



Chapter 23 – Valuation of Assets

Introduction	41
Relevant Parties and Legal Requirements	41
Statutory Funds	41
Fair value	42
Relationship to Unit Pricing	43
Shareholders' Fund	43
Cost Method	44
Amortised Cost Method	44
Deferred Tax Assets	44
The Relationship between Assets and Liabilities	45
Allocation of Assets to Liabilities	45
Investment Policy	45
Matching Assets and Liabilities	45
Other Assets	46
Replicating Portfolios	47



Additional Space for Notes



Introduction

This chapter is concerned with the valuation of the assets of a life company.

The assets of a life company can include a broad range of investments from the more standard asset classes such as equity, property and fixed interest securities to other assets such as derivatives and controlled subsidiaries.

The valuation of assets must be carried out in accordance with the accounting standards and APRA standards. These are not identical – there can be some differences between asset values reported to APRA and asset values reported under the accounting standards in a company's general purpose financial statements.

Relevant Parties and Legal Requirements

The responsibility for placing a value on the company's assets rests with the Board of a life company.

In cases where a readily accessible and credible value is not publicly available (e.g. the market value of an unlisted equity) the Board will normally make use of the services of professional valuers. Assets in this category would include property (e.g. an office block) and unlisted subsidiaries that undertake business operations (e.g. a distribution venture).

In all cases, the valuer provides advice on the value of the assets while the board retains the responsibility for the final value to be adopted in the accounts.

The accounting standards require the notes to the general purpose financial statements to include a description of how the values of assets are arrived at.

The auditor of a life company has a responsibility under the Corporations Act and APRA reporting standards to provide assurance that the company's annual general purpose financial statements and annual reporting forms submitted to APRA (with some exceptions) are reliable. The assessment of reliability includes the valuations placed on assets. Interim statements and reporting forms do not need to be audited.

The actuary needs to understand how the value of assets may vary over time. This is essential for assessing the capital requirements of the life company and for providing advice on investment policy. In particular, APRA Prudential Standard LPS 114 Capital Adequacy: Asset Risk Charge requires that asset values be recalculated in a series of stressed scenarios. The actuary must understand how to apply these scenarios. This is not always straightforward, particularly in the case of unlisted fixed interest assets and derivatives.

For the purpose of the actuary's financial condition investigation, Professional Standard 200 requires the actuary to consider and comment on the methods by which the asset values have been obtained and their appropriateness.

Statutory Funds

The Accounting Standard AASB 1038 requires that assets backing insurance liabilities be valued at fair value. The meaning of "assets backing insurance liabilities" is not clearly defined. However life companies typically treat all of the assets of statutory funds as backing insurance liabilities. This is consistent with APRA's requirement that all assets of



statutory funds be valued at fair value for the purpose of the APRA prudential standards and reporting forms.

For most assets that back insurance liabilities, the accounting standards require changes in fair value to be included in profit or loss. There are some exceptions, such as owner-occupied property, where increases in value must be reported as "other comprehensive income" which does not form part of the reported profit. This can cause a distortion in reported profit if there are policy liabilities whose value depends on the value of these assets. Companies will normally disclose the impact of any profit distortions in the notes to their financial statements.

For APRA reporting purposes, all changes in fair values must be reported through profit and loss. This can result in discrepancies between the profit reported to APRA and profit reported under the accounting standards.

Fair value

The fair value of an asset is the amount for which an asset could be exchanged between knowledgeable, willing parties in an arm's length transaction.

The best evidence of fair value is quoted prices in an active market. For example, the fair value of listed equities can readily be determined from the latest market prices.

The requirement that fair value be based on prices agreed between knowledgeable, willing parties means that actual transaction prices may sometimes be ignored. For example, in a mortgagee sale the seller may be unwilling and the selling price may be at less than fair value. Alternatively, an eager but unknowledgeable buyer may pay a price for an asset that exceeds its fair value.

If the market for an asset is not active, fair value must be determined by using a valuation technique. The objective of using a valuation technique is to establish what the transaction price would have been on the measurement date in an arm's length exchange motivated by normal business considerations.

