

Developments in the Management of Annuity Business

Abstract of the Edinburgh Discussion

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The President (Mr R. S. Bowie, F.F.A.): Welcome to members and guests. There is a very good turnout tonight, not surprisingly, for a paper which, although written by a group who derived themselves from the Life Practice Committee, has something for everyone. It has something for students of longevity; something for students of investment strategy; something for those interested in enterprise risk management.

For those of us whose day jobs involve advising pension scheme trustees, it is a marvellous insight into the issues that annuity providers face as they seek to capture the growing annuity market, if not particularly the buyout market, which the paper avoids.

With us tonight we have three members of the group: Derek Smith, who will be making the opening remarks, Paul Fulcher, who will be responding after the contributions from the floor, and the third member of the group is Peter Telford. Gentlemen, you are all very welcome.

Derek Smith works with KPMG. He has spent 30 years in the life assurance industry. He is an expert in all sorts of projects that life assurance actuaries love: IFRS; realistic reporting; and ICAs. He has also acted as an independent expert, making submissions to the High Court, evidence to support securitisation and merger of a couple of insurance companies, and has looked under the bonnet of a number of insurance companies to look at processes on valuation.

So, Derek, it is a great pleasure to have you here in Edinburgh and we look forward to what you have to say.

Mr D. W. Smith, F.I.A. (introducing the paper): Before I actually go into the discussion around the paper itself, it is probably worth saying a few words about how this group of people came together in order to produce this paper.

It was at the suggestion of the Life Practice Executive Committee that this was an area that could usefully be part of a working party group, under Peter Telford's direction. He managed to

pull together quite a disparate group of people. All of us have worked in the industry and been affected by and worked directly with annuities in a number of ways.

A working party tends to go through two different stages. The first is when we get together and start the discussions. That was the fun bit. I can remember we had some very interesting discussions around some of the technical issues, but I can also remember one meeting when we started discussing in quite some depth how people might buy and sell body parts in order to extend their longevity in the future. It did get somewhat into the realms of fantasy, but nevertheless an interesting debate.

The second stage is when we had to start committing things to paper. That is when it started to get a bit more like hard work. Having gone through this period of discussion, it was quite difficult to reduce it all down into something which would come together in a coherent paper. At one stage, we were thinking that this might be a 20 or 30 page paper, but there was no way that we could contain all that we had talked about in such a short space. So I make no real apologies for the length of the paper. We have covered a huge amount and huge range of topics. I would now like to bring to your attention some of the areas that I think will be interesting for us to debate tonight.

As you all know, the UK demographic trend has been towards people living much longer in retirement, and there has been such an increase in the complexity of product alternatives available to individual customers on reaching retirement, and also to corporate customers to secure their pension scheme liabilities, that this is obviously a good opportunity to debate some of the issues around that.

As well as giving an overview of the current market for annuities, we did try to draw out the implications for the actuarial management of the business arising from longevity risk, from financial management, from investment management and from ERM. We have also discussed in some technical depth Solvency II, analysing the proposed rules for technical provisions and the solvency capital requirement. Because of the timing of the production of the paper, we were not actually able to incorporate some of the latest pronouncements from CEIOPS on the use of risk-free rates and an illiquidity premium which, of course, is something that has been a major concern of the industry for a while.

We do hope that, in spite of the amount of time devoted in the paper to Solvency II, tonight we will be able to cover some of the broader strategic themes and public policy considerations which we have tried to signpost in the paper.

The working party discussed, without necessarily reaching a consensus, a number of these themes and topics in the course of our work. We think that the profession would be well-served to consider some of them. So I should like to offer some thoughts in terms of potential questions and areas for discussion.

The UK market is large and well developed precisely because it has been a necessary condition that accumulated tax preferred pension funds eventually have to be used to buy an annuity. The introduction of the alternatively secured pension, or the ASP, has shown that this might not always be a necessary condition. But while financial advisers and their wealthy clients are yearning for this freedom to be extended, the political discussions are really only just getting underway. In fact, what this may mean is that the compulsory age for annuitisation might be moved up from, say, 75 to 80 years, or so.

As a profession, where is our voice in this public debate, and what is indeed in the public best interest? While the siren voices calling for change are loud, who is looking out for the interests of the wider public? Who will ensure that individuals will not outlive their accumulated wealth or just spend today with little thought for their future needs?

Evidence from other markets strongly suggests that, given a free choice, very few individuals would actually choose to buy an annuity. If this experience were reproduced in the UK, where might that leave the plight of the elderly pensioner in a few years if their accumulated retirement funds are all used up? How should customers be incentivised for making provision for their own retirement, without unduly burdening the State?

Should there be an even wider debate in terms of the whole concept of retirement? We are all used to the model of working five days a week for 40 years and then drawing our pension benefits. But as longevity increases, what if the model becomes working four days a week for 50 years?

Accepting that annuities are currently part of the retirement landscape, the available choice for individual customers has substantially increased as enhanced and impaired annuities have increased in popularity. These now account for over one-sixth of all annuity purchases, and that is a figure which has doubled over the last four years.

As techniques for assessing the health and lifestyle factors affecting annuitants improve, the writers of non-underwritten annuities may increasingly be selected against and so forced to offer their so-called standard annuitants worse terms, thereby creating even more incentive for the mildly impaired to seek better prices. We are all used to the lengthy application forms used for multi-variant analysis and pricing of our motor insurance policies, and also critical illness cover, so maybe the time is coming quite soon when we will have to go through the same sort of thing when buying our retirement income. It will be interesting to see whether the financial incentive to disclose genetic and other defects that have an adverse effect on the likely lifespan will overcome the natural reticence of purchasers to disclose such matters.

We also need to consider whether lifetime annuities will remain the norm going forward or should there be further regulatory intervention to increase the space for temporary retirement annuities? Should there be a maximum age beyond which annuity payments cease or where the government is asked to take on the role as annuity provider of last resort? And have annuity contracts written so far, and those now available for sale, considered the possibility that some customers might use future medical advances to increase their lifespan?

I do not want to get into the realms of science fiction, but consider someone who was cryogenically frozen. Does the wording in our policies clearly define when an annuitant is actually still alive?

Longevity risk management is becoming an area of increasing specialisation, and one area where developments are likely is around the issue of longevity risk transfer. We can ask ourselves: should the Government seek to issue longevity bonds in the same way as they issue inflation-linked bonds? Would this lead to a growth in the secondary traded market for longevity-linked instruments and so potentially remove the barrier to writing these long tail and uncertain liabilities by bringing more participants into the market? Or would it just mean that the UK Government finances become overwhelmingly stretched if lifespans continue to increase and more resources are needed to be diverted to pay for State retirement benefits?

It is of interest to note the recent launch of the Life and Longevity Markets Association, which is aiming to give a wider platform on which to air these types of issues. Undoubtedly, we, as actuaries, will have a part to play in forming that discussion.

We all know that in the area of financial management there is a variety of measures and metrics which companies make reference to when managing their annuities. At times, these measures can actually cause conflict when one measure suggests actions that have an adverse effect on some of the other measures.

This is another example of an area where the management of annuity business has become more complex over time. Again, in the paper, we have not been able to offer any real solutions to this problem, and often firms simply need to decide which is the most important metric for them, and then to understand the consequences for the other measures.

The complexity of investment strategies and operations has increased greatly from a starting point that was typically a fairly passive and low risk one but is now a lot more complex. Indeed, we need to consider what the investment strategy will be in a Solvency II world and how we get to there from here. A traditionally invested Pillar I portfolio would contain a closely cash flow matched portfolio of corporate bonds and Government bonds with credit risk manifested as default risk.

