

Morris Review of the Actuarial Profession
1 Horse Guards Road
LONDON
SW1A 2HQ

20th July 2004

Dear Sir Derek,

Consultation Document

Many thanks for your letter, dated 28th June, inviting responses to your consultation document.

I am enclosing two papers, which may help you in response to certain of your questions.

Accounting Ability

Question 1.8 asks whether actuaries are sufficiently accountable for their actions. I am enclosing a copy of a paper, "Actuaries and Accountability", my presidential address to the Manchester Actuarial Society in 1999. This sets out what I believe should be actuaries' approach to their work (section 2.2), and I believe that a change from what I referred to as the "old approach" (section 2.1), is taking place. Appendix 1 sets out my model of good actuarial practice.

Question 2.1 refers to the regulatory framework for the actuarial profession, I am enclosing a copy of a paper "Constraints on Discretion: Distributing surplus in with-profits life insurance", published recently in the *Journal of Financial Regulation and Compliance*. This paper looks at a number of court cases consider with-profits business, of which there were four prior to the Equitable Life case, and goes on to suggest a greater role for actuarial standards in the bonus setting process.

I am unable to send you an electronic copy of the later paper, and I am sending you a hard copy of this letter, with a copy of the paper.

Perhaps I can also take this opportunity of mentioning that the Centre for Risk and Insurance Studies has a large library of life and general insurance company accounts, and also many companies' and many life companies' FSA returns. If you feel there may be some way in which I and/or other members of the Centre may be able to undertake some research in connection with your enquiry, please feel free to get in touch.

Yours sincerely

Chris O'Brien
Director, Centre for Risk and Insurance Studies
Nottingham University Business School
Jubilee Campus, Wollaton Road, Nottingham NG8 1BB
Tel: 0115 846 6519 Fax: 0115 846 6684
E-mail christopher.obrien@nottingham.ac.uk

ACTUARIES

AND

ACCOUNTABILITY

**Presidential Address to the
Manchester Actuarial Society**

by Chris O'Brien, M.A., F.I.A., A.S.A.

6 October 1999

1. INTRODUCTION

1.1 The motto of the actuarial profession in the U.K. is that we “make financial sense of the future”. This paper is about how I believe we can improve our ability to do so.

1.2 Actuaries deal with the long-term future, which is often uncertain and complex. So making financial sense of the future can be quite difficult. Can we really be accountable if it goes wrong? If the stock market falls and people lose money, surely we are not at fault, we are not accountable for that? However, we have to recognise that we work in a world where we are increasingly being brought to account.

1.3 We are being scrutinised more than ever before by our customers, the following being examples of their concerns:

- policyholders complaining about reduced bonus rates on with-profit policies; and
- directors of firms running pension schemes, concerned to understand the implications of the MFR (minimum funding requirement) valuation.

1.4 We also seen regulators looking more closely at our actions: in particular the Financial Services Authority (FSA) has taken over the responsibility for the prudential supervision of insurance companies and is carrying this out in a more detailed way than DTI.

1.5 The Government Actuary raised the subject to accountability in a paper to the Institute of Actuaries earlier this year. He wrote:-

“A further potential source of concern is the extent to which the Appointed Actuary is (or can be) called to account for his or her work. Clearly the Appointed Actuary must expect to be accountable, at least to the board and the management of the company, in some respects to the policyholders and shareholders, and to the insurance supervisory authority. The latter aspect is currently largely effected through the scrutiny of the Appointed Actuary’s report, assumption methodology and results by actuaries at the Government Actuary’s Department, acting on behalf of the supervisor. The profession has, itself, been looking at the implications of some form of peer review process, in this and in other areas, particularly focussing on how the profession can satisfy itself that mandatory guidance notes (practice standards) are being complied with. A further development, which the FSA might push for, is a more regular and formal audit process for the Appointed Actuary’s work.”

From “The Regulatory Role of the Actuary” by C. D. Daykin.

- 1.6 In my dictionary “accountable” means “bound to give account, responsible, explicable”. My theme is that we need to explain our work better to our customers and to our regulators. This will require us to structure our work more logically; then the recipients of our advice will be able to make better financial sense of the future. However, I believe that this should, and will, lead to changes in the way in which actuaries work.
- 1.7 Section 2 of this paper sets out my theme of a model of good actuarial practice.

Sections 3 to 7 apply this theme to a number of areas of actuarial work in life and pensions.

Section 8 summarises the areas where I would like to see changes.

