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This abstract relates to the following paper: Cowling, C.A., Frankland, R., Hails, R.T.G., Kemp, M.H.D., Loseby, R.L., Orr, J.B. and Smith, A.D. Developing a framework for the use of discount rates in actuarial work. *British Actuarial Journal*, doi: 10.1017/S1357321712000013

The President (Mr R. S. Bowie, F.F.A.): Over the last two or three years a number of people have expressed concern that we may have lost sight of the learned society ethos. The aim to advance actuarial science has been a hallmark of the Profession for 160 years. Although there has been a lot of good 'bottom up' investigations, with member interest groups looking at specific topics and bringing forward good papers for consideration, there are also big strategic issues that the Profession needs to be addressing. Amongst these none is more central to the work of all actuaries than the use and, unfortunately, the abuse of discount rates. So the Management Board of the Profession asked a distinguished group of actuaries to carry out a research project on the use of discount rates and how we could create a framework within which actuaries and non-actuaries could better understand the appropriate use of discount rates. It is that paper that we are here to receive this evening. We have a very distinguished list of authors.

Charles Cowling was the chairman of the working group. Charles is the managing director of Pensions Capital Strategies, and has been an actuary for 25 years, a Member of Council, Chairman of the Pensions Practice Executive Committee and a great servant to the Profession. Andrew Smith is a Member of Council and was recognised a couple of years ago with the award of the Finlaison Medal. James Orr, whose background is in general insurance, is now at the Financial Services Authority. James, too, has given great service to the Profession and is a Scottish actuary.

Mr C. A. Cowling, F.I.A. (introducing the paper): I am going to give a short introduction to the project and then hand over to Mr Smith and Mr Orr to take us through the key parts of the work. We will then open the meeting up to discussion. Ms Loseby will then close and say a few words about where we go from here.

As the President said, we were charged with looking at the whole issue of discount rates, taking a perspective across the entire Profession. It was deliberate that there was not a particular practice focus as the issue of discount rates affects all areas of actuarial work.

The Management Board tasked us with pulling together a group of people that would represent the Profession, and that is the group that you see before you. We were assisted by Ruth Loseby, who,

being in charge of our research function for the Profession, marshalled the resources of the Profession, and Maria Lyons, who provided all necessary secretarial assistance.

The Profession created this project about 18 months ago. It set various objectives. It asked us to look at current practices, existing research and debates to investigate what common terminology was used for communicating discount rates and to investigate how discount rates are used by actuaries.

The steering committee asked Chris Daykin and Chinu Patel to prepare a report, which was published on the Profession's website in May, 2010. That report gives a good summary of current practices, why we are where we are, and of some of the development in thinking that has occurred in the area of discount rates. A huge amount of research went into that and both Mr Daykin and Mr Patel are to be highly applauded for the very significant work that they did in preparing their report.

Our task was then to take that report and to propose a framework for the future. The final part is a consultation and communication process, not only with the Actuarial Profession, but also with users of actuarial advice and other people who are affected, so that we can see how our framework might develop and impact on how actuaries give advice and how it is received. So we will consider our report which is trying to develop the framework, in particular, looking at creating some common language and at how we influence debate.

This was, as the President said, the Management Board's desire. They gave us a blank sheet of paper, impressed upon us the learned society element of the Profession, and gave us the opportunity to make recommendations without any preconceptions. Whether the Profession accepts any of the recommendations will be partly dependent upon your response to it.

A framework is not about taking things away, but giving actuaries tools by which they can communicate effectively, potentially reducing diversity of practice where that is appropriate, but often helping actuaries to explain why seemingly very similar questions might have different answers.

One of the things that comes out is that key to our choice of discount rates is the question we are answering, that is, the purpose of the calculations. There will still be diversity in practice, but our desire is that there should be much greater transparency in how we use discount rates and how we include risk within discount rates.

Discount rates have many different purposes and users. These include capital requirements, accounting, shareholders and management. Within different practice areas there are trustees and members of pension schemes and there are policyholders and different people involved in the selling and promoting of insurance products within life and general insurance companies.

