



**Actuaries  
Institute**  
Australia

# LIFE INSURANCE AND RETIREMENT VALUATION

MODULE 4: LIFE INSURANCE AND  
RETIREMENT FUND LIABILITIES



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## Module 4

# LIFE INSURANCE AND RETIREMENT FUND LIABILITIES



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### 4. Life insurance and retirement fund liabilities

Students have been introduced to the idea of liability valuations in both their Foundation subjects (with a focus on formula-driven liability calculations) and within the Core Actuarial Management subject (with a focus on the control cycle). The content of this short module should be familiar to the reader.

This module addresses the following learning objectives:

Item	Unit/Key Performance Objective/Learning Objective
3	<b>Prepare a valuation of life insurance or retirement fund liabilities</b>
3.1	<b>Consider the characteristics of policy and benefit liabilities</b>
3.1.1	Explain the characteristics of the different types of life company or retirement fund liabilities
3.2	<b>Describe reasons for valuing policy and benefit liabilities</b>
3.2.1	Discuss the reasons for valuing liabilities and how these might impact the approach
3.2.2	Describe key stakeholders and their interests in valuation results



### 4.1. The characteristics of policy and benefit liabilities

#### 4.1.1. What are liabilities under life policies or retirement funds

Liabilities are a series of obligations or promises relating to a business event that has occurred, such as the writing of an insurance contract. For example, under a life insurance policy, an obligation to make a cash payment may arise when the life insured dies, becomes disabled, or reaches retirement age.

A prospective policy owner must apply to enter a contract with a life insurance company (life company). If the life company accepts the application, then the contract is said to be written and a liability is created on the life company's balance sheet. The liability is in respect of future contractual claims that may arise in respect of the specific contract effected. As described in Module 3 (Products), premiums from policy owners which are invested and earning investment returns over time are used to meet claims, expenses of the company, and profit (which may be negative).

Terminology differs for retirement funds but the concepts are similar. Under a retirement fund, a member of the fund and/or their employer will make contributions towards the retirement benefit while the member is still working for that employer. Retirement funds have an obligation to pay claims arising under events defined in the fund rules. Typical claim types are: cash benefits on retirement; early withdrawal payments to the member; transferring a cash measure of the member's claim on a fund to another retirement plan provider; death benefits to nominated beneficiaries and so on. Similar to the life company, a liability will need to be recorded in respect of each member in a retirement fund. Premiums are labelled *contributions* in retirement fund terminology. Contributions from members are received and invested to cover expenses and benefit payments. Retirement funds may be managed by profit-seeking entities or mutual entities. Profit-seeking entities extract charges to cover their profit objectives whereas mutual entities attempt to balance fees and charges.



Policy liabilities (for life insurers) and benefit liabilities (for retirement funds) represent the present value of cash flows relating to these obligations. These liabilities are uncertain, as the future events under which these cash flows occur are not known and instead must be estimated. An actuary uses data, methods, models and assumptions to estimate and place a value, at a point in time, on these uncertain future cash flows and has to use a considerable amount of judgement in arriving at such estimates.

### 4.1.2. Characteristics of policy and benefit liabilities

Key characteristics of life insurance policies and retirement funds which need to be taken into account when estimating their value include:

- **nature of the liability:** are benefits fixed in monetary terms or do they increase with inflation or change in some other way;
- **long-term obligations:** life insurance policies and retirement funds are long-term contracts, generally creating obligations, income and payments far into the future;
- **mismatched cash flows:** The timing and size of cash inflows and cash outflows under policies and funds are mismatched. Some examples are:
  - up-front costs such as commissions and internal expenses on setting up policies are incurred at the outset and recovered over the lifetime of the average contract;
  - premiums for a level term insurance policy exceed expected death costs in the early years and are less than expected death costs later on in the policy term;
  - contributions/premiums for retirement funds/life insurance investment contracts are received over many years and payments made much later, often on retirement;
  - for lifetime annuity policies, a single premium or consideration is paid to the life insurer and payments are made by the insurer for the life of the policy owner.
- **uncertain cash flows:** The timing and amount of both the cash inflow (premiums and investment returns) and cash outflow (claims and expenses) are highly uncertain and are contingent on many factors that require statistical estimation.



In addition to the above characteristics, life insurance and retirement policies:

- have many diverse contract designs and features of varying degrees of complexity;
- often include options and guarantees relating to insurance terms, premiums, benefit payments and investment returns; and
- sometimes include an entitlement to share or participate in the profits from portfolios of similar policies. These are called *participating policies* and are covered in the LI&R Product Development subject.

