment growth to compensate. The amount needed now is termed the **present value** of the future liability and the future investment return is termed the **discount rate**.

Defined benefit pension liabilities are valued by actuaries in this manner, using a discount rate linked to interest rates. Typically the reference point used is the yield on long-dated British Government bonds (gilts) and it is normally assumed that the investments will perform better than gilts by a fixed percentage amount (e.g. 1% per year).

Hence the present value of the pension liabilities is dependent on interest rates. When interest rates fall, the value of the pension liabilities increases to reflect the reduced contribution expected from future investment returns.

The duration of a liability indicates its sensitivity to changes in interest rates. A liability with longer duration (20 years in this instance) is most impacted by the change in interest rate because there are more years over which the interest rate is being applied before the liability becomes due.

(The relevant section of the Study Manual is Part 2, Chapter 1.1)

2. **Why is equity-type risk typically considered to be a rewarded risk and how can this risk be mitigated?**

**5 marks**

Pension liabilities have bond-like characteristics, and 'matching' assets are fixed interest and index-linked bonds (and similar types of investments) are often referred to as '**matching**' assets since their value changes broadly in line with the liabilities.

In practice, most pension schemes invest in other types of assets, in order to obtain more diversification and with the aim of achieving higher investment returns in the longer term. Equities (or shares in companies) are the most common examples, although there are a number of others. These can be referred to these collectively as 'equity type' investments, and are often called '**growth**' assets.

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Since the value of growth assets is largely unrelated to the value of a scheme's liabilities (i.e. growth assets are not matching assets), growth assets introduce a different type of investment risk, known as 'equity-type risk'. This is typically considered a **rewarded** risk, meaning that there is expectation of being rewarded for taking the risk, although of course that is not guaranteed.

Conversely, interest rate and inflation risks are typically considered unrewarded risks, meaning that there is no expectation of being rewarded for taking these risk and so it is logical to seek to minimise them as far as practicable.

It is possible to reduce the equity type risk by means of **diversification**, through investing in a wide range of equity markets (UK and overseas) and a wide range of equity holdings within a given market, and in other types of growth assets uncorrelated to equity markets,, such as absolute return funds.

(The relevant section of the Study Manual is Part 2, Chapter 1.3)

3. **What is the purpose of Liability Driven Investment (LDI) and what role can swaps play in its implementation?**

**10 marks**

In a defined benefit scheme the investment portfolio that exactly matches the scheme's liabilities will be one that removes interest rate and inflation risks. This is termed the **least risk portfolio** and is the benchmark against which the level of investment risk is measured.

Liability Driven Investment (LDI) is an approach to investment which focusses closely on the least risk portfolio, to remove interest rate and inflation risks. These are typically considered to be unrewarded risks (i.e. there is no expectation of benefitting from taking these risks), and so it makes sense to minimise them where practicable.

An increasing number of pension schemes are investigating and implementing LDI strategies, now that most are closed to future accrual and are becoming more mature.

Swaps are very common, although not essential, components of an LDI strategy. Swaps are contractual agreements where two parties (the counterparties) agree to exchange (swap) either single payments or a series of payments of equal value in the future. The two types of swaps described below are usually combined in practice.

In an **interest rate swap**, the pension scheme pays a variable rate of interest, usually measured by reference to an index such as LIBOR (London Interbank Offered Rate), in exchange for receiving a fixed rate of interest. When interest rates fall the value of the swap rises, while when interest rates rise the value of the swap falls

In an **inflation swap**, the pension scheme pays a fixed rate of interest (equal to the expected rate of inflation) in exchange for receiving a variable rate of interest linked to an inflation index, such as the Consumer Price Index (CPI). When the rate of inflation rises the value of the swap rises, while when the rate of inflation falls the value of the swap falls.

If interest rates fall (or if the rate of inflation rises), the increase in value of the swap compensates for the increase in value of the liabilities. If interest rates rise (or the rate of inflation falls) the lower value of the swap is offset by the reduction in value of the liabilities.

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In practice, the only exchange of money that takes place is the difference in value of the two cash streams in any period, i.e. the profit or loss. This enables the scheme to hedge interest rate and inflation risks on an essentially unfunded basis (i.e. without the need for capital).

