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High on the Agenda—Communicating Uncertainty

by Michael Pomery

Actuaries are highly numerate people, but we are not generally renowned for our communication skills. In my career, I have met quite a few actuaries who are very good communicators. However, it is often the case that actuaries are better at explaining how they have arrived at a result, i.e., the methods and assumptions they have used, than they are at explaining the implications and consequences to their client or colleagues.

The core of actuarial work, reserving and pricing, involves assessing the present value of future liabilities. This requires us to make assumptions about the future. The future is inherently uncertain. Communicating that uncertainty to others, whether to our clients or our employers, to journalists or to the general public, is a major challenge for actuaries.

To meet that challenge, there are a number of difficulties we have to overcome. Firstly, in much of our work we are required to produce a single result, for regulatory, accounting or practical purposes. This single result creates an aura of certainty. Non-actuaries can believe that the single result we have given them is, in some sense, the "right answer" to a question they have asked. This explains why they find it difficult to understand that two actuaries, faced with very similar circumstances, can come up with different results. Surely, they think, one actuary must be "right" and the other must be "wrong."

This way of thinking also helps to explain why actuaries are accused of having made a mistake when the actual outcome differs from their earlier advice. Here in the United Kingdom, successive published projections of future mortality tables by the profession have indicated longer and longer life expectancy.

As actuaries, we argue that the emergence of new data has enabled us to update our previous estimates. But the media frequently criticise the actuarial profession for "getting it wrong," by consistently underestimating life expectancy. We sometimes see the blunt criticism that, as the latest result is different from the previous one, the earlier result must have been "wrong."

The answer to the challenge of communicating uncertainty is to show ranges of possible outcomes. The "single result" can then be seen as one out of a large number of possible answers, every one of which might turn out to be the right one. This approach does, however, require greater effort by the person for whom the work is being done to understand the underlying actuarial advice. How many times have you come across the client who says, "I'm very busy—don't bother me with the explanation, just tell me the result"?

Another difficulty is that showing a range of possible outcomes may be unwelcome. Many people feel uncomfortable with uncertainty and crave as much certainty as possible in their lives.

Recent changes in regulations in the United Kingdom for both life insurance companies and defined benefit pension plans have created a shift in the role of the actuary. In life insurance, the appointed actuary position has been abolished and the responsibility for all management decisions has been firmly placed on the Board of Directors.

The actuary's role is now that of advising the Board. Similarly, for defined benefit pension plans, the trustees are responsible for agreeing funding targets and contribution schedules with the sponsoring employer. The actuary's role is to advise the trustees. This change in the emphasis of our role should enable us in the future to present our advice in the form of a range of possible outcomes, leaving the ultimate decision makers to choose the appropriate result from within that range.

This change of role might appear at first sight to make life easier for actuaries. But I believe it actually brings with it increased responsibility. We will need to distill the range of available choices to a manageable number and, in doing so, we will inevitably be making important decisions on behalf of our clients. We will then need to explain those choices and their implications in a clear and understandable way, so that the users of our advice can arrive at an informed decision. The manner in which we give the explanation and the extent to which we "steer" the clients will have an important bearing on the outcome.

Sir Derek Morris, in his review of the U.K. actuarial profession, identified what he called an "understanding gap" between actuaries and their clients or employers. He recommended better communication by actuaries, including the development of a "*generic standard on communication covering the content of actuarial communications and the use of those communications by others.*"

He also recommended improved training and education for users of actuarial advice. However, he concluded that the "understanding gap" could never be closed completely, because of the "*intrinsically complex nature of the subject matter.*" This conclusion colored much of his report.

The existence of this "understanding gap" was the main reason for recommending greater scrutiny of actuarial work, e.g., through increased use of independent peer review.

Even before the Morris Review was announced, the question of how best to communicate uncertainty was already being actively addressed within the U.K. actuarial profession in three quite different areas of our work; pension projections, mortality rates and general insurance reserving.

On pension projections, our Finance and Investment Board had prepared a paper for the U.K. financial services regulator. This paper discussed alternative ways of presenting projections of possible outcomes of long-term savings products for consumers. The emphasis was on helping consumers to appreciate the uncertainty of the outcomes. We were also able to send the regulator, who is conducting a review of the rules on projections, a copy of the final report on research that the profession had commissioned from Warwick University on "Consumer Understanding of Risk." *http://www.actuaries.org.uk/files/pdf/social_policy/ConsumerUnderstandingRiskRep.pdf*

The Continuous Mortality Investigation ("CMI") is a part of the U.K. actuarial profession's organization that collects data from insurance companies and publishes mortality tables for use by actuaries. The CMI has been engaged in detailed consultations with academics and actuaries into stochastic methodologies for projecting longevity, to meet the aim of highlighting the uncertainty surrounding projections. The CMI has published a series of Working Papers, which chronicle the development of their thinking in the light of the input from their consultation process. *http://www.actuaries.org.uk/files/pdf/cmi/wp15/wp15.pdf.*

In the third field of general insurance (or property and casualty, as it is known in some countries), a major project on reserving is underway. This is an area of actuarial work where the necessity for the "single result" and the inevitable disappointment when subsequent outcomes differ from the previous advice are common features. Not surprisingly, a key component of the project is the issue of communicating uncertainty. The draft consultation paper published by the project task force contains a chapter (chapter six) that discusses the distinction between parameter uncertainty

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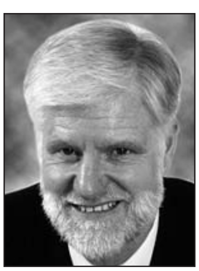
and stochastic uncertainty. It contains a number of examples of actuaries' current practice in communicating uncertainty when reporting on reserves and sets out draft proposals for improved communication. *http://www.actuaries.org.uk/files/pdf/general_insurance/grit_consultation.pdf*

Communicating uncertainty is part of a wider requirement for better communication to reduce the "understanding gap" between actuaries and users of actuarial advice, which Sir Derek Morris considered to be so important. It is being tackled from various angles in the United Kingdom and I hope we can pull the strands together to form a coherent communication standard, in order to meet the recommendation in the Morris Review. We would be interested to hear how actuaries in other countries are tackling this challenge. (*askmichael@actuaries.org.uk*). ☐



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