Life insurance liabilities (often referred to as “policy liabilities”) comprise liabilities for:

- future claims that have not yet occurred;
- claims that have occurred but the insurer is unaware of the claim (Incurred But Not Reported or IBNR);
- claims that have been reported to the insurer but have not been accepted as a valid claim (Reported But Not Accepted or RBNA);
- claims that the insurer has accepted (or admitted), but not yet paid
  - these remain liabilities until the point of payment;
- claims that have been accepted and involve on-going payments contingent on the insured satisfying specified criteria, such as:
  - immediate annuity payments contingent on the annuitant surviving to the payment dates;
  - disabled lives remaining disabled at the payment dates; and
- closed claims that may reopen, e.g. a closed income protection claim may reopen because the relevant condition was reoccurring within a specified time frame.

Methodologies and considerations in the valuation of future claims, IBNR, RBNA, accepted claims and accepted claims with on-going payments are covered in Module 5 (Life valuation).



Retirement benefit liabilities comprise liabilities to meet future benefit payments for existing members. Benefits may be payable on a member's retirement, early withdrawal, death or on other events. As with life insurance liabilities, some claims may be known but not yet fully settled, and some claims may not yet be reported to the fund at the time that the value of liabilities is being determined.

Retirement funds fall under two main categories: Defined Benefit (DB) and Defined Contribution (DC) funds.

A DB fund is one in which the benefit payments are determined by a formula based on a range of factors, rather than depending directly on investment returns earned on contributions. The factors may include the employee's salary, length of service and age. Benefits may be paid as a single lump sum amount or as a pension over a number of years. A DB fund has an employer/sponsor responsible for funding a part of the benefits. It is often claimed that the benefit amount is guaranteed but this is contingent on the fund having sufficient assets or that any shortfall of assets is paid by an employer.

### Exercise 4.1

In the risks section of the Product Disclosure Statement for UniSuper's defined benefit fund, it is stated that the "defined benefit scheme is designed such that over the longer term, investment returns are expected to be sufficient to provide for UniSuper's defined benefits, although this is not guaranteed." What does this mean and what actions can be taken by UniSuper?

DC funds, also referred to as *accumulation funds*, provide benefits based on an accumulation of contributions by or on behalf of a member. Benefit amounts on voluntary exit or at retirement are not guaranteed and will increase or decrease in line with investment earnings. It is common for death benefits to be guaranteed via a group insurance policy, with premiums deducted from the account balance.





Although funds will be predominantly either DB or DC, many funds include design elements of both benefit types. Many DB plans have an accumulation-style resignation benefit (e.g. return of contributions, possibly with some interest). Some accumulation plans provide a minimum benefit on retirement (e.g. 1% of salary for each year of service).

### 4.1.3. Other liabilities

Policy or benefit liabilities usually make up the largest liability item on the balance sheet of a life company or retirement fund. These are the focus of this subject. However, there are other types of liabilities shown on the balance sheet. It is important that actuaries are aware of the nature of various financial items in the company or fund accounts and their valuation basis.

Typical categories of other liabilities are described briefly below.

#### **Accounts payable**

These are generally short-term liabilities and represent amounts due, but not yet settled, in respect of goods or services provided to the company or fund. Office equipment, consulting services, audit services and so on, may be provided in a current reporting period but payment may not occur until a later reporting period. Since the services or benefits are received in the current reporting period, the recording of a liability for the "account payable" effectively records the cost in the same period.

#### **Tax liabilities**

These represent obligations to pay tax on profits or investment gains in compliance with the relevant taxation regime.

Taxes may apply to life company profits and investment gains. Where taxes apply to policy owner benefits or gains, the obligation to pay tax may be offset by a reduction in policy benefits and liabilities, or the gross benefit is paid and the policy owner is responsible for the tax payments.



Some retirement funds are managed by profit-seeking entities and tax may be payable on profits. Taxes may be payable on contributions, investment returns and benefits in all retirement funds.

A company's or fund's obligation to pay tax can generally be estimated accurately and recorded on its balance sheet. A company may also record investment gains that have not yet been received. Typically, a company or fund would record a deferred tax liability on its balance sheet representing the tax that would be payable on sale of assets with unrealised gains. Deferred tax liabilities may be discounted if the sale of assets is not expected to occur for some time.

### Debt

Life companies often face restrictions on when and how much they can borrow. Most jurisdictions permit life companies to issue longer-term debt. The value that a company records against long-term debt depends on the relevant accounting standards and the terms of the loan. In some cases, it may be the face value of the loan. Movements in market rates of interest may impact the valuation of, say, a loan where repayment terms are fixed.