2. THEME

2.1 Old Approach

- 2.1.1 One approach to actuarial work might be as follows. I am deliberately being extreme but this is intended to highlight the issues.
- 2.1.2 This “old” approach is characterised by:-
- (a) the assumptions are not set out clearly, or they are implicit rather than explicit;
 - (b) it is not clear why the assumptions are what they are;
 - (c) we use a computer model to do the calculations, which is in the nature of a “black box”; and
 - (d) the conclusions are from the perspective of the actuary rather than the reader.

2.1.3 In some sort of defence we say that one of the problems is the complicated regulations we have to work under: they are not always logical and certainly not very clear. The same is true of some of the professional guidance. Whether or not the actuary has complied with the regulations and guidance may also be unclear.

2.1.4 Yes, this is extreme, but sometimes the elements are true. In a world of increased accountability, we need to do better.

2.2 An Alternative Approach

2.2.1 An alternative approach is to say that our work should:-

- be focussed on customers and recognise their needs;
- be logical, comprehensible and explicit;
- be based on sound actuarial theory; and
- meet the requirements of regulation and/or guidance where applicable.

2.2.2 At present it is often very difficult to work out what regulations and professional guidance require us to do. We want to be able to demonstrate that we have met their requirements but this won't be easy until the regulations and guidance are re-drafted in plain English so as to:-

- (a) be logical, comprehensible and explicit;
- (b) help actuaries understand what they are required to do to comply; and
- (c) make it easy to show that they have complied.

2.2.3 Some of the profession's guidance notes have, more recently, recognised the need to be written more clearly. They have put the emphasis on the active rather than the passive, making them more compliance-friendly, as envisaged in para. 2.2.2. However, there is more work to do!

2.2.4 For regulation to be suitable, it has also to be based on sound theory. Now should any actuarial students think that they have entered a profession where, over 150 years after it started, all the problems have been solved, that is not the case! There are still plenty of challenges for intelligent and imaginative actuaries to design some better theory and overturn some of the ideas of the past.

2.2.5 We then need to ensure that this sound theory is built into our education and training system. This system should also reflect the content and scope of regulations and guidance, and actuaries' responsibilities.

2.2.6 This needs to be combined with reporting to our customers in a way which is more helpful and recognises their needs.

2.2.7 The advantages of this alternative approach are:-

- (a) our being logical, comprehensible and explicit should mean that our customers will understand more readily what we are saying; with this better communication, we will enhance the image of the profession;
- (b) our work will be more reliable with reduced chance of error:-
 - by being explicit, we will be better able to check that our assumptions are reasonable;
 - by setting out results in a comprehensible way, any material error should be more likely to be evident;
- (c) we will help customers because we can more easily tie in the explicit assumptions we make with actual experience, and we can test sensitivities to alternative explicit assumptions more easily;
- (d) customers will appreciate the uncertainties of the future and the risks they are running from following a course of action;
- (e) the link between sound theory, suitable regulation and good practice will mean that out-of-date ideas are eliminated from our work; and
- (f) explicit, compliance-friendly regulations and guidance, based on sound theory, should remove the question marks about compliance; the trust which customers place on the profession can be demonstrated to be justified.

2.2.8 In this more accountable world, there are discussions taking place on whether and how some actuarial work should be subject to audit. I would suggest that if we have the approach set out in para. 2.2.7 both we and our audience should be more confident that our work is appropriate and correct. Nevertheless, it may be that, in certain areas, formal audit would be helpful.

2.2.9 This is therefore the model which I present to lead to good actuarial practice which will enhance the ability of the profession and its customers to make financial sense of the future. It is illustrated in appendix 1.

2.3 Applications

2.3.1 In sections 3 to 7 of this paper I give some examples of actuarial work where I believe our practices can be improved in this way:-

3. valuing the liabilities of a life assurance company;
4. valuing the assets of a pension scheme;
5. declaring bonuses on with-profit policies;
6. assessing the suitability for customers of alternative life assurance policies offered by a firm;
7. making mortality assumptions in a pension scheme.

2.3.2 Actuaries have been moving into wider fields. I believe that the impact that the profession can make in new areas, such as banking or health care, will be enhanced if we take care to understand the needs of those we are advising and if we communicate effectively. Let us be proud to show off our skills. But this will only be accepted in non-traditional areas if we explain clearly what we have done and why: black boxes won't work!

2.3.3 In the traditional insurance and pension areas, actuaries need not be constrained to act in a traditional way. We may well need to be imaginative and innovative in formulating our advice. For example, directors of insurance companies should welcome new insights which actuaries can provide in suggesting new strategies. I would argue that our views will be given more weight if they are soundly based and well communicated.