Valuation techniques include consideration of:

- recent arm's length market transactions between knowledgeable, willing parties for identical assets;
- fair values at the reporting date of other assets that are substantially the same;
- discounted cash flow analysis; and
- option pricing models.

If there is a valuation technique commonly used by market participants to price an asset and that technique has been demonstrated to provide reliable estimates of prices obtained in actual market transactions, the company should use that technique.

Valuation techniques should make maximum use of market inputs and rely as little as possible on company specific inputs. They should incorporate all factors that market participants would consider in setting a price and be consistent with accepted economic methodologies for pricing financial instruments. For example, unlisted property assets may be valued by reference to recent transactions for similar properties.

Another example of a valuation technique is the valuation of unlisted fixed interest securities by means of a discounted cash flow analysis, with the discount rate set by reference to recent market transactions for instruments with similar duration, credit risk and liquidity.



It is important for the actuary to have an understanding of how valuation techniques have been used by the life company. Some assets may be difficult to value and there may be uncertainty as to what the underlying fair value is at any point in time. Fair value can become particularly difficult to determine at times of extreme market volatility, or if there have been no recent transactions for similar assets. If there is uncertainty about fair values, a life company should consider holding additional capital.

Fair value is determined after allowing for any transaction costs incurred in purchasing the assets, but before any transaction costs that would be incurred on sale. This means that any buying costs are recognised in the profit and loss statement during the reporting period in which an asset is purchased and any selling costs are recognised during the reporting period in which an asset is sold. A drawback of this method is that fair value overstates the amount a life company would receive if it sold all of its assets.

For listed assets, fair value is normally determined somewhere between "bid" and "ask" prices. The bid price is the highest price at which buyers are offering to purchase the asset. The ask price is the lowest price at which existing owners are willing to sell the asset. The ask price will always be greater or equal to the bid price. Again, fair value could overstate the amount a life company would receive if it sold all of its assets - the amount of assets that buyers are willing to purchase at the prevailing bid price could be smaller than the life company's holdings of the asset.

Relationship to Unit Pricing

The valuations placed on assets for the purpose of unit pricing may differ from the values used for accounting purposes. Unit pricing was discussed in Chapter 3 of the textbook. Any inconsistencies will distort the emergence of profit.

In particular, there will be an inconsistency between assets and liabilities if the unit prices incorporate an allowance for the discounting of deferred tax.

Shareholders' Fund

The assets of the shareholders' fund must be valued using the same methods that apply to the valuation of assets of non-insurance companies. Fair value is the most common method of valuing assets in the shareholders' fund, but some exceptions are allowed under the accounting standards for the general purpose financial statements and for the financial statements prepared for APRA.

The following types of assets can be valued either at fair value or at cost:

- investment property;
- property, plant and equipment (including owner-occupied property); and
- investments in subsidiaries, associates and joint ventures.

Fixed interest assets which the company intends to hold (rather than trade) must be normally be valued at amortised cost. However, companies are allowed to use fair value instead of amortised cost if doing so would reduce the potential for accounting mismatches to occur between their assets and liabilities.

Assets whose fair value cannot be reasonably measured must be valued at cost.



Cost Method

For assets valued at cost, the asset value is the purchase price (net of transaction costs) less any subsequent depreciation and impairment charges. An impairment charge must be made if fair value subsequently falls below purchase price.

The cost method of valuing assets has the benefit of being simple, but is unrealistic and can result in a misleading balance sheet if assets have significantly appreciated in value since they were purchased.

Amortised Cost Method

For the amortised cost method, the discount rate that equates future cash flows (interest payments and maturity value) to the purchase price is determined at the date of purchase. The same discount rate is then used to measure the value of the asset at all times subsequent to the date of purchase. A deduction must be made to the asset value if the asset becomes impaired (i.e. the counterparty is expected to default).

The amortised cost may be greater or less than fair value, depending on whether market interest rates have risen or fallen since the date of purchase.

Amortised cost is a useful method for companies whose liabilities are not interest sensitive. By using amortised cost instead of fair value, reported profit is much less sensitive to variation in market interest rates. However, the balance sheet is less useful as a measure of solvency as the values placed on assets may not reflect their current realisable values.