Regulation and financial reporting for annuity business is undergoing a fundamental change. In particular, the move under Solvency II to a one-year value-at-risk approach versus a risk-free portfolio with credit risk represented by mark-to-market spread to volatility.

Irrespective of the outcome of the current debate on the appropriate risk-free rate, this is likely to represent a significant challenge to the existing asset strategy, particularly in terms of a transition strategy.

The global financial crisis has also highlighted a number of significant issues for insurers in terms of management of their business such as the need to consider carefully basis risk on hedging strategies and potential for unexpected liquidity strains such as from collateral calls or non-calls of financial assets.

Annuity providers are increasingly seeking to diversify away from corporate bonds into new asset classes and the global financial crisis has potentially presented new opportunities for insurers to exploit the illiquid nature of their liabilities.

However, these new asset classes will bring a number of new risk management challenges. Furthermore, Solvency II may actually reduce the ability for insurers to invest in illiquid assets, and the interaction of longevity risk with ALM risk also becomes more complicated.

Are appropriate instruments, processes and techniques actually in place to manage these interactions?

The choice of an ERM framework is fundamental, including the dominant metrics, the time horizon over which these are studied and the architecture of processes. It is not likely that a single right choice exists as it must be aligned to the insurers' commercial goals whilst also capturing the impact of regulatory capital and reporting environments, and of course coping with the variety of risk profiles and diversification effects for different business lines.

The complexity of the ERM challenge is, in a sense, also the reason why actuaries and insurers need to address it. Annuity business is no longer simple, if it ever was, and this has been a recurring theme of the paper. Risk management must be appropriate to the increased complexity. There has been a proliferation of measurement systems for performance and capital requirements. The adoption of Solvency II and of economic capital just adds to this complexity. We need to consider whether performance, risk and capital can be measured and managed consistently.

Solvency II will change the capital requirements for annuity business, emphasising some risks more while, arguably, under-emphasising others. And it will likely have implications for business strategy, especially as regards investment.

But are the new requirements and strategy implications actually understood not only by the insurers but also by those making the rules and are the consequences of their actions understood? Will Solvency II mean that decent pensions become unaffordable to the majority of the population, and is this the intended outcome?

In this paper the working party have not tried to develop or promulgate new techniques for management of annuity business. Rather, it has been our intention to undertake a review of current best practice as this has developed substantially in several areas over recent years. We have also attempted to identify where developments are likely to occur in the future and what new issues may emerge, including in the regulatory environment. It is, perhaps, unfortunate that we have not been able to address in the paper the various operational risks that arise from managing annuity business, although there are some passing references made to it.

However, this is an area we would like to encourage actuaries to develop an interest and experience in as this is an area where we consider that further research could usefully be undertaken in order to seek to manage more closely the risks being faced by insurers.

I am sure the story is certainly allegorical but I think that the days of using a pickled thumb-print in order to prove that you are still alive and therefore claim additional years of annuity benefit is something which is, hopefully, long past.

We hope that the paper has given you the opportunity to reflect on some of developments and consider the issues that we have raised. Not only the obvious questions, such as, “Why is my organisation not managing risks in this way?”, or, “What will Solvency II mean for our capital position?”, but also some of the wider strategic and public policy issues.

The increased spread of defined contribution and money purchase pension arrangements, and the increasing longevity payments, has meant that the market in the UK for conventional annuities and other retirement income products has already grown substantially and is expected to keep growing substantially for the foreseeable future.

As far as I am aware, the tax preferred status, other than at the very highest end of the spectrum, is not under any overt political threat, but compulsory annuitisation has been criticised in many quarters, and this is certainly an area that may come under active review. We are not sure, as a group, whether this, and the consequences of it, has been fully understood by policymakers.

The insurance industry seeks to deliver appropriate products that are, and will continue to be, relevant to customers' changing needs and their desire to seek value for money products that satisfy their various needs during retirement. As future taxation and regulatory changes emerge, actuaries will be called upon to assist companies to understand the changing dynamics of the market, to design, price and deliver appropriate products that meet these customer needs, and to ensure that companies are well managed to deliver the customer promises and manage the risks that are taken on by the annuity provider.

We look forward to this evening's discussion and we hope that the paper has helped to stimulate some of your thinking.

Mr W. D. B. Anderson, F.I.A. (opening the discussion): My background is in occupational pensions and in longevity. Although I am no life insurance expert, I hope that the common thread between annuities and occupational pensions is very similar. It is a simple binary process at heart. You are either alive or dead. Whatever the regulatory regimes that prevail in our two different communities are, there is still, hopefully, an opportunity for some entrepreneurial flair beyond the regulation.

I should like to start off by congratulating the authors for a really comprehensive review of best practice. I found it very enlightening.

It struck me, thinking about many of the comments in the paper, particularly in section 3.1 with regard to longevity, that longevity risk is perhaps unique in the sense that neither the insurer nor the policyholder in this area have any alignment of interest with each other. That makes it unique. The individual, of course, is interested in a long, healthy and secure retirement. The insurer is interested in the opposite happening.

It strikes me that annuities potentially have more in common with spread betting than conventional insurance policies. I do wonder whether there is something we should be learning from the world of spread betting.

I was thinking about Saturday's Six Nations match, the Calcutta Cup match, where the only people who went home happy from that enterprise on Saturday afternoon were the bookmakers, I reckon, with all the spread betting that went on.

Of course, in the eyes of a gambler betting is an investment, a game of skill rather than chance. Back in the world of annuities, each party wins or loses, depending on how long they live, compared to the mid point in the spread. In theory, at least, the astute policyholder can back a hunch, particularly given all the benefit design options that now exist in the annuity market, that can tilt the bet in their favour through the choice of indexation or dependence cover that they choose to take.

They can also potentially bias the bet in their own favour because they know how long their ancestors lived and they know their own medical history, which puts them at a kind of information advantage relative to the insurer. So I think, in "actuarial speak", there is lots of scope for adverse selection in this market. It strikes me that as the market further fragments, and becomes more specialised, there will be a growing need to understand the characteristics of the people that you are pricing or have taken on in the past.

That led me on to think about whether there are things in life insurance that can benefit from insights from the world of occupational pensions and vice-versa. Here are a couple of thoughts.

The first thoughts are for annuity providers. There are many references to the development of longevity risk rating models within the annuity market, particularly the use of postcodes to help that task.

I was personally surprised to learn that annuity providers had not in the past made much use of salary level on retirement as a risk rating factor. Mr Smith was just talking about the potential for many complex rating forms being used in the future rather like motor insurance now. I do wonder whether that is the way to go. Within the work that Stephen Richards has done, and indeed based on my own work, it is shown that salary and postcode together are much more valuable in discriminating between individuals than postcode can possibly be on its own. I do think that there is possibly more mileage in looking at what affluence indicators you can use.

In the world of occupational pensions, there is a great deal of debate going on at a policy level at the moment about the best form for occupational pensions. It is great to see that there is lots of free thinking alive and well in the insurance world with all the developments in different product designs for annuities. It did lead me to think and to wonder who actually takes out these policies, where you give people a choice about what form of protection they actually want, and what they actually opt for in practice.

It would be really useful to the world of occupational pensions and, I suspect, the world of insurance, if it does not exist already, to have some kind of analysis of who takes out these options. I mean a behavioural economics view of what sort of person decides they want insurance, or whether they just go for the largest initial income in every case.

One of the sacred cows that the occupational pensions market might have to start looking at is changes to promises that have been given in the past.