### Provisions

These generally represent future obligations with various degrees of uncertainty. These need not be directly related to policy or benefit obligations. They may include staff unused sick, long service or annual leave, retirement obligations or provisions for doubtful debts. The latter would be a provision held against an asset, "Accounts Receivable". Provisions are characterised by the need to apply judgement in assessing their value by applying models, methods and assumptions. In this way, the valuation of provisions has some similarity to the valuation of policy and benefit liabilities.



While actuaries may not be responsible for determining the accounting treatment of all balance sheet items, it is important to ensure that items are reflected consistently in both actuarial valuations and accounts. It is also important, if an actuary has concerns with the value placed on an item or the consistency of its treatment over time or against other balance sheet times, that these concerns are addressed. While an actuary may not be responsible for every reporting item, they may need to include margins or adjustments to the value of liabilities to address any such concerns. Examples of balance sheet items that might be considered include:

- **Appropriate attribution of taxation liabilities** between shareholders and policy owners.
- **Discounting of future tax payable on unrealised gains:** Unit-linked liabilities will be calculated using policy owner unit entitlements and unit prices. Where funds are taxed, future tax payable will be deducted from asset values in determining unit prices. Usually, this contingent tax liability is discounted to reflect the time value of money. If accounting provisions are not discounted, a mismatch may occur. Depending on local regulations, the actuary may adjust liability values for consistency.
- **Deferral of tax losses** to be offset against future tax payable: An actuary may have an alternative view on the extent and timing of the utilisation of such losses.
- **Premiums due but not yet paid:** Actuaries particularly need to ensure that premium amounts due are not “double counted” as both projected income in liability valuations and as amounts receivable in the company’s balance sheet. Similar considerations apply to prepaid premiums.
- **Provisions for disputed claims:** Such provisions may require actuarial assessment and may represent the full value of the amount payable if settled in favour of the policy owner. A discounted amount may be justified, reflecting the time value of money or the uncertainty of the outcome. Either way, it is important that these claims are not double counted in both an accounting and actuarial provision.
- **Other claims provisions** for known but unsettled claims at the valuation date: These are generally estimated by the actuary but are sometimes held as an accounting provision. It is important to understand where the provision or liability is being held throughout the lifecycle of a claim to avoid double counting. These are discussed further in Module 5 (Life valuation) Section 5.3.



## 4.2. Reasons for valuing policy and benefit liabilities

### 4.2.1. Reasons for valuing liabilities

Policy and benefit liability valuations can be performed for a range of different reasons, including:

- assessment of the ability of the company or fund to meet underlying contractual obligations;
- performance monitoring as a management tool;
- disclosure of the value of obligations in a company's or fund's financial accounts and reports;
- demonstration of capital adequacy under a range of adverse scenarios;
- pricing of new products;
- financial condition reports showing likely progression of the solvency position over the next 3 -5 years; and
- calculation of tax payable.

In addition, policy liability valuations for a life insurer can be performed to:

- assess the value of shareholder equity;
- determine profit in a period;
- estimate profit distribution between policy-owners and shareholders and set bonus rates for participating business; and
- assist in the determination of embedded or appraisal value.



Two key reasons for valuing the liabilities of DB retirement funds is to determine the funding status of the fund and to determine a recommended employer contribution rate. The funding status is the extent to which assets exceed the liabilities. The employer contribution rate is the amount the employer needs to contribute in the future to fund future benefits and to make up any shortfall in the funding of past service benefit entitlements. The employer contribution rate will allow for the employees' fixed contribution rate. Regulations in many jurisdictions apply minimum standards to the funding or security of member entitlements.

It's important to consider the purpose for performing a liability valuation, as the purpose is likely to impact the methodology and assumptions to be used. The suitability and appropriateness of the assumptions underpinning the liabilities are dependent upon the purpose. A few examples are:

- when assessing the profits earned by a business for a particular period, local prudential or accounting regulations may dictate how profit is measured;
- a valuation for internal reporting to a parent entity may use a different methodology and assumptions to one prepared for submission to the local regulator:
  - a company will have the freedom to choose its preferred methods and assumptions for internal management purposes;
- when assessing the capital strength of the business, there are different choices:
  - risk-based methods involve investigating how assets and liabilities behave in extreme conditions; or
  - the liabilities may be calculated conservatively and are artificially inflated by factors specified by regulators.



### 4.2.2. Stakeholders

In addition to needing to understand the purpose of a liability valuation, it is also important to consider who the valuation is being prepared for and who might use its results. These people are considered to be “stakeholders” within the valuation process.

