



**KPMG LLP**  
**Financial Services**  
Canary Wharf (8th Floor)  
1 Canada Square  
London E14 5AG  
United Kingdom

Tel +44 (0) 20 7311 1000  
Fax +44 (0) 20 7311 3311  
DX 38050 Blackfriars

Louise Pryor  
Director  
Board for Actuarial Standards  
5<sup>th</sup> Floor, Aldwych House  
71-91 Aldwych  
London  
WC2B 4HN

Our ref nf/nd/jj

Contact Nick Dexter  
Tel 020 7311 5443

23 June 2008

**By e-mail: [basmortality@frc.org.uk](mailto:basmortality@frc.org.uk)**

Dear Louise,

### **Actuarial Mortality Assumptions – Discussion Paper**

This is a response from the Life Actuarial practice of KPMG LLP, to the above discussion paper published on 25<sup>th</sup> March 2008. A response has already been sent by the pensions advisory practice of KPMG LLP. We fully support this response and below, we have provided comments on the questions mentioned in Section 7 of this paper from the perspective of the Life Insurance industry.

As a general point, we note that the derivation and communication of mortality assumptions (and hence any guidance that may be issued) is dependent on the purpose of the calculation – e.g. pricing, embedded value, internal profit modelling, regulatory valuation. This distinction is not clear from the paper.

#### **1 Do respondents have any views on the significance of the adverse effects that the over- or underestimation of future mortality may have on pension scheme members, scheme sponsors, life insurance policyholders and life insurance companies, as set out in section 2?**

##### Significance of adverse effects on life insurance policyholders

The most significant impact on the policyholders is likely to be when future annuitant mortality rates used to set the premiums are underestimated – in this case the policyholder will be receiving less benefit than would otherwise have been the case.

Due to the additional capital that insurance companies must now hold (for example in the Individual Capital Assessment, where a company must hold enough capital in order to withstand an event that is likely to happen once in every 200 years), it is less likely that a company will run out of capital if the future annuitant mortality rates used to set the premiums are underestimated. Further, there must be a distinction between the mortality assumptions used to set the premiums (i.e. the pricing basis)

and those used to set the amount of capital needed to be held (i.e. the reserving basis), as the latter assumptions are more prudent in order to reduce the risk of insolvency.

It is unlikely that a company will overestimate their pricing mortality assumptions for protection products as this market is particularly competitive. The level of premium is likely to be driven more by these competitive pressures.

#### Significance of adverse effects on life insurance companies

The most significant impact for a life insurance company will be if the company overestimates the annuitant mortality assumptions for business in force. This will mean that company has to pay out more money than it originally set aside to cover the annuity payments.

An underestimation of annuitant mortality is unlikely to impact the company adversely as it will result in greater profits.

For protection products, the ICA considers the amount of capital required to survive a mortality “catastrophe” (e.g. bird flu). Therefore, an underestimation of mortality is unlikely to have a severe affect on the company.

An overestimation of mortality for protection business is unlikely to adversely impact the company as it will result in greater profits.

### **2 The BAS has discussed some of the issues surrounding mortality assumptions in section 3. In that context:**

#### **a) Do respondents have views on appropriate methods of communicating the extent and impact of the inherent uncertainty involved in mortality assumptions?**

The suggestion that companies should vary their base assumptions and communicate these results is a good one (one of the required disclosures for European Embedded Value and Market Consistent Embedded Value reporting is a 5% change in mortality disclosed separately for annuity business and life assurance business). However, we are not convinced that equating the change in value to a change in the discount rate is particularly useful. To perform this step will introduce further approximations. Further, under market consistency principles that are now commonplace within the life industry, discount rates are often set by reference to risk free yields. It is no longer the case that the discount rate is subjective, and thus there is no greater intellectual justification for using this assumption as compared with any other.

A defined set of sensitivities to mortality improvements may be useful to analysts looking at the embedded value of a company – this could be an extension of the defined sensitivities contained with the CFO Forum guidance.