On a positive note to finish, I detected some sense of doom and gloom about the prospect for annuities in future, particularly if compulsory annuitisation disappears. Let me go back to my idea that it is really all just about spread betting. So just as we have seen the bulk purchase annuity market split down into providing investment insurance through swaps, and providing longevity insurance, surely the same thing could develop in the individual annuity market as well. Perhaps if individuals do not buy a conventional annuity, what they will be looking for in future is some form of insurance against the risk, in their view, that they survive to some grand old age, such as an insurance policy that pays out if they get to the grand old age of 90 years or more.

Mr T. M. Ross, F.F.A.: I should begin by saying that I had not intended to speak, but the mention of spread betting on the eve of the Cheltenham Festival means that I cannot resist. I hope to see many of you there!

The comment in section 2.7.2, about the relevance and role of State pensions in relation to annuity markets, is worth exploring further. One possibility is that the main function of the annuity market should be to pay annuities for a temporary period, leaving the State to make payments through the State pension system in extreme old age.

I have just come back from the International Congress of Actuaries in Cape Town. At one of the sessions I attended last Friday, a Japanese presenter made precisely this point of the importance of looking at public policy and the private sector together, and that maybe we have become too wedded to the approach of providing private sector annuities for life.

When the State pension scheme started more than 100 years ago, with a pension age of 70, it was, in essence, a form of insurance against poverty in extreme old age. Many people did not live long enough to receive it. Much has changed in 100 years. Today most people will receive a State pension and, in future, most will receive some sort of occupational or personal pension as well, both for life.

One wonders whether the clock should be wound back and thought should be given to a framework where there is a very much more substantial State pension than at present – sufficient to remove most aspects of means testing – payable from a much higher age – perhaps 80 years – leaving the private sector to fill the gap from retirement until that age is reached. The better off could, of course, have an annuity for life from their private provision if they desired. But the majority would be able to enjoy an adequate income for life through the combination, with the State shouldering most of the longevity risk. The difficulty, as is usual with radical reform, lies in how to move from where we are to such a new system, but with a reasonably long transition period, it would not be impossible.

The other matter that prompted me to make a comment was the mention of longevity bonds, and whether the State should issue them. Effectively it seems to me the State has a choice. It could either issue longevity bonds to enable the private sector to look after extreme old age or it could do it itself, by revamping the State pension system along the lines I have described. That would remove the need for longevity bonds.

Coupled with the comments about the impact of Solvency II capital requirements, the question arises: what is the most efficient way to provide for an assured income covering extreme old age? Would there be opportunities to arbitrage against public policy, were the State to issue longevity bonds? I would be tempted to think – and I say this so that other people can disagree, Mr President – that greater efficiency might well be achieved with a system where the State does not issue longevity bonds but takes the risk itself.

Finally, I congratulate the authors on a paper which not only deals with significant technical issues, but which also prompts important public policy questions.

Mr S. J. Richards, F.F.A.: As a specialist in longevity risk, my comments naturally lean towards that part of the paper. This is not to ignore the other sections – on the contrary, as a non-specialist in investment and regulatory matters, I valued the authors' comments on asset matters and the detail on Solvency II. In particular, I noted with wry amusement in paragraph 5.5.3.2 that CEIOPS "recommended the use of Government yields as providing the risk-free rate". But which government? Greek government ten-year bonds yielded 6.04% last week, whereas equivalent bonds from the German government yielded 3.15%, despite being denominated in the same currency (Economist, 2010). The market for Greek government debt is much smaller and more thinly traded, so part of the extra yield may be due to that much-discussed liquidity premium. But should sovereign debt really be regarded as risk-free? The question is not academic for UK annuity writers – the UK government may have a lower relative outstanding debt of longer maturity, but its budget deficit of 14.0% is much higher than the Greek one of 9.5% (Economist, 2010).

The authors clearly show that running an annuities business has become a lot harder in the past decade. As covered in paragraph 2.7.1, important changes have been driven by customer behaviour: more people are phasing their retirement and the increased frequency with which people change jobs has led to more fragmented pension pots at retirement. As a result, the annuity purchase price has become less reliable as a proxy for socio-economic status, and therefore longevity. In response, insurers have become much more sophisticated in their underwriting of individual longevity risk, using methods such as those described in Richards (2008). The past few years have seen a veritable explosion in the number of risk factors used by insurers. As touched on in paragraph 3.2.3.3, the power of the postcode as an underwriting factor has quickly turned sceptics into advocates.

In paragraph 3.3.4 the authors talk of a reduction in credibility of the data set if the number of risk factors is increased. However, this is only true if one splits the data set in order to fit several mortality models, a procedure known as stratification. If one uses the entire data set in a single, overarching statistical model, then there is no such loss of credibility. On the contrary, the phenomenon of enhancement often applies – adding a new risk factor in a model can increase the explanatory power of the existing risk factors. This important feature of multivariate modelling is covered in detail by Currie & Korabinski (1984), and I have found this “virtuous circle” to be the rule in modelling annuitant mortality.

If the players in a market have varying degrees of sophistication in their underwriting, market-driven selection means the insurer with the least sophisticated basis is left with under-priced risks. This was described as “winner’s curse” by Ainslie (2000), and means that successful annuity writers have to use techniques which squeeze the greatest value out of their experience data. A life office which merely compares experience against q_x from a standard table will lose out to those offices using parametric survival models, for example.

The rise of the impaired-annuity market has created another source of anti-selection. Those who qualify for enhanced rates due to some medical condition would have been in the “standard” pool a decade ago. Measuring the strength of anti-selection in the open market is challenging, but it has the potential to wipe out the profit margin of any annuity writer who ignores it. As the authors note in paragraph 3.3.1, enhanced annuities have larger fund sizes on average than the rest of the market. This raises the obvious question of how to tease apart the roles of socio-economic status and selection. Again, this can only be sensibly done with a statistical model.

The less obvious flipside of the impaired-annuity market is risk for the writers of those impaired annuities. Most impaired portfolios contain a large proportion of liabilities to people with a relatively small handful of specific conditions, such as diabetes and hypertension. Impaired-life annuity portfolios are therefore particularly susceptible to a breakthrough improvement in medical treatment in one of those handful of conditions.

Although the individual annuity market is overwhelmingly dominated by pension annuities, I found it useful that the authors also covered purchased-life annuities and immediate-needs annuities (care annuities). My only comment on the latter is that life expectancies tend to be much shorter than “below 10 years” as cited in paragraph 3.4.1. I find the life expectancy for an immediate-needs annuity is typically under 2.5 years.

I was pleased to see the considerable attention shown to basis risk in paragraph 3.7.3 and elsewhere. This is particularly important in the area of mortality projections, where few portfolios have either

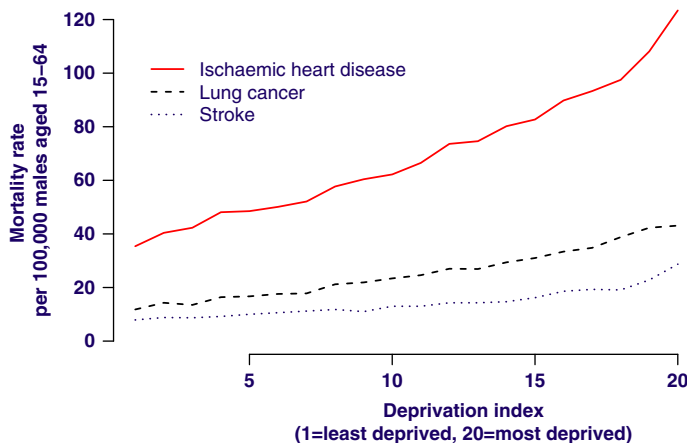


Figure A: Relationship between Major Causes of Death and Deprivation

the scale of data or the historic time series to parameterise a projection model. Richards & Currie (2009) questioned the suitability of the CMI “assured lives” data set for annuity purposes, which leaves most practitioners using population data. However, annuitants are a very select subset of the wider population, and annuity liabilities are even more concentrated still. Richards (2008) showed that half of all annuity liabilities are often payable to just 10% of lives in the portfolio. Insurers and reinsurers of annuity risks are rightly wary of basis risk, which has implications for all methods of mortality projection. It is a particular issue for projecting mortality by cause of death.