3. VALUING THE LIABILITIES OF A LIFE ASSURANCE COMPANY

3.1 The appointed actuary is responsible for valuing the liabilities of a life assurance company in the "statutory solvency valuation". This is complex but it is good to see two examples of changing practice (and regulation) which are moving us in the right direction of being explicit not implicit in what we do.

3.2 First, actuaries have been replacing the traditional approach to valuing permanent health insurance business, based on Manchester Unity friendly society data over 100 years old, by the inception/disability annuity approach which has explicit assumptions about the proportion of policyholders falling sick in a period and how long they are expected to remain sick.

- 3.3 We can now make separate assumptions about new spells of sickness and length of claim, which can be compared with the available data for reasonableness and can be monitored against actual experience. We can then understand why actual sickness claims change. We can link this in with our forecasting systems so that we can assess, for example, the implications of claimants staying sick for longer. We can also price policies more knowledgeably. Hence this explicit approach is much more helpful in understanding and managing the business, as opposed to the “black box” of Manchester Unity.
- 3.4 Second, it is planned to introduce a new regulation permitting the use of a gross premium (rather than net premium) valuation for non-profit business. This will be more understandable and good for managing the business. Incidentally, at least one company has already introduced this for the long-term business provision in the Companies Act accounts, which does not require the same regulatory change.
- 3.5 In other areas there is still progress to make. Consider the way in which we estimate the future mortality of annuitants. It is still common to use a recent table and then, recognising that it is not up-to-date and does not incorporate future mortality improvements, make a constant deduction from age. Instead of valuing an annuity for a 65 year-old we imagine he was say a 62 year-old. This is a very indirect way of allowing for the fact that underlying table is not appropriate, and may well be questionable in some cases. There is an example of 12-year age adjustments!
- 3.6 This practice dates back to when systems constraints made it difficult to do anything else. I would suggest the following alternative practice, which should be an interesting (and, I hope, manageable) challenge:-
- take the most recent table, say PMA92 for male annuitants;
 - multiply by a proportion (possibly age-related) to reflect improvements from the average date of experience in the compilation of the table, up to the valuation date; and
 - incorporate a specific factor or factors for future improvements.

- 3.7 While the computation in para. 3.6 is more complex, it surely is more explicit and explicable than 12-year age adjustments.
- 3.8 The assumptions used in valuing liabilities in the statutory solvency valuation have become more significant recently. The reduction in interest rates has meant that many offices' liabilities have risen sharply. Combine this with high expenses, the removal of tax credits on pensions business, the difficulty of matching guaranteed annuity option liabilities and the increasing longevity of annuitants, and we can appreciate that the free asset ratios of some offices have been under pressure. This has important consequences for offices who may find that lower published ratios are unfavourable for new business.
- 3.9 Note also the concerns that some actuaries may have assessed the reserves for guaranteed annuity options to be lower than required by the Regulations and/or have not disclosed their calculation basis in the Returns to DTI (subsequently Treasury).
- 3.10 How can we use my model of good actuarial practice here? First, I would like to see the profession's guidance notes in better shape. I suggest:-
- (a) we should combine GN1 and GN8 as they overlap (alternatively, their contents should be differentiated more clearly);
 - (b) they need to be re-written in plain English;
 - (c) they should not duplicate the content of the regulations; and
 - (d) they should be drawn up in a way which makes it easy to check that they have been complied with.
- 3.11 Furthermore, I would like to see the guidance incorporate points which the Government Actuary's Department feel may still be an issue, using their past experience from having studied the valuations and returns which appointed actuaries have completed. This will be helpful to appointed actuaries so that they understand the perspective of GAD's interpretation of the relevant regulations and it will assist in ensuring that the regulations are being applied consistently.

- 3.12 However, the regulations themselves should be reviewed and re-written to make them clearer. This review can also look at a number of areas where the regulations appear to be unduly harsh. FSA is intending to draw up a new handbook to incorporate regulations on the prudential supervision of life assurance companies, as a result of its new responsibilities when the Financial Services and Markets Bill is enacted, and I would urge them to give priority to this.
- 3.13 I have considered whether it would be preferable to have the appointed actuary's calculation of reserves made subject to audit. I have considerable sympathy with this, taking into account my comments in paras. 3.8 and 3.9. There are some practical issues on how the audit would be carried out: possibly by actuaries working for the firm's usual auditors. Peer review would be an alternative. However, what I would also like to see is better actuarial practices, using explicit methodologies, and with an improved set of regulations and guidance. This may influence what is the appropriate form of audit.
- 3.14 However, there is a deeper problem, namely that the regulations themselves are unsound! The issue is that we are valuing guaranteed liabilities by discounting at a rate not higher than the yield being earned on the assets we hold. In the case of equities this is (currently) the dividend yield and not, for example, the gilt yield; hence holding equities leads to a higher value being attributed to the liabilities. This gives an undesirable disincentive to hold equities.
- 3.15 Note that I said above "higher value being attributed to the liabilities" not "higher liabilities". This is because the liabilities, to pay benefits to policyholders and expenses, will not be any different depending on whether we hold gilts or equities. What we have is the odd situation that the regulations require us to value the liabilities by reference to the actual assets we have. In principle this must be wrong: the liabilities are the liabilities. Indeed, we might be insolvent and have insufficient assets. But the liabilities are still there!