Adopting LDI does not preclude the retention of growth assets. By hedging what is typically considered the unrewarded interest rate and inflation risks, the scheme can concentrate on taking equity type risk (which is typically considered a rewarded risk) with a view to obtaining improved investment growth.

(The relevant section of the Study Manual is Part 2, Chapter 3.2)

4. **Why is longevity a risk in pension finance? How can it be mitigated?**

**a) In defined contribution pension schemes**
**b) In defined benefit pension schemes.**

**10 marks**

If a pensioner lives longer, there will be more years over which a pension is required, and this will require a larger accumulated fund at retirement in order to finance it. Life expectancies have been increasing significantly over recent decades and it is necessary to assume they will continue to do so. This makes financial planning for retirement more difficult, since the rate of improvement in life expectancies is uncertain. Longevity risk is the prospect of running out of money in retirement through living longer than expected.

In a defined contribution scheme it is possible to insure against longevity risk by purchasing an **annuity** on retirement (a Lifetime Annuity). Since April 2015 scheme members are no longer required to purchase Lifetime Annuities at retirement, but they still serve an important role in guaranteeing a lifetime annuity. One of the perceived drawbacks of an annuity is that they are poor value if the member dies early, but there are various options available to mitigate this issue where benefits are provided on death (dependants' pensions, guarantee periods and value protection lump sums).

An individual's own health is closely related to longevity risk. There can be some advantages gained by deferring a Lifetime Annuity until later in life, as life expectancy may become more predictable. In addition, if health worsens, it may be possible to take advantage of Enhanced Annuity rates rather than normal Lifetime Annuity rates.

In a defined benefit scheme, annuities can also be purchased, normally on a bulk basis and are known as **buy-ins** or **buy-outs.** These are usually purchased for pensioners, although it is possible to purchase annuities for members not yet retired.

A buy-in is a type of investment; the individuals whose pensioners are purchased remain members of the scheme and the insurer pays the pensions to the scheme, who are separately responsible for paying pension to the members concerned. A buy-in removes longevity risk in respect of the members concerned, but more importantly removes interest rate and inflation risks.

A buy-out is normally entered into as part of a scheme wind-up, and the individuals cease to be scheme members. Some schemes enter into buy-ins with a view to a subsequent buy-out.

Longevity risk can be specifically mitigated in a defined benefit scheme using a **longevity swap**.

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One form of longevity swap is designed to fully protect the scheme against longevity risk for a specified group of pensioners for a specified number of years. In effect, the scheme pays a set of pre-agreed cash flows to the other party (counterparty), and in return receives cash flows based on the actual longevity experience of the pensioners. In practice these cash flows are netted off against each other. These arrangements are especially complex to document and administer and are usually only made for large schemes.

A second type of arrangement is designed for non-pensioners and is an option for much smaller schemes. At the end of the swap contract, which is typically about 10 years, a calculation is made to compare the rate of improvement in longevity based on national population statistics against a pre-agreed assumption. If longevity has improved faster than assumed, the counterparty makes a payment to the scheme, and vice versa if longevity has improved slower than expected. This type of arrangement only provides partial protection against longevity risk as it is not specifically linked to the scheme's membership experience.
(The relevant section of the Study Manual is Part 2, Chapter 2.1)

5. **How is employer covenant defined by the Regulator and why is it a risk for a defined benefit scheme? List four key considerations relevant to assessing employer covenant and briefly comment on each.**
**10 marks**

For a defined benefit scheme, employer covenant is defined by the Pensions Regulator as the ability and legal obligation to provide for the pension benefits under the scheme. Employer covenant risk is essentially the risk that the employer will be unable to meet its obligations. This has become a key focus given that most schemes have had funding shortfall for some time, and therefore rely on the employer covenant to make good the shortfall in the future.

The reference to legal obligation is important, because many sponsoring employers form part of complex organisations, which may have changed over the years. Identifying which companies within a group are legally responsible for funding the scheme is essential. There might also be companies that are no longer part of the group but which have retained responsibility for some scheme members. The Pensions Regulator expects trustees to carry out an audit to ensure they fully understand where the legal obligation lies.

Trustees are expected to assess the strength of employer covenant and to monitor this on an ongoing basis. They are expected to assess if they have sufficient expertise to make the assessment themselves, or to consider whether to seek professional advice.

