Deficits and how they are normally addressed

Stephen Yeo
Watson Wyatt

1. What is a deficit?

1.1 Types of actuarial valuation

There are a number of reasons why it is necessary to determine the value of a defined benefit pension scheme's liabilities. The value of the liabilities differs depending on the reason for the valuation. All methods now tend to value assets at market value, although this was not always the case. The three most important measures of a scheme's liabilities are summarised below.

(a) Valuation for determining employer contributions

A funding valuation is carried out at least every three years. The main purpose of this actuarial valuation is to determine the level of future employer contributions required so that after a suitable period, there will be sufficient assets to pay all benefits earned to that date. It is assumed that the scheme continues indefinitely, with employed members' benefits continuing to increase in line with members' earnings until they leave service or retire. The assumed rates of future investment returns, price inflation, how long members live and other assumptions are in most cases agreed between the trustee, employer and actuary, and are designed to be prudent. Occasionally, when the rules of the scheme permit, the trustees and the actuary are the only parties involved in such decision making.

In future this valuation will be known as the 'scheme-specific funding valuation' as described in section 1.4 below.

The actuary's report to the trustees must contain information such as membership data, the contributions paid since the last valuation, the funding objective and key assumptions made.

(b) Valuation for the employer's accounts

Companies are required to disclose various details relating to their pension arrangements in their annual accounts. The relevant accounting standard is known as Financial Reporting Standard (FRS) 17 (which, for quoted companies, has been replaced by International Accounting Standard IAS19 from 2005). The FRS17 accounting standard prescribes both the method and the assumptions which should be used to value the liabilities. In particular, the liabilities are valued using the yield on AA-rated corporate bonds. For most schemes, this currently places a higher value on the liabilities than on the funding valuation.

(c) ***Valuation to show what happens if the employer fails***

A discontinuance valuation shows the financial position of a scheme in the hypothetical situation of the employer failing (ie, the employer can no longer pay any future contributions). In that instance, all employed members would be granted deferred pensions based on earnings and pensionable service at the valuation date, and trustees would have to choose between:

- winding up the scheme and buying out the benefits with an insurance company (although for some large schemes and others with unusual benefits, this may not be possible); and
- continuing the scheme and investing in low-risk assets with the aim of paying all benefits to members as they fall due.

The discontinuance liabilities are very much higher than the liabilities measured using the funding or accounting valuations. If, on winding-up, an employer's assets are not sufficient to make up the scheme funding shortfall, it will not be possible to pay all members' benefits in full. In that situation the Pension Protection Fund provides a safety net designed to ensure that members receive the level of benefits specified in Schedule 7 to the Pensions Act 2004.

If there is a deficit, the actuary must quantify approximately the impact of the applicable priority order on different categories of benefit had the scheme been wound up on the valuation date. The actuary must also state what the overall solvency level of the scheme would have been had the statutory funding objective been exactly met on the valuation date.

Trustees should also be aware of the separate valuation for Pension Protection Fund levy calculation purposes, often called a Section 179 valuation. This indicates the ability of the scheme to provide the Pension Protection Fund compensation level of benefits in the event of employer insolvency.

1.2 Assumptions

The assumptions made by the actuary in carrying out a valuation can be split between demographic (sometimes termed statistical) and economic.

(a) ***Demographic assumptions***

These assumptions are usually based on past experience, with adjustment if there is an expectation that the future will differ from the past. Larger schemes may have enough data for their own experience to be used. In smaller schemes, the experience of larger populations of other similar schemes will be used. Assumptions are likely to be needed for:

- post-retirement mortality;
- family statistics (eg, proportion married members and age of spouse);
- options (eg, frequency of commutation or transfer);
- additional liabilities (eg, additional voluntary contributions);
- ill-health retirement;
- pre-retirement mortality;
- voluntary withdrawal – this can be service related; and
- promotional pay increases.

(b) Economic assumptions

History has shown that while the absolute level of various economic variables has fluctuated widely, their level relative to price inflation has been much more stable. It is therefore common to express the economic assumptions in terms of their real (ie, relative to price inflation) level. The main economic assumptions are as follows.