Figure A shows the strong link between cause of death and deprivation index which we can take as a rough proxy for socio-economic status. The least deprived have the lowest mortality rates for these three major causes of death. The most deprived have triple the mortality rate of the least deprived for ischaemic heart disease. With these relationships you might think that this is relatively constant across the socio-economic group, but, in fact, different causes of death have different gradients.

You can see in figure B how relative mortality rates change with the deprivation index for lung cancer, colo-rectal cancer and prostate cancer. Prostate cancer in fact reduces slightly as people get towards more deprived groups, whereas lung cancer has an incredibly strong correlation.

Put simply, the people who form the bulk of your annuity liabilities do not die of the same causes of death as the wider population. The relative proportions by cause of death in the wider population are not necessarily applicable to your annuity liabilities.

In Appendix A the authors show that the technical provision calculated using the best estimate mortality assumption was only 0.21% different from that calculated using the Monte Carlo simulations. While it is generally true that these values are very close, an important subsidiary point is that the explicit Monte Carlo simulations usually, I think, tend to produce the marginally higher value. Although the difference is relatively small, I suspect a regulator might prefer the explicit Monte Carlo simulations for precisely that reason. The authors also talk about using model points in paragraph 7.2.2.5, although full portfolio simulations are now easily within reach for even the largest portfolio. Even for a large portfolio it only takes an hour to do 10,000 run-off simulations with stochastic trend risk (Richards & Currie, 2009), so this is not computationally too intensive.

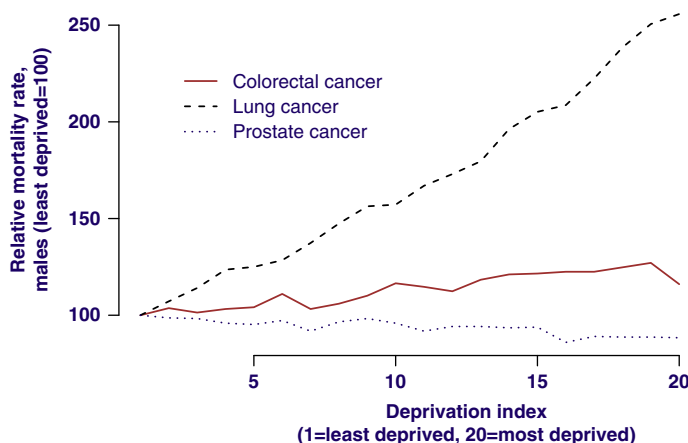


Figure B: Relationship between Relative Mortality Rate and Deprivation for Certain Cancers

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The President: When I read the paper I really did wonder why any insurance company would ever write this business, given how complicated, uncertain, unhedgeable, and unmanageable all the risks were. I noted also from early on in the paper that two of the major firms in this market are Prudential and AEGON, both of whom are substantially represented here tonight. I wonder whether somebody from one of these companies could tell me why they do this. What is it that I am missing?

Mr R. P. Priestley, F.F.A.: I think, as the authors have highlighted, there are a number of risks in annuity business. But I suspect we could sit down and consider a paper on accumulation savings, where I could talk about persistency risk, legislative risk or we could sit down with a paper on individual protection business, where I could talk about non-disclosure risk. I think, fundamentally, insurance companies are in the business of taking risks, managing them and making money out of it. Certainly, from the AEGON perspective, it is one of a range of ways of deploying shareholder capital to make money.

We take all the points on board in this paper about the risks involved. They can be mitigated or managed like any other insurance risk.

Mr R. K. Sloan, F.F.A.: I would just like to share a few thoughts that came to me during the course of this evening's proceedings, which have been most interesting.

To pick up on Mr Smith's point earlier, he talked about the principle of annuitisation coming under review. For my part, I have always advised clients to view an annuity as a combination of longevity insurance and investment. Viewed that way, it does not seem as risky as many IFAs describe it, namely giving all the money to the insurance company if you die early. Of course, we have investment-linked annuities, which highlight that distinction very clearly, namely, investment coupled with longevity insurance.

But Mr Anderson mentioned the scope for adverse selection. This is very much the case. I am surprised that insurance companies do not request medical evidence or some sort of self-certification of the state of health of an annuitant. Otherwise one can get the situation of a terminally ill man who could buy a 10-year guaranteed annuity with 100% spouse's pension with overlap. So if he were to die even one month after effecting the policy, there would be an overlap annuity to the spouse commencing immediately and payable for life plus ten years' annuity instalments. So it would seem that there is a severe risk there that terminally ill people could abuse the system. This, perhaps, has similarities to the need for suicide clauses in life policies.

I was talking to Stephen Richards earlier, and I am relieved to find I am already an annuitant of more than three years' standing as he said that I would have been subject to adverse selection because of the size of my annuity and the relatively affluent area of the city of Edinburgh in which I live. So I am fortunate that I got in quickly and received an ordinary annuity rate.

Paragraph 2.5.3 quotes the statistic that 40% of annuity purchase prices are under £10,000, which implies an annuity of £500 or £600 a year. That may in fact not be surprising; but if one looks to the future under the new NEST scheme, it is quite likely that it will include a large proportion of rather small pots.

In terms of looking ahead, to designs for the future, I am reminded of a proposal that Fraser Low suggested in this hall last year. His premise is based on the fact that one can choose voluntary deferral of one's State pension, which offers quite an attractive late retirement enhancement factor. But you then have a gap during the four or five years (or whatever) of deferment, which could be bridged if the NEST fund could be used to purchase a temporary annuity to bridge the gap before the deferred State pension starts.

A more recent idea was floated by a think-tank, possibly the Centre for Policy Studies. It was for State pensions to increase significantly, I think double was suggested, on surviving ten years after the State pension age, which the CPS reckoned could reduce the overall cost of providing State benefits. And people could then use their NEST funds to bridge the gap before the State pension doubled. £10,000 would go probably go twice as far in terms of buying such a temporary annuity rather than the £500 or £600 per annum lifetime annuity mentioned previously.

So, temporary annuities, if coupled with a State pension that increased from a higher age, could be an attractive way of avoiding the worst drawbacks of the likely large number of very small private pension pots.

The President: At several meetings over the course of the last couple of years speakers have brought together public policy and private savings. Mr. Ross mentioned it earlier; the concept of saving and drawing down money over five or ten years after retirement with the State as the long-stop taking the longevity risk is an idea that has been heard in this hall several times. Yet, disappointingly, it is one which does not seem to have got much traction with political parties of either colour.

Dr I. Currie (Heriot-Watt University): Section 3 of tonight’s paper is devoted to longevity risk and I’d like to make a few comments on this section. In paragraph 3.2.3.5 we read that “traditional actuarial techniques ... would not be adequate to establish base mortality of people with different characteristics such as postcode groups, pension bands and gender ... [since] the volume of data in each of the groups may not be credible using traditional methods”. In section 3.6 we have a discussion of mortality improvements. I’d like to describe, very briefly, a simple technique which does allow the actuary to adjust existing forecasts based on CMI data, for example, with limited company data which are subdivided into relevant subgroups.

