

By email

19 June 2008

The Director
Board for Actuarial Standards
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Dear Sir

Actuarial Mortality Assumptions: Discussion Paper

I am pleased to attach Prudential's response to the Discussion Paper on Actuarial Mortality Assumptions. Our response follows the structure of §7 of the Discussion Paper, first addressing the specific questions posed in §7.1, and secondly addressing some wider issues, as envisaged in §7.2. We note that this response will be a matter of public record and would be delighted to discuss any aspect of it with you.

Yours faithfully

Stephen Makin
Head of Longevity Research

Specific questions

7.1 The BAS invites the views of those stakeholders and other parties interested in actuarial practice who wish to comment on the content of this document. In particular the BAS would welcome views on the following issues:

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?

We have no comments on section 2 of the Discussion Paper.

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?

We agree with the comment on page 22 that "...in order for mortality assumptions to be communicated in a clear and transparent manner...the extent and impact of the inherent uncertainty surrounding them must be explained."

Whilst there is a uniquely correct assumption, it will only ever be known in hindsight. We therefore believe that assumptions must be presented in the context of there being a reasonable range of such assumptions, which is consistent with your comments in §3.19. An opening mortality experience assumption is perhaps most naturally presented in the context of a statistical confidence interval surrounding it (e.g. [123]% of mortality table, plus or minus [45]%, with [67]% certainty), while a range of mortality improvement assumptions could, upon making certain assumptions which should be stated, be presented in the context of scenarios for cause-of-death elimination (or reduction or deferral), thereby allowing real-world interpretations of the range.

We fully acknowledge that these are not the only possibilities, but we do see the use of confidence intervals surrounding opening assumptions as particularly important, not least because it provides a natural and direct means of comparing statistical uncertainty between different entities. We feel that regulators may gain insights into relative levels of financial strength in this way.

We have no objections to quantifying uncertainty in terms of changes to discount rates, and in fact we see it as having much to recommend it because it gives another real-world interpretation, namely asset performance. However, this should not be confused with implicitly condoning the practice of allowing for mortality improvements via a change to the discount rate.

The impact of uncertainty should always be quantified financially. In the context of solvency measurement, for example, it would be natural to quantify the impact of mis-estimation as an impact on the true solvency position of the fund. Analogous comments clearly apply to other measures, be they for pricing or for profit reporting.

- 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 with this entirely. The starting position should be one's best estimate for each element separately, such that expected benefit payments so projected represent a best-estimate view of these payments. Margins may then be applied, again to each element separately (with no cross-subsidy between the two), according to the purpose of the assumption. For example, to have the same level of statistical confidence in its assumption, a small fund would wish (or, failing which, be required) to hold a proportionately larger opening mortality margin than a large fund, all else being equal. In conjunction with a common "target for certainty", this would seem to provide a natural framework for assessing the relative prudence of assumptions across different entities.

- 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?**

Consistent with our comments on quantifying the impact of uncertainty, the most appropriate method is to base this communication on a financial measure, be it the impact on solvency position (if measuring solvency) or the impact of profitability (if pricing new business), etc.

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?**

There are two aspects to the communication of assumptions: technical communication to technical users, and non-technical communication to non-technical users.

Communication of assumptions from a technical perspective is not onerous, requiring only that the time is taken to write down the assumptions clearly, ideally following conventions similar to those envisaged by the CMI in its Library of Mortality Projections. If these descriptions are further supplemented by summary statistics, one can check that one fully understands

the basis by reproducing these statistics. One technical area that we feel may need some attention, however, is the disclosure of the adopted age and year conventions. For example, the CMI user guide to version 1.0 of the CMI Library of Mortality Projections, assumes (see pages 4 and 5):

- that the “00” Series tables are applicable to lives aged x exact on 30 June 2000; and
- that the application of a full year’s improvements from column $yyyy$ of one of the Interim Cohort Projections changes rates applicable to 30 June $(yyyy-1)$ to being applicable 30 June $yyyy$.

However, this practice is not universally adopted and actual practice is rarely communicated, which can be the source of some confusion.

Communication of assumptions from a non-technical perspective requires the use of real-world interpretations, be they financial or in a cause-of-death context.

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

There are many possibilities, but we feel that adopting an approach similar to that adopted by FSA in its recent “Annuity Survey – Focus on Longevity Risk (November 2007)” has much merit. For example, FSA asked for the following (amongst other pieces of information):

- “
1. *Life expectancy for your base mortality assumptions (that is, the life expectancy obtained if we assume zero future improvements in mortality at all ages).*
 2. *Your best estimate for life expectancy (i.e. including future improvements).*
 3. *The equivalent [medium cohort] underpin (i.e. [medium cohort] with $x\%$ minimum improvement) required which, when applied to your underlying base mortality assumptions, yields an equivalent life expectancy to your best estimate given in 2.*
 4. *Your best estimate for the present value of a level non-profit annuity with no guarantee period paying £1 a month in arrears, discounted at 4% per annum (please only discount the cash flows to the annuity holder – do not include expenses, profit margins etc). ”*

This approach can easily be tailored to cater for different needs and circumstances. For example, 1 and 2 are simply the comparison of period and cohort life expectancies, which easily extends to the sort of graphical representation envisaged in Figures 3-3 and 3-4 of the Discussion Paper.

An alternative approach may be to require improvements to be expressed in terms of equivalent constant annual rates of improvement.

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?

Whilst we believe that it is certainly useful for firms to be required to compare assumptions in a sensible and consistent manner, we feel that the use of benchmarks leaves open the possibility of “herding”, where one of the assumptions becomes an implicit standard by virtue of its widespread adoption. One could point to the widespread use of the unadjusted medium cohort as a recent and unintended example of this, and this should be guarded against for the future.