The creation of a framework will help us to ensure that our advice is better. Some diversity may be reduced, but we believe that there is huge scope for actuaries to communicate what they are doing in a way that really improves the understanding of our clients.

The presentation is in two parts. Mr Smith will briefly take us through some of the work that Mr Daykin and Mr Patel did on the research that has been done. He will summarise where we think

we are today and give some of the technical background to the recommendations that we have made.

Then Mr Orr will take you through some of the key proposals and recommendations that we offer as ideas for you to discuss and debate.

Mr A. D. Smith (student) (introducing the paper): I am going to start off by summarising some of the work that Mr Daykin and Mr Patel did.

One key conclusion from their paper is that discounted cash flow calculations actually fall into two distinct categories. Sometimes both of them get called valuations, but they are quite different.

The first is a budgeting calculation. That means that you have a portfolio of assets and an estimate of what the returns on those assets might be. You calculate how much of those assets you have to hold to pay off a set of liabilities given that future return.

A separate kind of calculation is the matching calculation. There you totally ignore the assets that you actually hold and you look for a theoretical portfolio, whose cash flows would match those of your liabilities, and then you put a value on the liabilities corresponding to the assets in this theoretical portfolio.

Selection of the first or second approach, Mr Daykin and Mr Patel said, was mainly driven by the purpose of the valuation and the context. Superficially, they both look the same, because in a spreadsheet you implement them in the same way by discounting the cash flows. Conceptually, however, they are very different.

The rationale for the matching cash flow method usually comes from finance and the concept of no arbitrage, or the law of one price. This assumes that if you have two sets of instruments with the same cash flows but different prices, then arbitrageurs enter the market. They buy the cheaper, sell the dearer and pocket the risk-free profit. They cannot do this for long because the prices move to eliminate their arbitrage opportunity. This means that you can get from the nature of the cash flows to a unique value. This is central to what I call the 'modern finance' approach to valuing cash flows.

Some questions arise. Suppose that you decide not to hold the matching portfolio, which would normally be the case for defined benefit pension plans. Does that affect the valuation? Under a matching regime the answer is "No": you put the same value on the cash flow, regardless of how you invest the assets.

It is not as trivial as you might think to put values on cash flows by this method. You start off by selecting instruments that might be in your set of discount curves. If you follow this process through you end up with a few building blocks.

However, you might have some adjustments to make as the instruments that you are holding are not a perfect replication. Inevitably there will be default risk, so you typically might make some adjustment for that. Irish insurance companies have some interesting choices to make as to whether they regard their government bonds as needing some default adjustment.

There are, potentially, also adjustments for liquidity. The problem here is that the entire theory is grounded on the notion that transaction costs are zero. In the real world transaction costs are not zero. You might say that that is easy to fix, that we can take the average of the bid and the ask prices. But, unfortunately, that does not quite do the trick because all of the theoretical arbitrages that would make prices converge do not work in the presence of transaction costs, and so you end up with a few other potentially messy adjustments for illiquidity premiums. As a result this method, although it looks objective, has more subjective elements to it than is sometimes thought.

I have a theory that this is all part of the lifecycle of actuarial ideas. You start off with something that looks very well defined and gradually people push at the boundaries. Actuarial governance being what it is we do not really have anything to pull them back in again. So everything looks more subjective after it has been used for 30 years than after it has been used for five years. Maybe that is the reason why these look objective at the moment.

Budgeting calculations are conceptually simpler. You are measuring the liability starting from the viewpoint of how it is going to be financed. The difficulty here is that, because you cannot exactly match the cash flows from the assets and the liabilities, there is a lot more subjectivity in the calculations, and potentially more judgment about the confidence level needed to meet these liabilities.

The main use of the budgeting approach is in valuations of defined benefit pension schemes. Embedded values on the life side also used to be rather like this. The models that analysts use to value companies are also often a bit like this: they are not trying to find matching portfolios, they are just trying to estimate cash flows and think about the returns that somebody might need and to discount them.

Those are the two kinds of calculations.