It would not be appropriate for the amortised cost method to be used for assets backing insurance liabilities as the value of insurance liabilities depends on prevailing interest rates. Use of the amortised cost method would create an accounting mismatch and distort profit emergence.

Deferred Tax Assets

Each asset has a deferred tax asset or deferred tax liability associated with it, depending on whether the reported value of the asset is lower or higher than its tax base (the difference between the reported value of an asset and its tax base is referred to as a "temporary difference" in the accounting standards). Deferred tax assets and deferred tax liabilities must be calculated assuming the asset is sold immediately. AASB 112 *Income Taxes* does not allow discounting to reflect the length of time the company expects to hold the asset. The rationale given for not allowing discounting is that it would be impracticable and highly complex. This may seem odd in the context of life companies as policy liabilities must be calculated using discounting. However, AASB 112 applies to all companies, not just life companies.

Deferred tax assets may also exist in respect of unused tax losses and tax credits carried forward from previous periods.

Deferred tax assets can only be recognised to the extent that it is probable that they will be able to be utilised to reduce future tax liabilities.



The Relationship between Assets and Liabilities

Allocation of Assets to Liabilities

Assets must be identified as backing specific liabilities in the following circumstances:

- assets in a VPST (Virtual Pooled Superannuation Trust) and Segregated Exempt Assets (e.g. those backing immediate annuities and other retirement income products) must be identified for taxation purposes;
- assets backing investment-linked business must be identified for unit pricing purposes;
- assets backing participating business must be identified so that the investment income can be added to the VSA (Value of Supporting Assets) and profit apportioned between shareholders and policy owners;
- assets backing other discretionary investment business must be identified so that the investment income can be allocated to policy owner accounts (by means of a crediting rate) and to/from the investment fluctuation reserve.

Life companies may choose to go beyond these requirements. For example, it may be useful to identify separate pools of assets for term and lifetime annuities. This will allow investment income to be allocated appropriately and allow profit to be analysed separately for each type of annuity.

Investment Policy

The assets of a statutory fund or shareholders' fund must be chosen with deliberate regard to the risk profile of the liabilities of the fund. The first step must therefore be a high level analysis of the characteristics of the liabilities. The second step is to identify the assets that most closely match the liabilities. The third step is to consider whether mismatching will help to achieve the company's financial objectives. The range of financial objectives might include:

- minimising regulatory capital requirements;
- maximising appraisal value;
- maximising expected return on capital (i.e. profit divided by capital); and
- minimising profit volatility.

The assets backing investment-linked business, participating business and other discretionary investment business must be chosen with regard to policy owner reasonable expectations. The promotional material for these types of products will give a broad indication of the types of assets the company intends to use to back the liabilities.

Matching Assets and Liabilities

The simplest type of liability to match is a term annuity. The timing and amount of the annuity payments are fixed. The only uncertainties in the liability cash flows are the servicing expenses and the possibility that the annuity might be surrendered. However servicing expenses are small in proportion to the annuity payments and companies usually have the ability to vary the surrender value so that it matches the value of the assets backing the policy.



The assets that most closely match a term annuity are a portfolio of high quality fixed interest assets with cash flows that match the annuity cash flows. In Australia, Commonwealth Government bonds are usually the closest one can get to a risk-free asset. Other assets that are very low risk include state government bonds, high quality corporate bonds and bank term deposits. An exact cash flow match may not be possible as fixed interest assets are only available with a limited range of maturity dates. Finding assets to match long-term annuities (beyond 15 years) can be particularly difficult.

Lower quality fixed interest assets will provide higher investment returns, but will not provide such a good match to the liabilities as there is a greater risk of the assets defaulting. Other assets such as properties or shares, while also likely to provide higher investment returns, are a poor match as rents, dividends and the fair values of these assets vary and they have no maturity date or maturity value.

More complex types of liabilities are more difficult to match. For lifetime annuities and disability claims in the course of payment, the current instalments of claims payments will be known but there will be uncertainty about how long these payments will continue.

For participating business with future best estimate bonuses and shareholder profits at the adequacy threshold (i.e. the policy liability equals the best estimate liability calculated using a risk-free discount rate), the matching assets would be high quality fixed interest assets with cash flows that match the expected payments of the sums insured and reversionary bonuses. Other assets could be chosen to match the additional liability if the adequacy threshold is exceeded. The additional liability can rise or fall to reflect actual investment returns.