- 3.16 It is a strength of the recent debate on pensions accounting that it has been recognised that the value of a liability does not depend on the assets which may (or may not) be held with a view to paying such liabilities. This is a complex argument, but the principle is that a liability can be valued as the value of the assets which would match it; if there is no perfect matching asset, then some further estimation is needed. We now need to see the principle applied to life assurance. This is an exciting opportunity to develop sound theory based on the ideas of financial economics.
- 3.17 Note that, in the case of a unit-linked liability there is a perfect matching asset, so that the value of the liability can be assessed from the assets.
- 3.18 So, over 150 years from the birth of the Institute of Actuaries, we are still debating the fundamentals of valuing assets and liabilities. My view is that one possible outcome is:-
- (a) in the accounts of a company we compare the market value of the actual assets held with something we call the market value of liabilities, calculated consistently but without depending on the actual assets held; in a proprietary company, the increase in the excess of assets over liabilities is profit;
 - (b) for prudential regulation, we determine the value of assets which ought to be held to meet the liabilities, on a prudent basis and taking into account the actual risks the company has, including asset default and asset/liability mismatching. We could use techniques such as stochastic modelling to carry out these calculations. The outcome would be expected to be a higher figure than the market value of liabilities in accordance with (a). If the actual assets held are lower than what ought to be held, the life assurance company would be required to inject capital or reduce the riskiness of its operations.

- 3.19 This is an important subject, which relates to the discussions of the International Accounting Standards Committee on whether and how to calculate the market value of liabilities. However, there is much more work to do on this. In particular, for prudential regulation, how do we determine the assets we need? We may well be able to learn from the way in which banks are regulated, and the requirements for risk-based capital which have been discussed in a number of areas. Stochastic modelling is a tool which actuaries have already been using to help understand the risks to which insurance companies are exposed. There are plenty of challenges here!
- 3.20 I believe that the Life Board should consider these issues: it is best to be in the debate at the outset!

4. VALUING THE ASSETS OF A PENSION SCHEME

- 4.1 How do we place a value on assets? The prices of most fixed-interest securities and shares can be found at the touch of a button; it is true that valuing property is likely to require qualified surveyor, but we generally expect that it is not unduly difficult to add up the market value of the assets of a pension scheme.
- 4.2 New actuarial students may be surprised to find that the usual way to value a pension scheme's assets is actually rather different: the "discounted income" method is used. Here an estimate of the future income (interest, dividends, rents) is made, and this is discounted back to the valuation date to give a present value.
- 4.3 The report presented to the Trustees might then say that the market value of the assets is 1000 but the actuary has assessed a value of (say) 900.

- 4.4 Now there are arguments put forward for the discounted income method. It is true that the assumptions for the calculation can be set out clearly, including the dividend yield, the increases in dividends and the discount rate. The report may also contain information on past economic trends. However, the method does not address the fundamental question of why are you making assumptions which are clearly different from those of the market? Therefore, I am afraid this is a method which does not meet my requirements for being explicit and logical.
- 4.5 The method also tends to confuse Trustees who think they have assets of 1000. Also look what happened in 1997 when pension schemes became unable to reclaim tax credits on U.K. equities. You would expect actuaries to have reduced the value they attributed to pension scheme assets because of the methodology based on future income. But what appears to have happened in many cases is that the actuary changed some other assumption in the discounted income calculation so that the asset value did not change significantly. This questions the helpfulness of the discounted income approach if the assumptions change.
- 4.6 Hence I would like actuaries to move to using market value of assets in pension schemes. Now actuaries may be uncomfortable with a market value of 1000 and think that the employer should contribute to the scheme as if the value were 900 because this would be more prudent or perhaps because the actuary fears that markets are about to drop by 10%. However, if this is the case, let's be explicit and say so, rather than use a pseudo-scientific way of calculating an asset value of 900. I hope this is something which the profession could recommend for use in the guidance on pension scheme valuations.