We are not convinced of the use of such sensitivities for policyholders. If we assume communication along the lines of, “Your annuity rate is X. In deriving this we have assumed certain future mortality assumptions. If we had assumed different future mortality assumptions your annuity rate may have

been in the range [Y, Z].” This would not assist policyholders in understanding their policies and their benefits (although it may help intermediaries).

**b) Do respondents agree that the use of separate assumptions for base mortality and future changes in mortality, not taking the form of margins in other assumptions, would be desirable?**

We agree that this approach would be desirable and note that in the Life Insurance industry the vast majority of companies use this approach already. We note that given the uncertainty in relation to the future improvements, it is less clear here as to what constitutes a best estimate assumption and what constitutes (where one is needed) a prudence margin than is the case with the base assumptions.

**c) Do respondents have views on appropriate methods of communicating the significance of assumptions, both in absolute terms and relative to that of other assumptions?**

The significance of an assumption is best communicated through sensitivities. There are two parts to this: a) deciding on a suitable sensitivity test and b) evaluating the effect of that sensitivity on the final result one is interested in (e.g. the liability, the value of in-force, the value of new business etc)

In terms of the choice of the sensitivity, it has to be chosen as either a) a plausible variation from central assumptions (as in the CFO Forum guidance used for European Embedded Value and Market Consistent Embedded Value reporting) or b) a catastrophic variation (as is used in the Individual Capital Assessment). Either choice must be made based on statistical evidence.

**3 Some proposals regarding the use of summary statistics and benchmarks in reporting on mortality assumptions are considered in section 3.**

**a) Do respondents foresee any practical difficulties in communicating the assumptions about subsequent changes in mortality rates underlying life expectancy statistics?**

It should be straightforward to calculate the expectation of life for someone of the same age, at different times. Although we note that it should be specified whether this is the curtate expectation of life or the complete expectation of life for direct comparison between companies. We agree that where an “expectation of life” of “life expectancy” is given an explanation should be given as to whether this does or does not include mortality improvements. We would suggest that it should.

**b) Do respondents have suggestions for summary statistics that can be used to describe changes in mortality rates?**

As noted in the paper, the most straightforward way to communicate changes in mortality rates would be to show the expectation of life for life aged 65 in 2008 and the expectation of life for a life aged 65 in 2015, say. This should give a clear view of how the company is expecting mortality to change.

An approach more complex than this is likely to be difficult to communicate.

**c) Do respondents think that the use of benchmarks is useful, and if so, should the development of standard benchmarks for future changes in mortality be encouraged?**

Benchmarks are useful and should be encouraged, but only if a way of developing standard benchmarks to which everyone can compare can be found. However, benchmarks should also be treated with some caution as the mortality improvement rates must be tailored to the population of policyholders specific to the individual company and not used as justification to decrease prudence in a reserving basis for example. Ranges of assumptions would be particularly useful, e.g. the range +/- 2 standard deviations from the mean.

**4 The BAS would welcome any general comments that respondents may have on the various possibilities for standards set out in section 4. In particular**

**a) Do respondents agree that the BAS should set some standards for mortality assumptions?**

We agree that it would be beneficial to the user of actuarial information to know that technical standards are in place and being adopted in order to increase confidence in the actuarial information received.

In terms of the different options for standards we would suggest that:

- Standards that specify what information should be provided about the assumptions would help the user. All the suggestions given in paragraph 4.17 would give useful information to the user. As we are talking about reporting standards, we are assuming here that the user would be the Board of Directors who must take responsibility for these assumptions. We note that in many Board reports we see the information suggested in paragraph 4.17 is already given.
- The derivation of mortality assumptions should meet certain criteria and so, in theory, standards that require that these criteria are met could be utilised. These would still need to be flexible to allow companies to move away from these criteria if suitable justification is given.
- Placing limits on assumptions is not practical, useful or desirable as a company should tailor its base mortality assumptions to their specific population of policyholders. If benchmarks are utilised then it will be clear to the user of actuarial information where mortality rates have exceeded the benchmark ranges.