The main difference between the two approaches is the extent to which you are going to take advanced credits for favourable asset outcomes in measuring your liabilities. In other words, how prudent are you being? You can reconcile the two approaches if the expected return on your assets is the same as the return on your matching portfolio. But it almost never is in practice. The expected return on your assets is usually higher, and that is why you hold those mismatched assets.

This can create a communication challenge for the Profession. It may not have always been the case in the past that the different parties who are being advised with the different kinds of calculations fully appreciated the differences between them and the reasons for those differences. We have some recommendations which we hope will improve matters.

Mr J. B. Orr, F.F.A. (also introducing the paper): The main issues are time and the way that things evolve over time, the way in which we understand the risk of things evolving and unwinding over time, and the advice that we give to our clients and to our companies with regard to the risks incumbent in that unwinding. The emergence of reality against our own theories and projections is the test of our advice.

A clear message that we need to get across is that this is fundamentally about risk. Although risk is a difficult thing to measure, or even define, it is an absolute that we ignore at our peril. If you look at the way in which you model cash flows and the way in which you value cash flows through a budgeting approach, you do need to think about the implications from a matching perspective.

To reiterate, we can look at discount rates through two alternative approaches: the matching or market consistent and then the budgeting based on a view of expected future returns. Obviously there are constraints on the extent to which we can go for a pure matching approach. The market consistency principle may be well established, but the practicalities do involve a lot of difficult decisions.

Consider Figure 1.

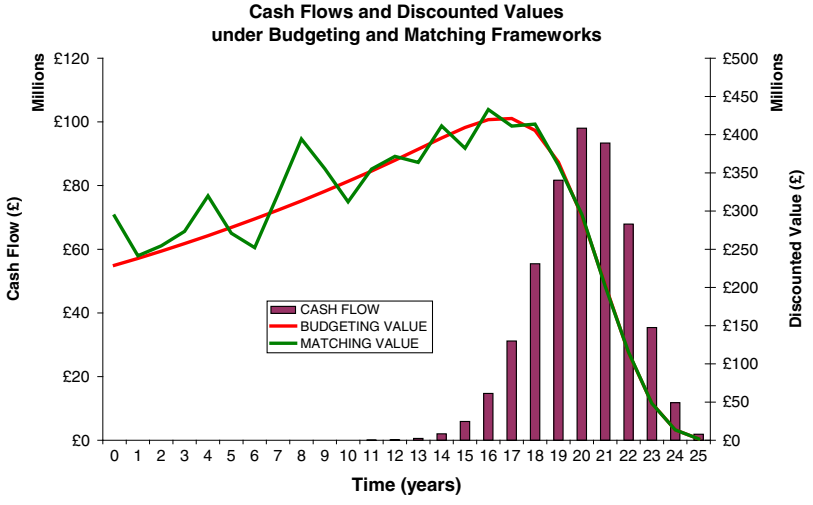

Figure 1. Cash Flow Example – Framework Comparison

Figure 1 depicts a hypothetical cash flow stream, with a mean term of about 20 years, a smooth build up after 12 and a diminution at 25 years. It makes a nice picture even if it does not necessarily represent what you typically see in a pension scheme or a life insurer!

We can value the cash flows under the two frameworks and use the differences as a way of picking out key points about risk. If we observe the gap between the two discounted values over time, what do they actually represent?

Regarding the budgeting value, we have the idea that there is a single discount rate that is applicable over time, and it produces nice mathematics and nice smooth curves. This is how we were first taught about using discount rates but we are increasingly faced with the reality that markets do not behave in that way. It is very difficult to get a constant rate of return on anything other than an artificial contract that somebody else is taking the risk on.

The cash flows are shown as the bars in Figure 1 and the discounted values over time as a smooth and a more variable line. If we assume that we have a constant 4% discount rate, based on expected returns over time, then the discounted value traces is a nice smooth progression with time, the red line. This is a conceptual basis of how we are used to thinking of valuing cash flows. However, there is not much information there as regards risk. But there is a risk. If we need to make these liabilities utterly secure then we need to buy them out or find some other party to pass them over to and that is where the immutable nature of the market comes in. It is at our peril that we ignore what the market is telling us about the value of future cash flows.