Figure C sets the scene. Imagine a company with an annuity portfolio. It has covariant information and we suppose that the company data, along with the mortality data, is just for a small number of years, perhaps eight or ten, and we suppose that these data are split into four subgroups by social class, which might be done by postcode, of course, and by pension size. That gives us four groups. At one end we have high status individuals with large pensions and at the other end we have low status individuals with small pensions.

Figure D shows a CMI forecast done by some method which I do not intend to describe – but you can pick your own favourite method – forecast to 2048 for age 75. Also shown is the CMI data for ages 75 and 76.

We can see a pattern in time at age 75 which allows this forecast to take place. We also see a consistent pattern between ages 75 and 76 which facilitates consistent forecasting across the whole table.

The Figure also shows the mortality averaged across the four groups of our company data. Two things are extremely clear. First, the CMI forecast is badly biased. We have heard something about this already this evening. Secondly, it is quite clear that there is insufficient company data for a stand-alone forecast to be attempted. This is the point that is made in paragraph 3.2.3.5.

However, we have a little trick up our sleeves with Figure E.

There is sufficient company data to allow us to adjust the CMI forecast and Figure E shows us the result of applying a method, which I have christened “piggybacking”, to give mortality forecasts with confidence intervals across all four groups of company data. You can see in Figure E the high status, high pension group. They have, by chance, pretty much the same mortality as the CMI group. We also have the low status, low pension group with much poorer mortality.

Data splitting

- Social class: two levels
- Pension size: two levels
 - * Level 00: high status, large pension
 - * Level 01: high status, small pension
 - * Level 10: low status, large pension
 - * Level 11: low status, small pension

Figure C: Data Splitting

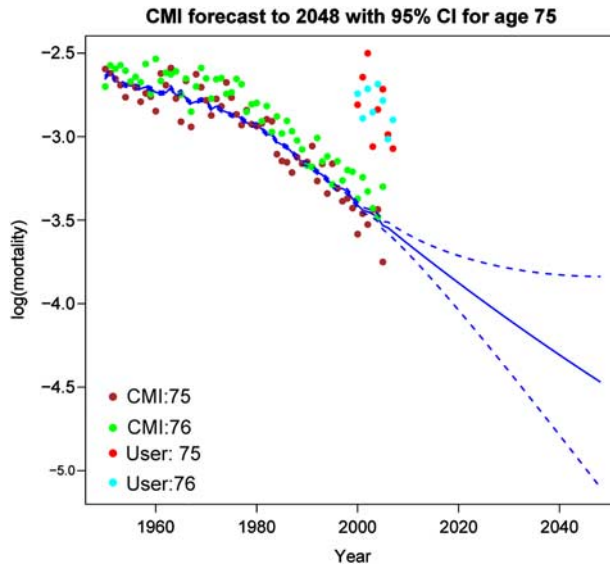


Figure D: CMI forecast to 2048 for a 75 year-old

Reference

Additional information for the “piggybacking” method:

Adjusting for Bias in Mortality Forecasts at the *Mortality & Longevity Conference* in Edinburgh in October 2009. Slides accessible at: http://www.ma.hw.ac.uk/~ian/research/talks/Currie_Longevity_4up.pdf

Forecasting with limited portfolio data, Longevity website, posted September 2009, at <http://www.longevity.co.uk/site/informationmatrix/piggybackmodelsorforecastingwithlimitedportfoliodata.html>

Mr J. Hastings, F.F.A.: The area I particularly wish to address this evening relates to public policy in relation to pensions and annuities. Two things about annuities that you need to be concerned about are longevity and investment risk. I am not sure how you can solve the problem of longevity risk other than perhaps, as Mr. Ross suggested, with an extreme age annuity, possibly provided by the State.

A lot of comments I see in the press about annuities and pensions in general usually come from the industry itself. I often think they are talking about this from inside the bubble and do not actually consider what is going on outside the bubble. So they are fairly keen on the concept of offloading their risk in some manner, e.g. using longevity bonds, provided by the State, or greater issuance of index-linked gilts, again by the State. If I put on my taxpayer hat and ask myself the question, “What is in it for me as a taxpayer?”, the problem I have is determining the fair price for the inflation risk I am underwriting. I’m sure any of these bonds has a fair price. But the risk is a bit like my golf score: there just seems much more risk on the upside (e.g. unexpected higher inflation) than on the downside. Why should the taxpayer be left to pick up this potential burden of underwriting?

Longevity risk reveals exactly the same problem. It is hard to see who would want to underwrite longevity risk because the risk of the upside is just potentially so extreme that it probably really needs to be the State that provides it.

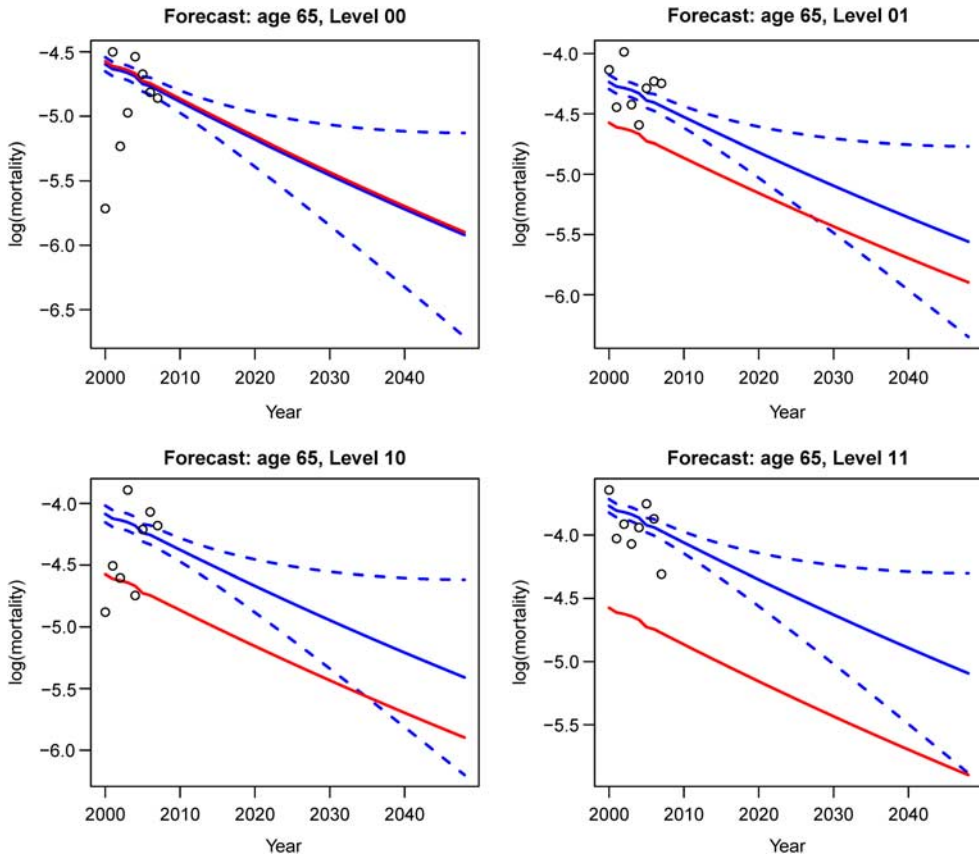


Figure E: Mortality Forecast of Each Sub-group using “Piggybacking”

So the question I then begin to ask myself is: is there a way that you can give the pension industry something they wish for but in a way that suits the State (or me, as a taxpayer)?