We believe that it is much more important for actuaries giving advice on mortality to be encouraged to provide an individual, reasoned, and clearly-articulated rationale to support their recommendations, having clear regard to the specific circumstances of the advice being given. This is vital for creating confidence amongst the users of such assumptions. Accordingly, we believe that BAS must not provide “hard” technical standards in the form specific minimum assumptions. That said, BAS (and indeed any of the regulators, for that matter) may of course wish to form a view on what it considers to be sensible in this regard in a variety of circumstances, but we firmly believe that the publication of such would be detrimental, potentially detracting from independent thinking and creating an environment for herding.

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?

Yes, we do. Whilst we believe that these should principally be in the context of standards of disclosure with the aim of increasing transparency, we can also foresee value in the setting of “soft” technical standards relating to factors which should be considered when setting mortality assumptions, and we would be happy to discuss with BAS what we consider to be amongst the most important factors. That said, we would not wish to see a “recipe book” or “checklist” approach, and so such guidance should perhaps be advisory rather than mandatory, and should certainly be refreshed regularly as new information or thinking comes to light.

In terms of technical disclosure, and consistent with our comments on 3(a), we feel that mortality assumptions should be described with enough detail to allow others to recreate certain published summary statistics. Furthermore in terms of disclosure we feel that prudent assumptions should also be

accompanied by the corresponding best estimate assumptions in order that levels of prudence may be clearly understood. Ideally this would be viewed in the context of the concept of “targets for certainty” as per our response to 2(b).

In terms of non-technical disclosure, we feel that it is up to each actuary to present what he/she feels would be most helpful to his/her client in the specific circumstances, and as such we see difficulties in setting standards in the regard.

- 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?**

Yes, we agree with this entirely.

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

This is difficult to predict, but provided that technical standards relate to disclosure or to factors which should be considered when setting mortality assumptions, we would expect such standards to be beneficial. We would be pleased to review draft standards at an early stage, or to assist BAS with their formulation.

- 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 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 do not believe that it is desirable to force or to constrain the choice of mortality table. We would expect there always to be good reason for choosing one particular table over another, but we feel that this should be a matter of reasoned judgement and discretion.

- 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 broad thrust of §§5.41-5.44, but feel that this information is much too detailed in certain areas. Users of the advice are unlikely to understand all of it, which may simply deflect from the important decisions

that require making. We also envisage potential commercial sensitivity in disclosing some of this information. That said, we would view §5.52 as nicely encapsulating a sensible approach. We agree with the comments in §5.45.

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.**

We have some sympathy with this statement in general terms, but actuaries should not be precluded from differentiating between groups of lives, not least because there is no consensus for the population as a whole. To give an extreme example, one should tend to expect to have different views on improvement assumptions for certain medically impaired lives (e.g. with progressive and incurable conditions) relative to an “average” population of healthy lives. As we say in 3(b), actuaries giving advice on mortality should be encouraged to provide an individual, reasoned, and clearly-articulated rationale to support their recommendations, and we would not wish to see BAS restrict this in the context of mortality improvement assumptions, directly or otherwise.

- 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.**

Consistent with our comments in 5(b) above, we feel that the requirements of §§6.51 and 6.52 may be too detailed. Users may not understand all of this information, which again may deflect from the important decisions that require making.

We agree with §§6.60-6.64, but note that the restriction in §6.66 may not be appropriate. Prudence should be determined relative to the corresponding best estimate rather than being constrained *a priori*. For example, if one’s best estimate view of future improvements were an extreme reversal in recent trends then it would seem not unreasonable that a prudent assumption could simply be a somewhat less extreme trend reversal.

General question

7.2 In addition to the specific questions listed above, the BAS invites respondents' views on any other aspects of possible standards for mortality assumptions in actuarial calculations. To ensure that the significance of their point is fully appreciated by the BAS, respondents are encouraged to indicate how their comments address the BAS's aim of increasing the transparency of assumptions and their comprehensibility to users of actuarial information.

- Although it is often viewed as the “easy” or “factually objective” element of an overall mortality assumption, there can be more than meets the eye to the setting of an opening mortality assumption, even in the context of large funds where statistically credible analyses are possible. We therefore believe that actuaries must seek to validate their opening mortality assumptions beyond a simple comparison to the results of experience analyses.
- Thinking ahead to Solvency II, we believe that it is important that all firms with what might reasonably be regarded as a material exposure to mortality or longevity risk have internal models in respect of these risks, i.e. rather than simply meeting a standard stress (such as the 25% longevity stress specified in CEIOPS' QIS 4). We view the application of a standard stress as very good (or bad, depending upon your viewpoint) example of herding. One size most certainly does not fit all, and it is dangerous to pretend that it does.
- Notwithstanding our comments above, we naturally feel that companies should be under no pressure to disclose externally anything which it reasonably regards as being commercially sensitive. BAS may therefore wish to distinguish between standards for external disclosure and standards for internal disclosure.
- We feel that BAS should consider reviewing the currently-published actuarial guidance with the specific topic of mortality in mind. For example, it may be appropriate to consider the setting of explicit guidance for Actuarial Function Holders advising on mortality assumptions. This comment naturally extends to other specified role-holders, e.g. Reviewing Actuaries, With-Profits Actuaries, Scheme Actuaries, etc in their respective capacities. Reiterating our comments at 3(c) and 4(a), however, we feel that such guidance should relate only to the factors to be considered, as opposed to being “hard” technical standards.
- Finally, and notwithstanding the previous comment, we feel that BAS must try to guard against an excessive focus on the mortality assumption. It is important to remember that mortality is often just one assumption amongst many others and that, depending upon the context, there may well be other assumptions of equal uncertainty and even greater importance.