Figure 1 also shows the matching value based on risk-free discount rates. The gap over time between the budgeting and matching values could be quite large. It is that perspective, that aspect of risk or uncertainty, that we recommend all actuaries consider in framing the advice that they give to their clients.

More practically, if you take the view that you can achieve a better return by not matching the assets but actually investing in something which has a better potential return, such as equities, there will be some sort of equity premium earned over time. Credit for that could be taken in the discounting calculations. If credit is taken the gap between budgeting and matching values is even greater. What we are saying, and recommending, is that at all times actuaries should think about the potential consequence of going to the market and of trying to match against the market consistent basis.

Rather than listing all key recommendations in the paper, we have picked three in particular to prompt some reaction, choosing one from pensions and a couple from the life area.

Recommendation 4 is that when actuaries are framing advice in the field of pensions, if they use a budgeting calculation alone in assessing technical provisions, then they will not be providing an adequate information source for the assessment of the security of members' benefits.

We are saying that just showing a budgeting calculation is not sufficient and that you need to pay regard to the matching costs of those liabilities. The difference between the two bases gives you an idea of what the consequences are of looking at the liabilities on a fair value accounting basis. Fair value is the direction in which a lot of accounting practices are going, and it is also the buy-out costs of those liabilities.

The potential impact of investments deviating from the budgeting or matching value of the liabilities is an overlay on that. If you have a relatively risk-free asset but not a perfectly matching one, that has consequences. But if you move away from that to a more risky but potentially higher yielding asset, that may have further implications. Both of those aspects need to be considered in the advice that is given.

The next recommendation we pick to highlight is on life insurance, numbered 17 in the paper. Here we are supporting the apparent move in solvency regulation towards a market consistent matching approach, particularly in relation to Solvency II, and we recommend and encourage the UK regulator to preserve this principle in the UK implementing measures.

Our third recommendation of the 19 in the paper, which is not quite so clear-cut, concerns pricing. This is numbered 14 in the paper and states: "In providing advice in relation to premium rates for life insurance an actuary should have regard to the specific needs and requirements of the firm proposing to sell the products. However, where the price is calculated other than using a matching framework or where the intention is to use the premium rates over a period of time, actuaries should provide sufficient information to enable the recipient to assess the continued appropriateness of the rates recommended as economic conditions vary over time."

Pricing has to be done on assumptions that can be used over time: there is no point in having revisions of premium rates everyday that the market moves. We recognise that practice has been

driven more by the practicalities of arriving at a calculated value that is consistent with longer term assumptions on average.

If somebody goes with a matching assessment framework it is important that actuaries also make clear that there cannot be a perfect match. They need again to consider the practicality of the judgements and the subjectivities that need to be in there.

With a budgeting framework, or a budgeting approach to valuing assets, the implications need to be put more fully with regard to the matching view, giving an indication of the impact of market value variability with regard to that difference.

Dr D. J.P. Hare, F.F.A. (opening the discussion): I have five questions to offer you that I hope will be helpful in stimulating debate and interest. Note that I am not speaking on behalf of the Board for Actuarial Standards (BAS) or my employer.

The first question: is the proposed framework helpful? It is set out in section 5 of the paper. There seems to be three aspects to the framework. In terms of BAS terminology, part of it is about the measure that you use to value the liability. Matching techniques or budgeting techniques would be, in 'BAS-speak', measures to use. Part of the framework concerns the types of liabilities that we might be valuing: they could be contractual liabilities, constructive liabilities or possibly discretionary liabilities. Part of the framework covers the purpose of the valuation, which could be concerning solvency, transactions or funding.

Returning to the question: Do you find that a helpful framework to use? Or do you feel that, because so much is set out in regulation, you concentrate more on implementing the framework that somebody else has given you rather than thinking through the framework? If you are one of the actuaries who work on funeral plans, then you do not have a framework laid down by regulators, so you have to choose which to use.