(i) Investment return (or discount rate)

The expected rate of return on fixed interest securities can be estimated from the redemption yield of good-quality corporate bonds of appropriate duration to maturity, depending on the term of the liabilities. It may be appropriate to allow for the risk that money will have to be reinvested at lower returns than are currently available. Where the actuary's method requires an assumption about the expected rate of return on shares, this can be derived from the current dividend yield, with an upward adjustment to allow for the expectation that dividends will increase faster than inflation. The excess return of shares over bonds, known as the equity risk premium, varies with time, but has averaged around 3% a year over the last century. Essentially, this is the return demanded by the market as compensation for the risk that equity returns will be less than those on bonds.

(ii) Price inflation

A view on future price inflation can be formed from the target set by the government for the Bank of England (BoE), recent levels of price inflation and inflation forecasts implied by bond market data. The current BoE target is expressed as inflation of 2% a year measured by the Consumer Prices Index (CPI). The Retail Price Index (RPI) includes housing costs, notably mortgage interest payments, and for mathematical reasons to do with the construction of the index, the 2% CPI target is considered to be equivalent to an RPI target of about 2.75%.

(iii) Pension and deferred pension increases

These are usually related to price inflation, possibly with a cap (eg, limited price indexation, which requires indexation in line with the RPI subject to an annual limit of5%) or a collar in the form of a minimum increase. Detailed modelling can be carried out to determine the appropriate allowance.

(iv) Pay escalation

Statistical analysis of past pay escalation figures indicates that the rate of pay escalation over time has been relatively stable in real terms (ie, net of price inflation), and a rolling 10-year average of general annual pay increases varies between 1.0% and 2.5% a year in real terms. However, pay figures (as used in the calculation of pension benefits) can be influenced by the definition of pay (eg, total pay, basic salary, pay less an offset or pay subject to a cap) and the employer's remuneration policy.

Prudent assumptions can allow for some degree of out-performance of scheme assets relative to bonds, depending on the specific circumstances of the scheme. In particular, the trustees should consider the scheme's investment policy and the ability of the employer to cope with the financial consequences of assumptions not

being borne out by experience.

1.3 Deterministic and stochastic techniques

One problem inherent in the conventional actuarial valuation is that only a single answer emerges – that is, the fund is required to pay all benefits if all assumptions are precisely borne out by experience. Most assumptions can be regarded as one point in a range of possibilities.

To illustrate this, stochastic modelling techniques have been developed, often seen in the form of 'asset-liability' models, which might assist trustees when assessing the prudence of either individual assumptions or the overall calculation of technical provisions. The main characteristics of these techniques are that they:

- attempt to model the course of events as they might emerge based on randomly generated simulations of the future in line with an economic model; and
- result in a range of outcomes with probabilities attached. They are not meant as a predictive tool; rather, they are illustrative of possible outcomes.

The use of stochastic modelling techniques may not be appropriate for all schemes and trustees normally discuss with their actuary possible approaches to illustrating variability. A simpler and less costly analysis could take the form of carrying out the valuation on a few different sets of assumptions simply to illustrate the width of the potential outcome range and the sensitivity of results to particular assumptions.

The actuary's report must draw attention to those assumptions to which the valuation results are particularly sensitive. The actuary must describe or illustrate how the results will differ if these assumptions are not borne out so that the reader may understand the sensitivity of the results to the assumptions chosen. In particular, this analysis must include the susceptibility of the results to variations in future mortality experience compared with that assumed.

1.4 Single discount rate v dual discount rate

The appropriate overall investment portfolio, or that for individual groups such as pensioners or employed members, can be considered using asset-liability modelling techniques. In practice, many schemes currently have an investment strategy that is consistent with a portfolio for pensioners that is predominantly (but not exclusively) bond based, while that for employed members and deferred pensioners includes a substantial amount of equity (ie, traded shares) and real property. The discount rates derived for each liability class based on these implied portfolios is therefore likely to differ.

Possible approaches that could be used to derive a discount rate for these liabilities include:

- a single discount rate, derived as a combination of the discount rates for each asset class, reflecting the weighted average of the trustees' current strategy;
- different discount rates in perpetuity for each liability class; or
- the discount rate derived for employed members and deferred pensioners for the period before retirement, and the pensioner discount rate for the period after retirement of employed members, deferred pensioners and pensioners.