- 4.7 I appreciate that moving to the market value of assets means we need to come up with a method of determining the market value of liabilities: not easy, when pension scheme liabilities are not usually traded. The accounting and actuarial professions have already been studying this, arising from pressure from the accounting standard-setters. I think the outcome will be quite different from the rules we currently have for MFR valuations. Extremely complex, they breach the principle that the value of a liability is independent of the investment policy for the assets; they have been called “actuarial mumbo jumbo par excellence”. Supporters of the clear and logical would not be complimentary. The profession currently has a number of working parties looking at MFR valuations: I do hope they come up with a better alternative.

5. DECLARING BONUSES ON WITH-PROFIT POLICIES

- 5.1 Actuaries have made good progress in becoming more scientific about the way in which they calculate bonus rates on with-profit policies. We know that payouts, and hence rates of terminal bonus, are usually calculated so that payouts are about equal to asset shares, with smoothing to avoid undue fluctuations in payouts. In recent years we have seen better attention given to how asset shares are calculated, with more offices having analysed miscellaneous surplus and having made formal decisions about expenses which may be charged to the estate rather than asset shares. A number of offices have formalised the way in which smoothing is carried out.
- 5.2 Some of these changes have been in response to the new rules on disclosure when new policies were issued. Figures now are not merely right, they can be shown to be right. However, the greater benefit comes from actuaries and the directors having a better understanding of the way in which asset shares are built up and payouts set. We can more easily forecast what future asset shares will be under a variety of assumptions and it should be simpler to make good, knowledgeable decisions.
- 5.3 This is fine from the perspective of the actuary but what about the customer?

- 5.4 It is easy to say, and may well be true, that most with-profit policyholders receive bonuses which represent good value for money. However, policyholders do not always agree. There have been complaints about reductions in reversionary bonus rates; companies' responses concerned with the cost of guarantees may not be adequate. Communication from the perspective of policyholders may well be below par, both as regards the annual bonus notices of reversionary bonus rates which have been declared, and when the terminal bonus is payable on claims.
- 5.5 At present, the Personal Investment Authority Ombudsman is unable to adjudicate on complaints about bonus rates. This will change when the Financial Services and Markets Bill is enacted and takes effect: then the new Financial Services Ombudsman will have this power. Actuaries will become more accountable quite quickly.
- 5.6 We will, no doubt, see improved communications regarding why bonus rates are what they are, and some offices have already become more explicit about how asset shares and bonuses are calculated.
- 5.7 However, I think we need to review what information we would pass to the Ombudsman or policyholder in the event of a complaint. We need to be fair and open with policyholders, but we may have concerns about disclosure of what would normally be regarded as confidential commercial information.
- 5.8 Where I believe the profession can help is by re-designing its guidance to appointed actuaries on bonus declarations. I do not think GN1 properly recognises the way in which asset share methodology has developed in recent years. With guidance which is clearer and more up-to-date, actuaries will be able to indicate that they have complied with professional guidance, which should help give assurance to with-profit policyholders that bonuses have been declared in a proper manner.
- 5.9 I suggest that the profession can also discuss with FSA, and the new Ombudsman before a specific case arises, the information which it would normally be appropriate to disclose to support decisions on bonus declarations.

- 5.10 We need to remember that decisions on bonus rates are usually the responsibility of the directors, and we would need to involve industry representatives in the discussions suggested above.

6. ASSESSING THE SUITABILITY OF LIFE ASSURANCE POLICIES

- 6.1 The Financial Services Act led to rules for representatives of a life assurance company, when advising customers, to give “best advice”, i.e. to assess the customer’s needs and choose a suitable product, if there is one, from the range offered by the company or, where applicable, the “marketing group” of which it is a member.
- 6.2 A life assurance company is responsible for ensuring that its representatives give “best advice” and put in place a training and competence scheme, together with appropriate monitoring, to achieve this.
- 6.3 The company would generally have guidelines on best advice. In other words, what were typically the circumstances in which say a unit-linked endowment was more appropriate than one which was with-profits, or comparing different types of risk product.
- 6.4 There are two current issues of this type which are very important.
- 6.5 First is the question of whether an endowment mortgage is generally to be preferred to a repayment mortgage. The removal of MIRAS has reduced the advantages of the former. Taking into account the charges on an endowment, is it still reasonable for company representatives to recommend them?
- 6.6 I believe that the answer can be yes but it depends on factors such as the charges on the endowment and the customer’s understanding and acceptance of risk.