This is not the only framework. BAS also has a framework. The BAS framework starts in a different place. It starts with the user, which caused a fair amount of contention in certain parts of the Profession when it was first presented. I am quoting from the BAS's conceptual framework where, in paragraph 2.3, we are told that "Technical Actuarial Standards (TASs) are intended for the benefit of the public rather than for the protection of actuaries." In 1.1 of the conceptual framework we are reminded of the Financial Reporting Council's (FRC) reliability objective which is that "Users of actuarial information can place a high degree of reliance on the information's relevance, transparency of assumptions, completeness and comprehensibility."

Within the framework, it is recognised that you might use various different measures for different purposes and in different contexts. It then goes on to define what it means by a measure: "The approach that is used to define how an (uncertain) asset or liability amount is quantified. Two different measures of the same asset or liability may produce different results." Thus, for example, as implied by 5.2.1 in the paper, budgeting and matching calculations could give you different answers for the same liability.

BAS also defines a method which is the mechanism that is used essentially to implement the measure that you have chosen or to quantify it: "The measure that is used to quantify an (uncertain) asset or liability amount. Two different methods of calculating the same asset or liability measure should produce similar results."

Thus, the BAS framework sets the context of a piece of actuarial work and the purpose of the work from the user's perspective, recognising that that might then influence the measure and the method that is used. It then goes on to draw a distinction between the sorts of calculations we might do.

I am quoting BAS's conceptual framework, section 3.3, when it talks about different "precepts" – talking about liabilities, assets, uncertainty and consistency. Under "liabilities" we have: "In particular, TASs will recognise that calculating an actuarial liability for planning purposes may require different considerations from the calculation of a liability for a valuation and that, within each of those two objectives, further differentiation of approach is desirable."

We have a slightly different framework to what is in the paper. For example, the paper's definition is subtly different in framework to what BAS has. In C.2.3 of the paper, we find the following: "In broad terms, 'matching' and 'budgeting' approaches can be viewed as corresponding respectively to the types of technique underlying 'valuation' and 'planning' exercises as referred to in BAS standards." They are only "corresponding to". They are not the same. This is a framework that is actually about saying what measure you use for what purpose, whereas BAS is not going that far. This becomes clear in C.2.6 where its states: "We then see that differences in practice between 'matching' and 'budgeting' approaches to determining liability discount rates are driven primarily by differences in the returns assumed to be available in the future on the assets used to fund the liabilities vis-à-vis those that we would expect to be available were we to follow a matched investment strategy."

I ask the question: is it helpful to have two slightly different frameworks applying to actuarial work? Is it also helpful to have a framework that goes beyond transparency and reliability and actually links the measure that you use to the purpose that you are doing the calculations for?

The next of my 5 main questions is: what should the Profession do with the recommendations? Should the Profession actually go so far as to recommend approaches or should the Profession concentrate on how the actuary communicates the work that has been done within a framework set by other people?

One reason I ask that question is because of the Groupe Consultatif, which plays a key role in European regulation and policy development but does not make political decisions. There are some people who are seen as political players and others who are seen as knowledgeable players. But the only group that is seen as knowledgeable, but not political, is the Groupe Consultatif. So does that mean that the Profession should refrain from saying what should be done and just instead concentrate on the consequences of the different choices open to other people? Or should the Profession go further and say what should be done and, indeed, set technical standards?

In the paper – I am trying to provoke discussion rather than be too critical – recommendation 5 says: "In assessing what is a 'prudent' discount rate for the purposes of calculating Technical Provisions under UK regulations, consideration should be given primarily to the current or evolving pension scheme investment strategy, it being noted that there may then need to be other explicit elements of prudence included in the liability calculation if the overall result is to be sufficiently prudent as far as the Pensions Regulator is concerned."

That felt to me a little bit like a technical standard rather than just advice and guidance to actuaries. Maybe the Profession should go that far, but maybe it shouldn't. What do you think?

One of the last times Mr Frankland was here in Edinburgh was to present his Extreme Events Working Party paper. That was an example of the Profession sponsoring research to help actuaries do their job within the framework that other people have laid down. Is that where the Profession should lay its emphasis on research?