One thought I had was that, rather than issue more index-linked gilts, it may be possible for the State to allow retirees a one-time opportunity to annuitise using a government guaranteed rate of 2% real but limiting the opportunity to a fixed lump sum amount, as a once-in-a-lifetime opportunity. Annuity providers can then accommodate the longevity element left in that annuity, knowing the interest rate has been guaranteed.

This might sound like an enormously expensive thing to do. But there are other benefits. For example, it could encourage more pensions saving. If you set the lump sum amount at a level which provided something like £3,000 or £4,000 p.a. of pension, then it could come in as a replacement second pillar sitting on top of the basic state pension.

If you can also make this available to people who are in final salary pension schemes, for example, then you can relieve some of the pressure on these schemes and potentially on the PPF. So it could work both for people who are in final salary or defined benefit pension schemes and for those in defined contribution pension schemes.

You can separately consider how to deal with any balance amount left over. Any annuity or drawdown would no longer need to be risk-free. Options can be more speculative, e.g. using unit-linked annuities. This would relieve some of the pressures on solvency margins.

This raises enormous taxation issues, another area of public policy. Why is it that the vast proportion of the tax relief that builds up within pension plans in this country goes to the much better off members of society? We are already seeing steps being taken to scale-back contribution relief, so that part of the debate is already happening.

Holistically you can draw all of this together. If, as a profession, we were able to advocate some more interesting alternatives to what has already been put forward in this space, we might find other means of satisfying some of the requirements we are looking for, better alternatives to that which appears in most of the press commentary that I see, from what I would consider to be principally insider, industry sources.

The President: Derek Smith posed the question, “Is Solvency II going to make good pensions unaffordable?” We have heard the average pension, the average compulsory annuity, is very small; but the debate typically relates to a minority who want the freedom to tailor their retirement income to their own circumstances.

It does not seem beyond the wit of the industry, nor the wit of government, to give most people what they need and want: to give security for those on small pensions but to give a degree of freedom to those who have more money and feel that they would like to take advantage of that freedom. Perhaps there is a role for our Profession to offer some imagination there.

Mr P. G. Telford, F.I.A. (panel member): President, I will pick up your point about the financial impact of Solvency II.

Solvency II, in effect, puts the insurer on what one might call a discontinuance funding basis. In other words, the insurer must be able to bear a one-in-200 year shock, and then dispose of its business in good order to some other commercial enterprise, handing the acquirer sufficient assets to re-finance the business commercially and carry it on.

I wonder whether there is a parallel with the experience of defined benefit (DB) pensions. I make this point tentatively, because it is over 20 years since I was in pensions practice, but that description of Solvency II sounds to me a little bit like some of the changes that have happened in pension funding in the course of my career. We are currently living with the out-working of those changes for the DB pensions industry. That said, the challenge posed by Solvency II is different, not least because annuity business can be run, and risk capital requirements determined, in the context of a diversified business. Not every annuity insurer has that position but many do.

We have gone into some depth about how the volatility of capital requirements is going to change, and companies are already evolving ideas as to how that might be managed.

Even with as much notice as we have had about Solvency II and the general shape of the regime, some sense of surprise might still be around as to its implications, when we approach the implementation date and the likely impact on not just insurers but customers becomes apparent.

There has been plenty of attention to this in the financial press, but I am not aware that the Actuarial Profession as such has voiced much on the topic, although individual members have contributed. I hope that not just the ten of us who formed the working party, but the Profession as a whole, will make a contribution so that we manage this transition and continue to provide a line of business that is to the public good.

The President: One of the things that is happening among the very wealthy members of defined benefit pension schemes is that when they reach retirement, because of current tax changes, a number are actually taking their money out and moving into a SIPP. The paper does not really have the data to identify how much money is moving in that direction.

I wonder whether, perhaps, not just the very wealthy but more of the people reaching retirement, middle-earning people, might take that step if they knew that they could take a transfer value and have it secured in an insurance company and protected to a one-in-200 chance of failure compared with the much lower security that is offered by a defined benefit scheme. Would such people take their money and buy those individual annuities, if the schemes allowed it, and would a number of pension schemes be glad to see them go to gradually reduce their liabilities down to the size of the company? I wonder whether there is possibly a dynamic emerging, notwithstanding Solvency II, which might make this more attractive to an as yet untapped group of defined benefit pension scheme members.

Mr Anderson: I am intrigued. Mr Smith posed a question about the longevity bond idea, and whether the Government should issue it. I am probably in the camp which thinks that the Government should not issue it at the moment. Part of the reason is because the Government has a large exposure to longevity risk already through all the longevity bonds it has already issued in the form of the basic State pension and the State second pension, although it views them slightly differently.

I should like to try to support Mr Smith's call for somebody to speak in favour of why the Government should be interested in issuing such instruments. I hope somebody in the audience has a bright idea about why it is in the public interest.

Mr B. J. Duffin, F.F.A.: I am a non-executive director of the Debt Management Office which will be responsible for issuing longevity bonds, if they ever come about. These are my own views. They are not the views of the Office.

In respect of the UK, I see very few arguments in favour of issuing longevity bonds. If you viewed the UK in enterprise risk management terms this would not be a step towards ensuring the achievement of objectives; it would be a step away from it. Not only do we have the State retirement pensions, such as the current State pension and other State benefits payable on attainment of advanced age, but we also have the pensions for public sector employees themselves compounding and producing longevity risk.

However, I would offer as a suggestion that if we widen our perspective to some of the developing countries, we may find a different point of view. I am speculating a bit here but I would think that if you looked at India, where the demographic profile is that of a young population and, if that population increases as mortality declines, particularly when they are trained and able, the economy and government revenues expand as the workforce is more economically active for a longer period.

There may be more alignment of interests in a country like that issuing a longevity bond, confident that if longevity was actually greater than expected, it would also have a greater ability to pay the bills as they fall due.

You would have to have some very clever investment banking and swapping techniques to transfer that risk instrument back to meet sterling, UK longevity needs; but perhaps this is one example of the thinking which might help, just as in general the decumulation problems we face in western economies are a little easier to grapple with if you look at the world as a whole and if you combine the financing needs of developing countries on the one hand with surplus capital available from developed countries on the other.

The President: I met the people from the Provident Fund of Singapore which, as you may know, is a controlled economy. They were not going to offer longevity bonds. They had not previously offered annuities at all. People reached their retirement and they took a lump sum from the provident fund.

They have done two things. Firstly, they have done as John Hastings suggested, and they have issued Government bonds which are only available to the Provident Fund which give a guarantee of something like 2% over inflation. But they are available only for that purpose. The Government is taking some risk whatever the market price for those bonds is.

Secondly, they have addressed, at least in these early years, longevity by keeping the right to reduce the pension annuity from the Provident Fund in the event that longevity actually exceeds expectations. They have a young population. It is a long term issue for them. But they have decided that they need a safety valve on longevity. Taking the financial risk of issuing bonds at 2% over inflation appears to be regarded as a lesser risk for the economy of Singapore than having the open-ended longevity risk.

It is interesting that they have taken that view. It may be a kind of “walking before they run” view, but they are much concerned by the longevity issues that they see in the western world and do not wish to get off on a footing that ties them to that for ever.

We have heard almost nothing about credit risk tonight. Yet for some time it was perceived that holding corporate bonds was just fine for annuity portfolios. That seems to have been a belief that has been much-tested over the course of the last couple of years. I am interested to hear from someone with an insurance company background on how they view that issue going forward.

Mr Priestley (closing the discussion): I am not going to take up the invitation to talk about credit risk in insurance companies. I have a colleague from asset management sitting here who has kept quiet so I will follow his example.

To summarise the discussion tonight, I think there are three common themes coming through.