- 6.7 But we cannot leave answering the question to the company representative and then, if he gets the answer wrong, say he has been mis-selling. It must be the responsibility of the directors of the life assurance company to set out guidelines (or rules) on the subject. Who should the directors look to, to produce such guidelines? This must surely be the appointed actuary, who can arrange the appropriate calculations, choosing suitable assumptions and explain the outcome clearly. The actuary also has to recognise that, while the answer may appear negative from the perspective of the new business and profit objectives of the company, or the expected income of its salesmen, the company exists first and foremost to satisfy the needs of its customers, and any company which neglects this does so at its peril.
- 6.8 The second current issue is whether pension policies should be used to contract-out of the State Earnings Related Pension Scheme. Changes in the terms for contracting-out and in financial conditions are tending to lead to the conclusion that there may be few circumstances where this would be suitable. Again, the actuary should be advising the directors.
- 6.9 The FSA in its new regulatory regime, is looking for companies to have clear responsibilities at senior management level. What are the responsibilities for guidelines on best advice? I believe that we as actuaries are often in the best position to make the appropriate judgements in this area.
- 6.10 I suggest we should consider this more fully, assessing what skills and experience are necessary to come to suitable conclusions on best advice guidelines. Such skills would include a knowledge of pensions legislation. In a marketing group which also issues non-life products such as ISAs, the role of the appointed actuary of the life company may not be clear-cut. These are matters for discussion.

- 6.11 However, I do think that the guidance to appointed actuaries should highlight the need for them to be aware of the best advice guidelines relating to the products issued by the life company and to liaise with the Compliance Officer and directors so that appropriate guidelines are in place. In some areas (such as the endowment versus repayment mortgage issue) I would expect the appointed actuary to be deeply involved in the design of such guidelines. I am not sure how far we may wish to go on the road to saying that the appointed actuary of a life assurance company should have the responsibility for the guidelines given on best advice regarding the firm's products. Nevertheless, I believe this is a crucial area. Mis-selling adversely affects customers, the finances of the life company when matters are put right, and potentially can damage the actuarial profession. I suggest the first step is for the Life Board to consider whether the existing professional guidance GN1 can be amended to draw attention to the best advice issues, and we can discuss how far along the path of formal responsibilities we wish to go. This is an area where the FSA will also have an interest.
- 6.12 Related to this, our profession has concentrated very much on the "supply" of financial products: what are the potential costs and risks to companies offering uncertain benefits. I think this needs to be complemented by a better understanding of the demand for financial products. Without that we cannot easily fulfil our role of looking after the interests of the consumers of the products offered by our firms.
- 6.13 This understanding of "demand" is certainly is needed by an actuary setting out guidelines on best advice. However, it should be much wider. One approach to achieving this would be if the marketing and selling of relevant financial products was included in our examination syllabus and/or continuing professional development. This would cover not only life assurance business but also pensions and general insurance. I believe this will help actuaries develop their commercial skills and enable them to contribute more effectively in the firms where they work.

7. MORTALITY ASSUMPTIONS OF A PENSION SCHEME

- 7.1 An actuary carrying out a pension scheme valuation needs to consider how long the pensioners are expected to live: this must surely be a key factor in assessing the cost to the employer of his liability to pay pensions.
- 7.2 Let me consider the assumption which actuaries are required to make in Minimum Funding Requirement valuations. For very large schemes (pensioner liabilities over £100m) it is what the actuary considers appropriate. In other cases the assumption, set out in GN27, is the PA90 table rated down 2 years.
- 7.3 This appears questionable as the PA90 table was issued many years ago (in 1979) and although it aimed to include expected mortality improvements up to 1990 we know that actual improvements were greater than expected. There is a 2-year age adjustment. To try and understand what this all means I compare an alternative more explicit approach. I also show some figures if the age adjustment were amended to 3 years.
- 7.4 This alternative uses the most up-to-date table of life office pensioner experience, the so-called "92" Series, set out in the 16th report of the Continuous Mortality Investigation last year.
- 7.5 We then need to adjust for mortality improvements up to 31.12.98 (say). We can adjust using what we know of life office pensioner experience to 1997 and population mortality in 1998. I conclude that it is reasonable to think that life office experience at the end of 1998 would be 91% of PMA92. I set out my reasons for this assumption in appendix 2.
- 7.6 There are some reasons for thinking that the expected mortality of pension scheme members may be heavier than that based on life office data. I have therefore tested the sensitivity of the result should mortality rates be 10% higher than above, i.e. 100% of PMA92.