A covenant assessment would be expected at the time of an actuarial valuation every three years, with regular reviews in between, and if there is a significant employer event, such as a takeover.

Assessing covenant strength involves gathering appropriate information. Published data about historic performance is helpful to some degree, but much more important will be management information provided by the employer (on a confidential basis) about past performance and forecasts of future performance.

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The following considerations are relevant to an assessment of employer covenant:

**Scheme size**: The size of the pension scheme in relation to that of the employer is an indicator of covenant strength. If the scheme is large in relation to the employer, then it is financially more significant and that may be a sign of covenant weakness when combined with other factors

**Profitability**: The history of profits and future profit forecasts will indicate if the employer has a sound ongoing business

**Cash flow**: Profits are only part of the story. The pension scheme needs cash funding and the ability of the employer to generate sufficient cash for its business needs as well as for the pension scheme is important

**Balance sheet**: the availability of assets to fund the shortfall in the event the employer goes out of business (after allowing for other creditors with higher priority) will be important only if the trustees have serious concerns about the future viability of the employer. It is rare for an employer to have sufficient assets in such circumstances, but the extent of the shortfall indicates the proportion of scheme benefits that are at risk.

(The relevant section of the Study Manual is Part 2, Chapter 2.2)

6. **What is meant by contingent assets and how can they be used for the purposes of:**

   **a) Setting the technical provisions and the length of the recovery period in defined benefit scheme funding**
   **b) Determining investment strategy.**

**10 marks**

For a contingent asset to become a scheme asset, this will be contingent on a specific '**trigger event'** occurring, such as the sponsoring employer's insolvency. Examples of contingent assets are:

Charge on assets: For example land or buildings: the trustees would take ownership under specified circumstances normally in the event of employer insolvency. The ability and willingness of an employer to offer such a 'contingent asset' will depend on the specific circumstances

**Parent company guarantee:** the parent company may be much larger than the sponsoring employer but would normally have no legal obligation to finance the scheme. A legally binding guarantee would commit the parent company to provide financial support up to a pre-agreed level in specified circumstances, again typically in the event of employer insolvency, or if the employer were unable to meet its agreed funding commitments to the scheme.

**Escrow account**: the employer places money in a separate account, to which it has access only in specified circumstances. The trustees will then have access to the money held on escrow in specified circumstances, such as employer insolvency.

Some of these arrangements (e.g. charge on assets or parent company guarantee) can be recognised by the Pension Protection Fund (PPF) and used to reduce the levy paid to the PPF.

Contingent assets provide one means of improving the strength of the employer's covenant, in that they provide a potential future source of assets in times of particular need. In return for providing contingent assets, the employer can expect this improved covenant strength to be recognised.

a) In relation to defined benefit scheme funding, a stronger covenant can be recognised in an actuarial valuation in one of two ways. By placing a lower value on the scheme's liabilities (or 'technical provisions') the calculated total

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future employer contribution requirement will be lower. Alternatively by adopting a longer 'recovery period' over which a funding shortfall is to be financed the annual employer contribution will be lower. Either way, the impact is likely to mean less cash contributions being paid into the scheme in the short term, on the understanding that the contingent assets provide additional security for the scheme.

b) In setting investment strategy, a key decision for trustees is the proportion on **growth** assets (such as equities) versus **matching** assets (such as bonds). The safest investments are matching assets since their value changes broadly in line with the scheme's liabilities and hence they minimise the volatility in the financial position of the scheme.

Most pension schemes choose to invest a proportion of their assets in growth assets, to obtain diversification and with a view to improving the long-term investment return. By deliberately mismatching the assets and liabilities, there is greater risk attached to the scheme, since there is no guarantee that the matching assets will perform as well as matching assets in the longer term. Since the time horizon of a pension scheme is uncertain (e.g. it might close prematurely following the insolvency of the employer), this introduces a further risk from investing in growth assets, which can be volatile in the short term and might have depressed values at a crucial time.

The extent to which trustees can invest in growth assets will be partially dependent on the strength of the employer covenant; with a strong employer there is more scope to do so. Contingent assets can strengthen the employer covenant, thereby permitting a higher proportion of growth assets.

(The relevant sections of the Study Manual are Part 2, Chapter 2.2 & 3.3)