The following figure outlines the key stakeholders in a life insurance valuation.

Figure 4.1: Life Insurance stakeholders and their interests in the valuation



- **Boards** are usually the decision maker and delegate responsibility to management to complete the valuation. There may be legislative requirements to ensure they have received adequate advice from nominated persons, e.g. the Appointed Actuary.
- **Analysts** attempt to assess matters such as company strength and outlook. This will guide the investment decisions of potential **investors**, i.e. shareholders and bondholders.



- An **Overseas Parent Entity** may wish to receive and consolidate valuations from subsidiaries using consistent and comparable approaches.
- **Reinsurers** provide insurance to life insurance companies, assisting them to manage risk. Companies pay premiums and receive payments based on the experience of their underlying life insurance portfolios. Reinsurance may cover individual policy claims or total portfolio claims, subject to agreed limits. Reinsurers will be interested in the effective claims management of the insurer.
- **Customers**, including potential policy owners, are implicitly interested in the financial strength of an insurer as they expect valid claims to be paid. They will not have the time nor knowledge to determine financial strength and leave it to regulators to monitor companies on their behalf.
- **Auditors** are required to express an opinion on whether financial reports give a true and fair view of a company's financial position. Investors, policy owners and regulators place a great deal of importance on the auditor's report. The company's own internal risk assessment process may also place reliance on the external auditor's report.
- **Regulators/The Government** are concerned to promote a trusted and viable industry. Regulators ensure that companies can pay policy owner benefits and that financial reports provide a fair, accurate and consistent view. Another key government stakeholder is the **tax office**, who want to ensure that tax is paid in accordance with local rules.
- **Management** will be interested in movements in liability values and impacts on profit, which can trigger management questions like "how are underwriting and claims management functions performing?" or "what changes need to be made to reflect recent experience such as increasing claim numbers or higher lapse rates?" **The Chief Financial Officer (CFO)** will have delegated authority from the Board to manage profit and recommend profit distribution. The **Chief Risk Officer (CRO)** role provides oversight and this is discussed in Module 13 (Risk management). Management will be interested in wider issues such as how disputed claim payments are handled. Considerations on meeting customer needs are addressed in the Product Development subject.



- The role of the **Appointed Actuary (AA)** varies by country. The Australian prudential regulator states that, from July 2019, *‘the purpose of the Appointed Actuary role is to ensure that the board and senior management have unfettered access to expert and impartial actuarial advice and review. The role is intended to assist with the sound and prudent management of an insurer and ensure that the insurer gives appropriate consideration to the protection of policy owner interests. The Appointed Actuary must have the necessary authority, seniority and support to contribute to the debate of strategic issues at a senior management level and provide advice that is considered by the board. The Appointed Actuary plays a key role in, and provides effective challenge to, the activities and decisions that may materially affect the insurer’s financial condition, as well as policy owner interests.’*

### Exercise 4.2

If you were required to audit the valuation results of a life company, what questions would you ask about the valuation?

What additional considerations would you have if auditing a valuation report for a defined benefit fund?

Retirement funds share a number of key stakeholders with life insurers. In particular, auditors, regulators and management have a similar interest in retirement funds as outlined above for life insurance operations.

In addition, the following are key stakeholders in a retirement fund, with a brief description of their primary objectives:

- **Members** will have analogous expectations to life insurance customers:
  - aim for the post-retirement benefit to be sufficient for their needs;
  - aim for families to be looked after on events occurring pre-retirement, such as death or ill-health; and
  - expect that the fund fulfils its legal obligations;





- The **employer or sponsor** will want stability in its outgoings; i.e., contributions are stable. This is simple for DC funds but can be more complicated for DB funds, as discussed in Module 9 (Retirement valuation). The sponsor may use the fund to form a competitive advantage through attracting and retaining staff, or perhaps as a benevolent gesture to employees. In any type of fund, the sponsor will want to comply with all local laws.
- The **trustee** is an entity or person formally appointed to manage the assets of a trust for the benefit of its beneficiaries in accordance with the terms of the trust. Retirement funds are often written under a trust deed. A trustee owes fiduciary duties to the beneficiaries. These duties are typically set out in the trust deed (the legal document setting out the rules of the fund). The main objectives of a trustee are:
  - administer the trust fund
  - satisfy all the requirements of the trust deed
  - act independently from the fund sponsor
  - act in the best interests of members as a whole
  - pay correct benefits at the appropriate time
  - ensure the fund complies with current superannuation and taxation law
  - communicate appropriately and continually with members
- **Governments** set up the detailed tax and legal rules that create the retirement system. They have the power to change the rules to fit with changing needs, the economic environment, or to make other changes from time-to-time. They may promote education on pension provisions and require funds to educate members on benefits and choices. Pension provision is encouraged in many countries via tax breaks. Some governments compel citizens to contribute to retirement funds.