- 7.7 Next we need to make some assumptions about how mortality rates will reduce in the future. One possibility is to use recent experience of improvements and assume they will continue indefinitely (I have called this the “sustained” basis). The improvements do vary with age, and this basis could be:-
- 2.50% p.a. for ages 55-64
 - 1.75% p.a. for ages 65-74
 - 1.25% p.a. at higher ages.
- 7.8 However, there are some good reasons for thinking that the rate of mortality improvements will reduce in the future. In this “moderated” basis I assume that the rate of mortality improvement reduced by a third after 15 years (note that the factors in para. 7.7 and the moderation as described are not necessarily prudent assumptions for the statutory solvency valuation of a life assurance company).
- 7.9 These assumptions for future improvements are more complex than an age adjustment. However, it is now not difficult to build a computer program to implement them, and there is much benefit in being able to understand the assumptions set out in this way.
- 7.10 What does this mean for the cost of providing a pension of £1 p.a. for a male retiring at 65? Assume the pension is payable monthly in advance with a 5-year guarantee. The costs on various mortality bases and 5% p.a. interest are:-

		Cost of £1 p.a. pension	
		Level	Increasing at 3% p.a.
"Old"			
PA90 minus 2 years		10.516	13.496
PA90 minus 3 years		10.788	13.956
"Alternative"			
% PMA92	Future improvements		
100	None	11.015	14.216
100	Moderated	11.472	15.084
100	Sustained	11.499	15.150
91	None	11.294	14.701
91	Moderated	11.767	15.613
91	Sustained	11.794	15.690

7.11 The effect of the alternative basis is clearly significant. The old basis of PA90 minus 2 years does not appear to reflect current mortality, before we even consider future improvements. For a pension escalating at 3% p.a., I would suggest that the realistic cost is at least 10-15% higher than the basis prescribed for the MFR valuation.

7.12 We can also show the effect for a notional pension scheme. Say the assets of the scheme are 1000. The liabilities are also 1000, of which 250 relates to pensioners, all assumed to be males aged 73; and 750 to non-pensioners, all assumed to be males aged 55, due to retire at 65. Pensions escalate at 3% p.a. Then how does the value of the liabilities change with alternative mortality assumptions?

		Liabilities		
		Non-pensioners	Pensioners	Total
"Old"				
PA90 minus 2 years		750	250	1000
PA90 minus 3 years		786	261	1047
"Alternative"				
% PMA92	Future Improvements			
100	None	847	254	1101
100	Moderated	945	268	1213
100	Sustained	959	268	1227
91	None	881	266	1147
91	Moderated	981	281	1263
91	Sustained	997	282	1279

7.13 I have concentrated above on the mortality assumptions in the MFR valuation. Actuaries carrying out their own valuations to recommend contribution rates can use different assumptions. Some, understandably, use lighter mortality than the MFR basis. I have also seen heavier mortality: I have to say this surprises me.

7.14 The calculations above are highly simplified. However, they do suggest that many pension scheme liabilities are perhaps 20-30% higher than is traditionally calculated. This implies that many employers will face some significant increases in contributions in the future. Furthermore, the increase in liabilities could well be quite high compared with a year's profits.

7.15 It concerns me that our clients, pension scheme trustees, are unlikely to understand the appropriateness and importance of the mortality assumption. Consider the actuary's accountability here (compare life office actuaries where the valuation basis in the regulatory returns is subject to scrutiny by the Government Actuary's Department).

7.16 I do hope the Pensions Board will be able to consider recommending a change in the mortality assumption in the MFR valuation and introducing some specific comment on mortality considerations in guidance note GN9 which relates to other valuations. It should also recommend a change in the assumption used by the Inland Revenue in its over-funding test.

7.17 I don't believe this is rocket science. It is a traditional actuarial role of setting suitable mortality assumptions. If we do the job logically and set out the reasoning behind our assumptions, we will be better able to help our customers make financial sense of the future.