There was the theme of public policy and how we link annuity business into public policy. In particular, there were a number of interesting points raised about what the role of the Government should be in either supporting or supplementing the annuity market.

One of the interesting points that the authors raised in the paper is that the UK annuity market has been developed through a combination of tax breaks and that it is much more developed and much larger than any other developed annuity market. An observation was made that most

people, given the choice, would choose not to annuitise. I think that provides an interesting dilemma for us. If we take away compulsory annuitisation, will people just spend their money and then rely on the State later on? I would be interested to hear the authors' views on that.

I also noted from the paper that the average case size of annuities tend to be below £10,000. At that point the level of income people receive is possibly not significant for them, and if compulsory annuitisation was removed the temptation just to take that money and have the round-the-world cruise must be almost overwhelming.

There is a real challenge there between giving people a choice with what to do with the money and actually having a pension system that is designed to provide for people in their old age.

I heard a lot of discussion about longevity risk, how difficult it is to manage. I think the President threw out the challenge as to why anyone would take on longevity risk and choose to manage that to make money. Mr Richards gave us some insight into some of the techniques that could be used to measure it, and to project it going forward. He made some observations about the difficulties of using insurance company data and population data to project improvements.

Certainly managing longevity risk has been a challenge for any writer of annuity business over the past 5-10 years, understanding how to project the mortality and to make sure that there is not a need to revisit these projections again and again, resulting in strengthening those assumptions. Dr. Currie suggested some solutions to deal with that issue.

I would make the observation, and the authors also noted it in the paper, that, despite this being a difficult risk to quantify, there are certainly people out there willing to buy longevity risk at the moment. The authors noted a couple of new entrants into the bulk market. There are also banks willing to trade. I just wonder whether the authors have a view as to what the banks who are offering to buy this risk know that those who are willing to sell do not.

The final thing I thought was very interesting was product design. There was some discussion about the behaviour of policyholders in particular. Mr. Ross asked: 'Do people behave rationally when buying annuities?' I will be interested to hear the authors' views. Having seen some data on our own annuity portfolio at AEGON, I know we sell a significant proportion of single life annuities with no escalation and no RPI benefits. It is not clear to me whether that it is always in the best interests of people buying those annuities to choose not to protect their annuity against inflation. There is certainly a challenge there if you believe rational people would choose to protect themselves against inflation.

The authors also note that with a fund of £10,000 the access to advice for these people is very limited. I am not sure whether they have a view as to how to bridge that gap.

The final question that they touched on very briefly was Solvency II and the role of Solvency II in annuity pricing. We were discussing this before the meeting and Mr. Smith said if we are struggling for comments then he was just going to mention "liquidity premium". I am actually quite surprised at how little debate there has been tonight about the impact on the pricing of Solvency II. This is proving to be a very hot topic for the industry, for both those who are writing annuity business and those who are encouraging people to save at the moment for their retirement when they do not know what they are going to get in terms of an annuity rate. It feels to me that that is a big challenge.

The final point is on the financial management of the business. One of the most interesting things to think about with annuity business is there have been a number of different profit measures over the past 5 to 10 years. It strikes me that if we, as a profession, are struggling to decide how to measure whether this business is profitable or not. Different measures give us different views of profitability in this business, whether we use embedded value, market-consistent embedded value or IFRS. If we are struggling to decide how to measure whether it is profitable or not, then it is possibly not surprising that the President is asking me how do I know whether it is good business or not. There is certainly a challenge there to agree a consensus for what makes this business profitable and actually to hold on to that measure for a period of time.

Mr P. Fulcher, F.I.A. (panel member): First of all, on behalf of the authors, I should like to thank you all for the discussion tonight. There were a lot of very interesting points. There are only three of the 10 authors sitting here so we will endeavour to provide a fuller response to some of the points made when the formal transcript appears in the British Actuarial Journal. I will make some initial comments. Some of them will be in more of a personal capacity than on behalf of the authors.

There was a lot of discussion around longevity risk in terms of managing it from a data point of view. I think we will defer to the experts on that one. Mr Richards made a very valid point. In paragraph 3.3.4, we were essentially saying that if you take data and segment it ex-ante, in other words, you decide what the rating factors are in advance, you lose credibility in each bucket. I took the point that Mr. Richards was making that if you ask the data what the factors are, ex-post, you do not lose credibility. You are still using the entire data set. Indeed, you get the enhancement effect that he mentioned. That was a very valuable point.

I did not understand Dr. Currie's "piggyback" method quite so well. We will need to give this further thought. It seems to me that, if one extrapolates from the graph, one is implicitly assuming that the trends are the same for your population as the general population data, and you then get the basis risk issue that Mr Richards mentioned. We will revert on this in the British Actuarial Journal.

As Mr. Priestley said, there was a very valuable debate on public policy and the interaction with private pension policy. As the President said, that is a discussion which the Profession has raised many times. We owe it to ourselves, as a profession, to somehow make some real progress with the political parties.

But it is never very easy for people to do things politically that make it look as if pensions have somehow been worsened.

At times, again a personal view, there has been something of an obsession from the State that, because such generous tax relief has been given up-front for pensions, they are going to have to be very restrictive in terms of the requirements for how that pension can be taken. Given, as we mentioned in section 2.1.2 of the paper, that some of that more generous tax relief is being taken away, particularly at the higher end, maybe this will break the log-jam of public policy and allow more flexibility.

Various suggestions that were made that it could be the job of the private sector to provide pensions for a period of life, and the job of the public sector to pick up the very long tailed risk

of very old aged people from, say, 85 years, and to provide a minimum income for that age group. I think this could potentially be quite a valuable solution to various issues: the concern with taking longevity risk in the private sector, and some investment issues as well. It is that forced need to match very, very long-dated pensions that requires the purchase of very long-dated corporate bonds with a lot of spread volatility, and the purchase of very long-dated interest rate instruments that simply forces down interest rates because there is no one really on the other side. So there is a valuable area there where the Profession needs to continue to develop our public policy side. It is to be hoped that this paper and this debate will help forward that aim.

I have been challenged by a few people as to why we think the Government, or indeed anyone else, should provide the other side of longevity. What do “clever banks” know that insurers do not?

I think if you look at it from the purpose of people on the other side, it is interesting that the EIB did try a few years ago to launch a longevity bond. The Debt Management Office (DMO), as has been said, have looked at it and decided not to. Why did the EIB think it was a good idea? They thought it was a way of getting cheap financing. They could see a demand for this instrument and thought that simply by issuing it they would get their debt at a cheaper price.

The DMO, I know, have concerns the other way round. Firstly, the UK Government is very long on longevity risk already. Secondly, there is a price you pay for launching a novel new instrument. You may get a cheaper price in one sense but, on other hand, it is a less liquid instrument so the Government would also probably find they would lose the liquidity premium they get in issuing debt instruments if they issued too many bespoke instruments.

A related issue is whether the Government should offer LPI bonds, rather than RPI bonds, with the same inflation caps and floors as pension funds. But it may well find that it costs them more than issuing the vanilla instrument.

It is interesting that when the EIB issued their bonds they weren't actually assuming the longevity risk. It was actually a reinsurance company, ultimately, who was providing that longevity hedge, and I think one of the clever things the banks know is how to repackage risk. With a lot of investment banks offering these longevity products, quite a lot of that risk ultimately gets passed to the reinsurance markets.

Mr Telford once made the comment to me that longevity bonds seem to be a case of “which expensive wrap would you like on your reinsurance contract?” Why would insurers not just want to go to the ultimate longevity hedge provider direct? For pension funds they often cannot do that, so it is valuable for them; for insurers, there is that slight question mark.