**b) Do respondents agree that reporting standards would play a significant role in increasing the transparency of assumptions and their comprehensibility to users of actuarial information?**

We would suggest that reporting standards are unlikely to change the methodologies (and hence assumptions) of Life Insurance companies. The majority of companies we deal with already do most of the things suggested in paragraph 4.17. Therefore, we would expect little impact of these standards on the assumptions themselves. However, the main impact could be in the confidence that users will gain.

**c) Do respondents have any comments on how to assess the likely impact of possible BAS standards for mortality assumptions?**

We are not convinced that there would be any material impact for life insurance companies. An appropriate way to estimate the likely impacts would be to survey the companies themselves.

**5 In section 5 the BAS considers possible standards for assumptions about base mortality.**

**a) Do respondents believe that it would be desirable for a BAS standard to require the use of the most recent applicable published tables, taking into account both the communication problems and the practicality of setting a limit on the tables to be used?**

We agree that generally speaking the most recent official tables should ideally be used, subject to companies being able to use other tables if the reasons are clearly justified, for example the shape of other recent tables is a better fit. Companies do need time to update systems and often there is a lag before new standard tables are implemented. We note further that the wording “most recent applicable published table” is vague and would need to be clarified. Overseas business (in territories where there is no equivalent of the CMI) needs to be borne in mind. It may also be necessary, in certain circumstances, to give more details if any non-standard approaches are used for very old ages.

**b) Do respondents have any comments on the proposals for possible requirements for reporting on assumptions about base mortality, criteria that assumptions should meet, or limits that should be observed when setting assumptions? Respondents are asked to focus on:**

- **Any practical problems that might arise in complying with them; and**
- **Whether they would further the BAS’s aim of increasing the transparency of assumptions and their comprehensibility to users of actuarial information.**

We agree with the proposal in 5.42 (concerning companies using rates based on a published table) to require communication of the published table that was used and justification of any adjustments made. We also agree with the information that should be given when making adjustments, though we note that this information is often contained in Board reports that we see for a number of companies.

For those companies who use their own mortality tables (of which we know of relatively very few) we are not convinced that the user (i.e. the Board) would find the graduation method and the variable

and parameters used of much use. A clearer way may be to compare these rates with the benchmarks (to check for reasonableness) and to show how they compare to the most recent published tables.

For those companies that do not already supply this information to the Board, there may be additional work here, which would result in additional costs, but we can't foresee any practical difficulties with getting this information.

**6 In section 6 the BAS considers possible standards for assumptions about future changes in mortality.**

**a) Do respondents agree there is no objective basis for differentiating the future changes in mortality likely to be experienced by a particular small group of lives from those likely to be experienced by the population as a whole? If respondents disagree, the BAS would be interested in examples to the contrary, together with supporting evidence.**

Any assumptions made concerning future mortality changes must be subjective. There is evidence of differences in past mortality improvements between different sub-populations (or cohorts) and males and females. Using this past experience, we would suggest that it is very unlikely that the whole population will experience the same level of future mortality improvements. We would thus disagree with the BAS's assertion here.

**b) Do respondents have any comments on the proposals for possible requirements for reporting on assumptions about future changes in mortality, criteria that assumptions should meet, or limits that should be observed when setting assumptions? Respondents are asked to focus on:**

- **any practical problems that might arise in complying with them;**

**and**

- **Whether they would further the BAS's aim of increasing the transparency of assumptions and their comprehensibility to users of actuarial information.**

We do not agree with any constraining of assumptions regarding future mortality improvements as this may restrict improvements made in the modelling of future mortality. Further, if companies would be expected to produce results using a variety of different projections, this will add a significant amount to the workload as additional runs in this area would be very onerous to do.

We do agree that it should be made clear to the user what method the actuary has used to model future mortality.

Yours Sincerely



Nick Dexter FIA  
*Partner – KPMG LLP*



John Jenkins FIA  
*Partner – KPMG LLP*