The first question is: did you find the framework helpful? The second is: what should the Profession do with the recommendations? The third question is: what should individual actuaries do with the recommendations? Did you find any of them particularly helpful or did you find any particularly unhelpful? Did you feel the recommendations were significantly different from what is laid upon you already or what will soon be laid upon you when the pensions TAS and the insurance TAS become operational?

Recommendation 1 in the paper says: "Actuaries should seek to determine discount rates (and be able to justify their choice of discount rate) within a matching framework or a budgeting framework…." Recommendation 3 says: "In presenting advice based on the use of discount rates actuaries should communicate clearly the framework, building blocks and level of embedded risk that they have used to determine the discount rate(s). Moreover, actuaries should take great care over the terminology they use, making every effort to promote understanding by users."

Is that any different to what we are already required to do? TAS-R, which is operational just now for pension scheme reserved work as well as insurance reserved work, says: "An aggregate report shall include sufficient information to enable its users to judge its relevance to the decisions for which they use it." Some of the recommendations are giving specific examples of the sort of relevant information that we need to give. But we are required to give that just now. Amongst the aggregate report requirements are that it should "state its purpose" and make clear whether it is concerning a funding exercise or a valuation exercise. The latter is essentially what C.3.7 requires.

I will give you a few more quotes from TAS-R:

> "An aggregate report shall state … the material assumptions on which any calculations or judgements are based." (C.4.4)
>
> "An aggregate report shall describe the rationales for … any material assumptions used or recommended [as well as] the measures and methods used in any material calculations." (C.4.6)
>
> "For each material risk or uncertainty faced by the entity in relation to the work being reported on, an aggregate report shall state the nature and significance of the risk and explain the approach taken to the risk." (C.5.5)

While I completely agree with the issues that were highlighted by Mr Orr, we should be covering that anyway in my reading of the TAS.

The Pensions TAS, which is more recently produced (and the Insurance TAS has very similar text), you get text about choosing assumptions and saying that "Any opinion in a report on an assumption or a set of assumptions to be used for an exercise shall include a statement about the appropriateness of the assumption or set of assumptions for the purpose of the calculations for which they will be used." (D.2.7) In particular, where discount rates are required, we find the following requirement: "For any discount rates used in, or proposed for use in, an exercise,

aggregate reports shall explain: (a) the derivation of the discount rates; (b) the implications of adopting the discount rates; and (c) the cash flows that are being discounted." (D.2.13)

The Pensions TAS goes further than the Insurance TAS does to say that "Aggregate reports shall explain how the discount rates used in, or proposed for use in, an exercise concerning a funded pension scheme compare with the return on assets that can be expected from assets invested according to any stated investment strategy, including any anticipated changes in that strategy." (D.2.16)

So I ask: are the recommendations just recommending that we comply with existing standards or do they actually go further and maybe we need to be more careful to recognise the subtle differences?

The fourth question is: can you over-emphasise the importance of risk discount rates? My background for this is the Sharma Report. Those of you who follow insurance regulation will know that, in May 2001, as the European Commission were kicking off the Solvency II project, they asked the European regulators to review and advise them on what should go into that review.

The response to this request was that a working group was set up of insurance supervisors under Paul Sharma of the FSA, with a remit to "look at the practical lessons from the past and to highlight emerging trends in the risks faced by insurance companies".

As part of their work, they took 21 confidential case studies of near-misses or actual problems with insurers and sought to draw the common lessons out of them. They kept the real case studies confidential, but invented 12 representative case studies which they presented in their report published in December 2002. You can find the report on the European Insurance and Occupational Pension Authority (EIOPA) website. There are various helpful things in it. They have a risk map which can be quite useful in developing scenarios. Their key findings are quite interesting. What they say is: "We found that, whichever group they were in," – this was grouping by cause and type of issue – "almost all of the case studies shared the same underlying or root causes: poor or inexperienced management, leading to inadequate decision-making or inadequate internal controls… Although a well-managed firm can still fail, poor management makes a firm vulnerable, and we believe that in practice it is a primary root cause of most problems in insurance firms" (excerpts from 4.5.1 and 4.5.2).

