Technical Briefing

No. 33

cprm
actuaries and consultants

Mortality Matters

Introduction

The Continuous Mortality Investigation of the Faculty and Institute of Actuaries (the CMI) have recently presented research into the latest mortality experience trends and also provided actuaries with a mortality projection model which reflects long term views of the future.

Use of the Interim Cohort Mortality Projections

The CMI has become increasingly concerned about the continuing widespread use of the 'interim cohort' mortality projections because these projections do not take account of experience data published after 1999 and have inevitably become increasingly out-of-date. The use of the so-called short, medium and long cohorts only allow for future mortality improvements to persist until 2010, 2020 and 2040 respectively after which such improvements are assumed to tail off to zero. However, it is widely acknowledged in the pensions industry that such a rapid tail-off is neither a realistic or prudent assumption to make.

The CMI have stated that the most recent observations in mortality show a greater rate of improvement than those anticipated by the interim cohort projections. Therefore the use of out-dated tables and the interim cohort mortality improvements means that actuaries may not be building sufficient prudence into their assumptions to measure a pension scheme's technical provisions (an estimate, made on actuarial principles, of the assets needed at any particular time to make provision for benefits already accrued).

CMI's Mortality Projection Model

The CMI has recently developed an expectation-based mortality projection model which:

- Reflects the latest experience on trends in mortality.
- Allows flexibility to modify mortality projections to suit different views and purposes.
- Can be regularly updated over time to reflect emerging mortality experience.

The projection model produces a single set of improvement rates over all ages and is based on the idea that the forces driving current mortality improvements may be significantly different from those factors which may influence patterns of mortality improvements in 30 or 40 years' time. The model also allows for the "cohort effect" where people born in different generations experience different levels of mortality and are expected to have different rates of future mortality improvements.

The model is based on current rates of mortality improvement which will blend over time into the assumed long-term rates of improvement. The current rates of improvement are based on up-to-date mortality observations. The results of the mortality projection model are heavily dependent on the subjective long-term rates of mortality improvements and the method of convergence chosen by "expert opinion" which is simply an educated guess.

No. 33

What Factors Influence Future Mortality?

Mortality depends on many factors not only age and sex. As well as geographic location, and social class, mortality is affected by complex inter-related factors which include the type of occupation, wealth, medical conditions and lifestyle factors.

Factors that are currently increasing longevity include:

- Changes in lifestyle from a greater awareness of well-being, i.e. healthier eating and increased exercise.
- The impact of reduced levels of cigarette smoking including the impact of the ban on smoking in enclosed public places.
- The impact of medical advances. For example, the growth in the use of statins over recent years should lead to a reduction in death rates from cardiovascular disease.

Factors that could off-set the above or even reduce future longevity include:

- An increase in alcohol consumption, particularly in younger people.
- An increase in the incidence of obesity, again particularly in younger people.
- The possibility of the impact of contagious diseases (e.g. bird/swine flu) resulting in a significant short-term increase in mortality rates.
- The possibility that global climate change could have an adverse impact on general future life expectancy.

Whilst it is healthy to debate the possible causes of mortality improvements in the future it is clear that this can only be an educated guess. Although current mortality may be predicted with great certainty over large populations, the drivers for the future improvements in longevity are more subjective.

The Views of the Pensions Regulator (the Regulator)

The Regulator has stated that the assumption for mortality to measure a pension scheme's technical provisions should be chosen prudently. The size of most pension schemes is not sufficiently large as to allow any meaningful analysis of past data to determine future mortality and therefore up-to-date base mortality tables should be employed.

The Regulator has also stated that where there is insufficient evidence to make scheme-specific allowance for future improvements then this should be based on broader data. Moreover, the Regulator states that the assumptions on future improvements will not normally have good cause to be scheme-specific unless a scheme's own experience is very extensive.

Furthermore the Regulator has stated that mortality improvements which appear weaker than the long cohort assumption and do not have some sort of improvement underpin will be treated as a "secondary trigger" for second cycle Actuarial Valuations (those with an effective date from 23 September 2008) may attract further scrutiny and dialogue with the trustees.

Conclusions

The CMI's mortality projection model may become a useful benchmark tool or "common currency" when used to "scenario test" different assumptions for the uncertainty of future mortality improvements. It may also assist the Pensions Regulator in judging the reasonableness of assumptions used by different pension schemes.

For the majority of pension schemes current mortality cannot be estimated with any great certainty from past data and any allowance for future mortality improvements cannot be

determined by the extrapolation of existing data. Therefore, pension schemes should calculate their technical provisions using the most up-to-date base mortality tables with a prudent allowance for future mortality improvements bearing in mind the views of the Regulator. However, where justifiable, scheme-specific adjustments should be made to the standard tables to reflect the characteristics of the membership of the scheme relative to the larger population, e.g. geographic location, general income levels and employment differences.

The over-riding principle that trustees will bear in mind is that of setting the level of their technical provisions prudently especially in light of the employer's covenant in these exceptional times. This may require reserving for higher future mortality improvements which in turn will increase any funding deficit in the pension scheme and therefore further increase the short-term cost of running defined benefit pension schemes. The actual cost will depend on the experience of the pension scheme rather than the prudent funding assumptions used.