### 4.3. Key learning points

- A liability is an obligation or promise relating to a business event that has occurred, such as the writing of an insurance contract or acceptance of a new member to a retirement fund.
- Life insurance and retirement fund liabilities represent long-term obligations. The timing and size of cash inflows and outflows are mismatched and are uncertain.
- Life insurance policy liabilities comprise obligations for known claims; claims that have occurred but the insurer is, as yet, unaware of; and future claims which haven't yet occurred.
- Under DB retirement funds, benefit payments are determined by a formula, often based on salary and length of service. Under DC funds, benefits are not guaranteed but based on an accumulation of member contributions.
- Policy or benefit liabilities usually make up the largest liability item on the balance sheet.
- Policy and benefit liabilities are valued for a range of reasons including profit and capital adequacy assessment, funding determination and reporting requirements.
- There is a range of stakeholders interested in the outcomes of a liability or benefit valuation. Their interest in the valuation varies depending on who the stakeholder is.

### 4.4. Answers to exercises

#### Exercise 4.1

In the risks section of the Product Disclosure Statement for UniSuper's defined benefit scheme, it is stated that the "defined benefit scheme is designed such that over the longer term, investment returns are expected to be sufficient to provide for UniSuper's defined benefits, although this is not guaranteed." What does this mean and what actions can be taken by UniSuper?

Answer:

This is a difficult question.

You will need to locate the PDS and a quick google search provides the link:



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<https://m.unisuper.com.au/forms-and-documents/product-disclosure-statements#/defined-benefit-division-and-accumulation-2>.

A defined benefit scheme provides, by definition, benefits that are defined. Employees contributions are fixed. That means the employers contributions are varied to ensure benefits are paid.

For Unisuper, the employers' contributions are fixed. Thus, the required balancing item for the scheme to be a traditional defined benefit is not present. It is managed such that benefits are paid in line with expectations but poor investment performance may lead to a cut in benefits.

It appears more like an unusual defined contribution scheme where investment returns are shared across generations of members. Different generations of members have been offered different defined benefit structures.

The risk section in the PDS mentions that one action is to cut all benefits. That is the explicit option.

It would be unusual to cut current pensions and the first step is usually to alter the benefits that accrue on future service. For example, current retirees have index-linked annuities whereas new members to the scheme are entitled to a lump-sum payment and the new members bear considerable inflation risk over the last five years of their working lives.

It is possible that employers collectively agree to raise their contributions but that is by negotiation.

Potentially, the fund could attempt to allocate assets to each contributing member and transfer these to DC scheme although that sounds extremely difficult.

Merging the DB fund with other funds is a possibility.

### Exercise 4.2

If you were required to audit the valuation results of a life company, what questions would you ask about the valuation?



What additional considerations would you have if auditing a valuation report for a defined benefit fund?

Answer:

Draw a map of the high-level processes. These are covered in detail in Module 10 but you should be able to think through the main ideas.

Questions for life company valuation:

- How has the actuary ensured that all material matters have been taken into account, including options and guarantees under products, reinsurance and changes to products or the business since last time
- Valuation methodology
- Appropriateness of assumptions, taking into account company and industry experience and current economic conditions
- Any changes to assumptions, methodologies or models since last time and the reasons
- What data reconciliation checks have been applied, what issues were found and how were they addressed
- What internal review processes exist, covering appropriateness of models, assumptions, methodologies and processes
- Judgements applied by the company
- Quality of explanations of results, changes since last time and any other material matters
- Spot checking of models and results; overall reasonableness checks using ratios; comparison to previous results and those of other companies where available.

Additional questions for DB fund:

All of the points above are relevant for DB retirement funds, adapted as relevant.

For instance, review of member benefit guarantees and changes to member benefits or the fund since the last review, replaces changes to products or the business since last time.



# Life Insurance and Retirement Valuation

## Module 4: Life insurance and retirement fund liabilities

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One difference between insurers and DB funds lies in the different parties that are involved with the fund: the trustees, the employer, and the fund administrator. For instance, the fund administrator may be independent of both the employer and the trustees. The auditor will need to understand reliances by the actuary on data or other information provided by each of these parties, and any undertakings given. An example is an undertaking given by the employer as to the payment of future funding.



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