They went on say: "The main focus of the current Directive regime [Solvency I] is on capital and solvency. But capital and solvency weakness usually result from other, prior risks and decisions, and although they are a useful warning indicator they are rarely early. The near misses showed that, in a significant number of cases, problems can be identified and even resolved long before solvency thresholds are breached. This demonstrates that the solvency regime captures only some of the situations which require supervisory attention. Supervisors have a wide range of other tools and practices, not currently covered by the Directives" (from 5.5.3 of their report).

If we want to find out why we have a strong Pillar II in Solvency II, the Sharma report is probably the document to read.

In a regime centred around policyholder security, which is what Solvency II is, do you get the case where you could change consumer outcomes depending on where you pitch the technical provisions and where you pitch the capital in isolation of the supervisory review process, which is part of Pillar II?

Maybe the setting of what the minimum technical provisions, and what the minimum capital requirements should be on top of that, is more a political decision than it is a technical one.

If you have a policyholder protection scheme then, depending on its coverage, the industry or the state is taking the risk of the insurance companies, and then you have to look at the cost, the cash flows and the implications of that.

The FRC's purpose is to foster investment, so maybe the availability of capital, and hence the availability of consumer choice, are also issues that need to be considered in setting the minimum levels of capital and the minimum levels of liability. If the technical provisions are set too high, or are too rigid under stress, the measure that you have chosen could influence the outcome to policyholders.

Some of the earlier research I was involved in was with the Bonus and Valuation Research Group of the Faculty on a paper researching mutuals where Angus Macdonald and others were modelling with Adrian Eastwood. A lot of the examples that we came across were companies that became technically insolvent at some point during a stochastic projection, but, if you allowed them to run on, they recovered and were able to meet policyholder guarantees in full. This didn't always happen and I am not advocating no solvency requirements for insurers. What I am saying is that where you pitch these things could have consequences for end customers, and so minimum solvency requirements need to be set carefully, in the light of all relevant considerations.

The other point is that present values do not tell you everything. You need to understand the cash flows. That is why BAS standards say so much about cash flows and I was pleased that the paper talks a bit about cash flows too.

My last question is: what should the final report cover more or less of? After all, this is an interim report and we do hope that our friends will come back with the final report. Perhaps more excerpts from Malcolm Kemp's excellent book or more summarising Mr Daykin and Mr Patel's paper?

Maybe you might like the paper to give more help to the European Commission in helping to sort out the issues of yield curves. I thought the analysis of the QIS 5 compromise was interesting. But maybe you could go further and suggest other things.

Maybe you would like more commentary on the social time reference rate discussion and the current HM Treasury consultation on the discount rate used to set unfunded public service pension contributions.

Would you like more help in understanding what the market is doing? My favourite quote of all from the paper is footnote 16, "The extreme spreads at which some instruments traded during the height of the recent credit crisis can be viewed as a possible example or counter-example of this [the point that you can derive default risk from spreads in the market]… Some of these spreads were viewed by many as beyond any plausible level that could reasonably be inferred from past history. The only way to rationalise such spreads was to argue that market implied views encompassed outcomes akin to a replay of the Great Depression or worse. With the benefit of hindsight we might consider such prices to have been shown to be 'irrational', because the outcome has not been this bad, but whether at the height of the crisis these views were then quite so 'irrational' is less clear, given the level of pessimism that many commentators were then expressing." There could be value in applying

that to help actuaries decide what are the appropriate stresses and best estimates to use when you are trying to set a market-consistent basis when the market is being irrational with hindsight.

Paragraph 3.1.4.6 reminds us that "Markets provide an objective measure of value on which participants can agree." If only that were the case for the illiquidity premium! Those of you involved in insurance will know the importance of that issue.

Would you like the paper to say more on how to present uncertainty? Figures 7 and 8 in Appendix C were very helpful in this context.