Finding matching assets for regular premium business is more difficult than for single premium business as there are future cash inflows as well as outflows to be considered. If a fund's cash inflow will exceed its outflow in the short to medium term, matching may only be possible through the use of derivatives. For example, interest rate futures could be used to lock in current interest rates until future cash inflows can be invested. A similar but more difficult problem arises with matching liability options which may not be exercised until many years into the future. For example a superannuation product might include an option to convert to an annuity at age 65 using guaranteed annuity rates.

Other Assets

After the matched asset portfolio has been determined, a company can consider the impact of mismatching.

Standard investments include Australian shares, international shares, direct property, listed property trusts, government bonds and corporate bonds. Other investments might include loans on mortgage, infrastructure, private equity, hedge funds and joint ventures/subsidiary companies.

Mismatching should increase the expected amount of future investment experience profits. However it will also increase the company's capital requirements and the volatility of future profits.

Diversification of mismatched asset exposures should be used to optimise the risk/return trade-off to shareholders (and any participating policy owners). For example, if a company decides to invest in shares, the share portfolio should be well diversified rather than being concentrated in a small number of holdings.

The liquidity of assets should be considered if large unexpected payments to policy owners may have to be made in a short period of time. A liquid asset is an asset that



can be sold quickly for its fair value. Some types of assets such as direct property and operating subsidiaries are normally very illiquid.

Trading costs can also be an issue. For example, investments should not be made in direct property unless it is reasonably certain that these assets will not need to be sold in the near future. The transaction costs for buying and selling direct property include stamp duties, legal fees and agents' commissions. The property must be held for a substantial period of time in order if rental income and capital appreciation are to recover these costs.

Replicating Portfolios

Replicating portfolios of assets are increasingly being used by actuaries as a tool in managing and understanding asset/liability risks. It is important that students understand the meaning and use of replicating portfolios.

A replicating portfolio is a portfolio of market instruments (i.e. assets) whose cash flows match as closely as possible the cash flows of the liabilities. The replicating portfolio will have the same value as the liabilities due to the principle of non-arbitrage – if two sets of identical cash flows have different values it would be possible to make a profit by buying one and selling the other. The value of the replicating portfolio will move in harmony with the value of the liabilities as financial markets change – this includes factors such as interest rates and the value of equity and property assets. The replicating portfolio will not move in harmony with the liabilities if non-market variables affecting the liabilities change. These non-market variables could include mortality and morbidity experience, lapse rates and servicing expenses.

For pure risk products the replicating portfolio will typically be comprised of risk-free fixed interest assets whose cash flows match the expected cash flows of the liabilities.

For products with exposure to financial market risk the replicating portfolio will be more complex. For participating business in Australia the policy owners are usually allocated 80% of investment returns. However there is a minimum investment return implied by the guarantees of sums insured and reversionary bonuses, or investment account balances. The replicating portfolio could be made up of the actual asset mix but with the addition of put options (to provide the guarantee) and perhaps a higher proportion of fixed interest assets (to give volatility which is 80% of the volatility of the actual asset mix). Alternatively the replicating portfolio could be made up of fixed interest with call options. There will be a considerable amount of work involved in deriving the replicating portfolio for business with complex financial guarantees.

The replicating portfolio may not exist in practice. For example very long term fixed interest assets may not be available to back long term products such as annuities. And options are not normally available to match the guarantees of investment products invested in property assets.

The replicating portfolio is particularly useful for valuing liabilities with embedded financial guarantees (e.g. participating business and investment-linked business with guarantees) and for understanding the dynamics of change in the value of liabilities as market variables change.

The replicating portfolio (even if only theoretical) creates a benchmark for the actual asset allocation. The replicating portfolio can be used to split profit between the investment management operations and the insurance operations of a company. If used for this purpose the investment return allocated to the insurance operation will be the return on the replicating portfolio. The investment management operation may attempt to add value to the company by investing in a different portfolio. Any



differences between returns on the actual portfolio and the replicating portfolio will be credited to the investment management operation.