On the other hand, banks have managed to find people other than reinsurers to take longevity risk. What do these investors think they know, and why are they attracted to longevity risk? First, it is uncorrelated. That is almost unique. When we think of the credit crunch, pretty much every other sort of asset class blew up at the same time. The only thing we actually got in the credit crunch longevity-wise was a ‘flu epidemic that would have worked the other way round.

A crash in the stock market, a crash in markets generally, if it is going to be correlated to mortality at all is probably going to be correlated to worse mortality and probably has no correlation whatsoever. That has genuinely attracted interest from some investors.

The other one is they just see the price. They see the forced demand for customers to buy the product. They see the forced demand for insurers to hedge that risk, and therefore there is an assumption that you potentially get quite an attractive risk premium if you are on the other side of that deal. There may also be a view that we, as a profession, have overdone some of the mortality improvements we are factoring in. So we do see real risk desire on the other side of longevity instruments, but probably not enough to meet the massive demand that is required.

Just one other comment on the Government issue. It is worth thinking back to why the Government did issue inflation-linked bonds. Mr Hastings made the comment that he was not sure, as a taxpayer, why the Government were doing that. One of the reasons was actually a signalling effect. They wanted to signal by issuing inflation-linked bonds that they were going to keep inflation under control. I am not so sure they want to signal they are going to keep longevity under control.

Mr Anderson made some valuable points on interactions between the occupational pensions sector and things that could be learnt. He mentioned salary as a factor. Insurers, as we mention in the paper, have historically used pension amounts as a proxy, but maybe a poor proxy, and maybe there is something more that can be done in that area.

I thought his comments about the trend in the pension sector to more DIY buyouts were valuable. That is, ultimately, pension funds are often willing to separate the various risks, so prompting the question: is there a role for the insurance market to offer pure asset solutions or pure longevity solutions?

Mr Priestley asked whether we, as a working party, think people act rationally. I think they act rationally in the sense that they do not actually want an annuity. So they act rationally by having the cheapest version, one with no indexation and no spouse's pension. Is that irrational in terms of their long-term welfare? In other words, is there a monetary illusion? Clearly, there is. That is where, again, public policy plays an important role.

Again, perhaps it should be the State that steps in as that provider of last resort. Maybe it is better that the State does that directly than does it indirectly by making insurance companies sell expensive and unwanted products to their customers.

How do you bridge the gap in terms of the tiny amounts of pension that are being paid? As we mentioned in the paper, non-intermediated sales are increasing. One may ultimately see the comparison website model, with customers being able to go on the internet and buy the annuity that finds the best terms for them. That does not interact very well with the need for advice on the complexity of product. Again, maybe, as an industry and a profession we have a role to develop the simple products that customers can actually choose from and then just obtain the best terms for themselves.

The last point that Mr Priestley made was the various measures that insurers are subject to. As somebody who does not work for an insurer, here is a little bit of a challenge that I throw back to the industry: what do you really believe? A lot of the measures, Solvency II, MCEV, IFRS feel like measures that are being imposed on the industry from the outside. I think what analysts would like to hear from insurers is exactly how you think this business works. How do you measure your profits? And then come up with a measure that fits that.

Some of the discussions about things like IFRS, MCEV, and Solvency II seem to have become a lot more theoretical than actual, a lot more angels dancing on the heads of pins to define exactly how things are calculated. Again, as an industry, we need a bit of simplification in some of this.

As a final comment on Solvency II, we make no apology for the fact that that is probably the longest section of the paper.

The point we were trying to make is there is a lot of detail in Solvency II and a lot of the devil is in the detail. One of our concerns is that Solvency II has become too theoretical, both in terms of its implications for public policy but also its practical implications for insurers and their ability to implement it. A very high standard has been set for things like the evidence for a liquidity premium. We think, in reality, a more pragmatic approach might lead to better solutions.

In closing, when we wrote this paper, we were not aiming to break new ground, and we were not aiming to provide all the answers. What we really were trying to do was to document current best practice, highlight issues, and, perhaps most importantly of all, stimulate discussion.

Thank you very much for your contributions. We hope the discussion we have had tonight, and the one that we will have in a week's time at the Institute, is the start of that process. We urge you all as interested stakeholders in the annuity market – whether you are consultants, regulators, people from the DMO, insurers or investment bankers – that, as a profession, we carry on that debate and try to make sure that we influence public policy, as well as best risk management practice, for the good.

The President: Thank you very much. On the question of whether people act rationally in the pension fund world for companies that are finding the burden of their pension scheme almost unbearable, there is a benefit change called 'Pensions Exchange'. You can offer people the opportunity to exchange their limited price indexation pensions for a higher starting pension, but one that perhaps has price indexation only up to 2% or 2½%. My limited experience of this is that about as many as 40% of people take that switch.

Their rationale is that a bird-in-the-hand is to be preferred. There is evidence that where people are given a choice, they do value the pound now rather than the pound later. Whether that is because they think the pound later will be taxed more highly, whether they do not believe that they will live that long, whether they believe that in fact their spending needs are between the ages of 60 and the early 70s when they are at their fittest, whatever, I have no idea what the reason is, but there is quite a lot of evidence that people will do what Mr Priestley said, which is they will take the option that gives them the maximum amount of money early and take the consequences.

Mr Fulcher: May I make a quick comment on that? I think you have issues on both sides there. Taking this up with international precedents, in my time in Japan, there was a period when people were offered the choice of swapping an endowment policy for a whole life policy. The endowment policy had, say, a 5% guarantee, the whole life had only, say, a 1% guarantee. But the sum assured went up simply because one was a ten-year endowment and one was a whole life policy. A very high proportion of customers offered this choice went for the whole life option because of the visual increase in sum assured, even though they had actually given up a valuable guarantee.

So on the one hand there is that risk that customers are acting irrationally; on the other, I think Solvency II, in particular, does pose the real question: do customers genuinely place a value on the guarantees that we as an industry provide, which is as high as the cost to us? By and large, I think the answer to that is, unfortunately, “No”.

The Danish pension industry is currently going through a process of simply saying to customers, “Do you want your money back, or do you simply want it in the form of a unit-linked contract, because this guarantee you have is costing us X. We can buy you out of that at a cost which is a win-win situation for both parties concerned.”

This could be taken as a negative trend from a social perspective, but I think it is a real trend that Solvency II will accelerate.

The President: It will force the issue on what price a guarantee.

Thank you, authors and closer. At the opening of tonight’s session I did pose the question: given 90 pages, each of which introduced yet another risk, many of which were unhedgeable or unmanageable, why would anybody write this business?

I think tonight we have heard, at least in the longevity area, some grounds for hope that these risks can increasingly be better managed than they have been. Whether we have heard so much on the other areas, I am not sure. But, as Mr Fulcher said, perhaps the Profession has been too willing to be reactive to the many profitability and other measures that have been imposed upon us. It might make good sense for the Profession to do some more work to try to have an identifiable measure of profitability that we could all rally round, irrespective of the regulatory measures that are being imposed.

The insurers have been encouraged to find yet more imaginative products for what seems almost certain to be a burgeoning market from all sorts of different sources. We, as actuaries, can also perform a useful function in helping the public figure out which of those various imaginative options is the right one for them, helping them to guard against people seizing what is perhaps an illusory better option.

But for the authors who encouraged us to carry on the debate, I suspect the will of the floor would be that the authors too should carry on their work as a working party. I do not think anybody who has read this paper can have done other than learn a lot about the issues, even if it has not solved many, and are thirsting now to take this on and try to find some solutions to the many problems that have been posed.