8. CONCLUSIONS

8.1 I summarise below the key areas where I would like to see change, together with who I would like to consider them:-

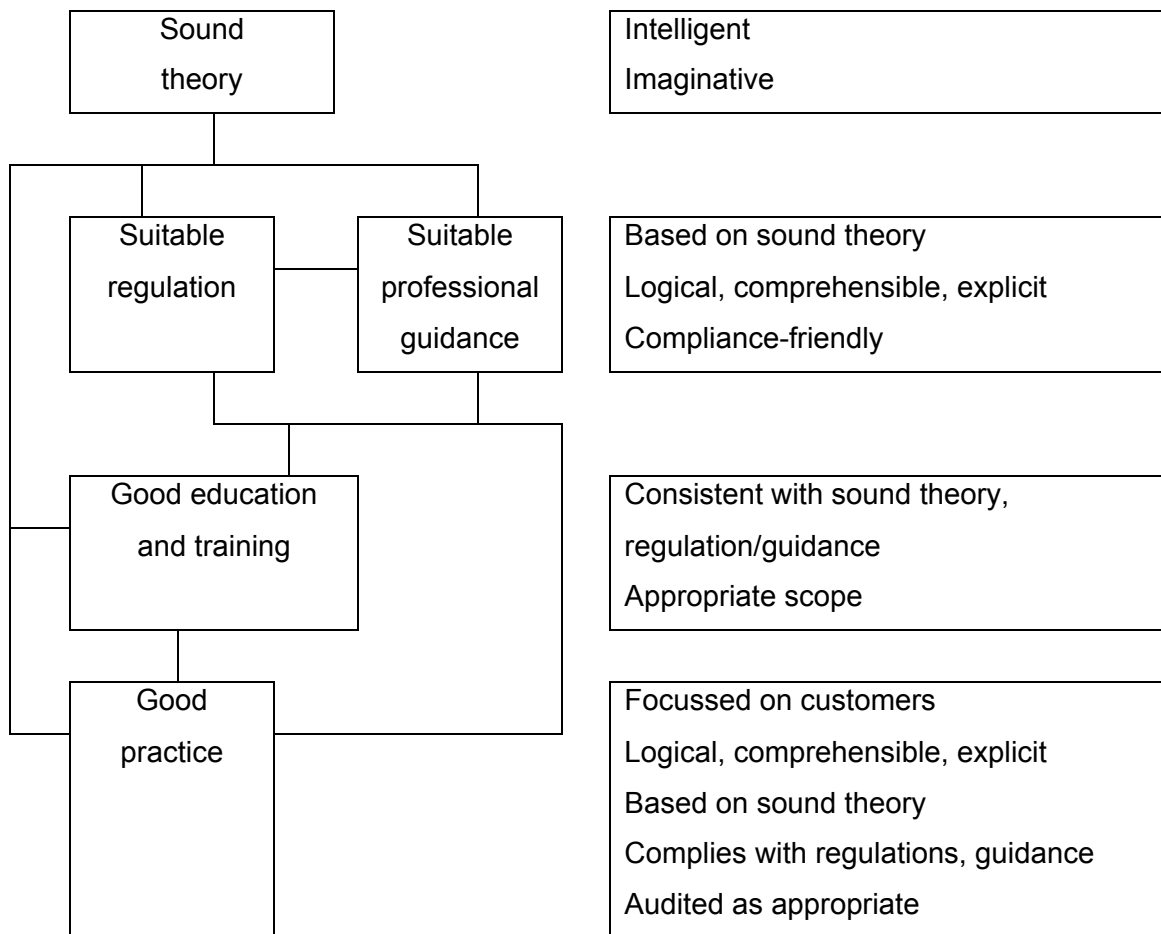
Para.	Who?	What?
3.10	Life Board	Combine and re-write GN1, GN8.
3.11	GAD	Contribute issues to be included in guidance
3.12	FSA	Review and re-write regulations.
3.20	Life Board	Consider fundamental change to solvency regulation.
4.6	Pensions Board	Recommend use of market value of assets in pension scheme valuations.
5.8	Life Board	Review guidance on bonus declarations.
5.9	Life Board	Discuss with FSA and Ombudsman the disclosure to support bonus declarations.
6.11	Life Board	Consider responsibility for guidance on best advice.

Para.	Who?	What?
7.16	Pensions Board	Recommend change in mortality assumption in valuations for MFR and Inland Revenue over-funding test; and include comment in guidance on other valuations.

Acknowledgements

I would like to thank David Bartlett, Bob Gore and Mike Kipling for their assistance in the preparation of this paper. The views expressed do, of course, remain the responsibility of the author.

MODEL OF GOOD ACTUARIAL PRACTICE



PENSIONER MORTALITY

Life office pensioner experience, males, normal and early retirements, using amounts of annuity;

100 A/E, expected using PMA80(c=2010)

1991-94	1995	1996	1997
102	103	94	88

We assume 1998 was also 88 (because population mortality in 1997 and 1998 were about equal). On this basis 1995-98 averaged 93.25.

The annual reduction from 102 in 1991-94 to 93.25 in 1995-98 was 2.2%.

If we assume a trend of 2.2% p.a. reduction in mortality rates from end-1996 (the mid-point of 1995-98) to end-1998 we then have $93.25 \times (.978)^2 = 89\%$ PMA80(c=2010) at end-1998.

1991-94 life office experience, males, amounts, was 98% PMA80(c=2010) for normal retirements. This was also 100% PMA92.

We therefore convert 89% PMA80(c=2010) for end-1998 to 91% PMA92.