Or, maybe, should the authors concentrate on further developing a framework for describing what we have done? For example a framework which describes which measures we have used rather than prescribes what they should have been – a bit like the CMI projection terminology, which is very much a consistent way of expressing what you have done rather than saying what the minimum should be that you would do.

In this context I recall a paper by O'Neill and Froggatt back in 1993 called "Unitised with profits – Gamaliel's Advice" that appeared in JIA 120:415-469. The paper was so named because the authors were quoting from something that happens in the Acts of the Apostles in the New Testament when the Jews are discussing what to do with radical young Christians. Gamaliel, the wise old member of the Jewish ruling council stands up and says: "And now I say unto you, Refrain from these men, and let them alone; for if this counsel or this work be of men, it will come to nought. But if it be of God, ye cannot overthrow it; lest haply you be found even to fight against God."

In other words, should the Profession leave prescription well alone and concentrate on the communication, explanation and education of actuaries? I can see arguments for both sides of this question and recognise that sometimes the decisions are made for us. I hope by asking the question, and some of the others, I will have prompted at least some more remarks than might otherwise not have been made.

Mr N. Forrester (Affiliate): The recommendations in the paper are to be welcomed and the Profession should stand behind and promote them. With regard to the section on pensions I was a bit disappointed, and possibly even more so having heard the flexibility around the remit that was given.

I was glad to see, in section 6.4, the emphasis on the solvency position. The recommendation about being clear that the use of a budgeting calculation alone will not provide adequate information on the assessment of security should be welcomed.

The paper could have gone much further. In section 4.3.1 the paper assumes the trustees and managers of the scheme will have an agreed approach to investment strategy, which will have been set having regard to both expected return from these assets and the uncertainty around achieving that return. The reality is that, as the paper hints at later, there is an element of circularity here because the investment strategy was probably agreed on the back of the contributions at the previous valuation and some previous financial position of the scheme. Treating investment strategy and contributions in this linear fashion is unhelpful in terms of supporting the clients to make well-informed decisions. In addition, the paper, by accepting it without comment or criticism, does a disservice to the increasing number of examples across the Profession of what should be seen as best practice, where both the strategy and the contributions are reviewed and considered together and

not in isolation. I would prefer to see the paper promoting this best practice and not perpetuating the current habits.

There is a comment in section 4.4.1 about the difference between the target schemes have for ongoing funding and the market-consistent value reflecting the ultimate exposure to the scheme's sponsor. The paper here should be recommending the inclusion of some measure of uncertainty around that gap, even if it is just a one year confidence interval. This was alluded to by Mr Orr in his description of Recommendation 4 but does not come across clearly enough in the main section of the paper.

Even then, it is just giving a representation of the hoped for position of the scheme, because the reality is most schemes are not funded to their technical provisions. The paper notes a recovery plan can make use of expected returns from the investment strategy over and above those used in the technical provisions. So a more appropriate demonstration of the risks would be to consider the gap between the market-consistent value of the liabilities and the assets alongside some confidence interval.

My main issue with this paper is in relation to pensions funding. Technical provisions and their estimation for a scheme using discount rates is just a distraction when it comes to helping the users of actuarial information make decisions about the important things on the budgeting plan, such as, the contributions to be paid, the investment strategy risks to be run and, more importantly, the uncertainty of these over time, in the context of different objectives and constraints of the scheme and the sponsor.

More importantly, it is a distraction which does not paint the Actuarial Profession in a good light. I am embarrassed when I see examples of Actuary A writing on behalf of a client to Actuary B arguing that assumption X within the technical provisions is too prudent or not prudent enough, and, while they are at it, assumption Y could be challenged by looking at some historic data which does not really prove anything, or disprove anything, either. This is both a waste of client's money and the Profession's reputation.

Discount rates are simply not the most appropriate tool with which to approach a pension scheme budgeting exercise. Do not get me wrong, I think discount rates are fantastically useful – as much of the paper shows, they are an essential tool in what happens in many areas. But this is the second decade of the 21st century. A large number of people in this audience have smart phones and iPads, portable computing power, which were not available 20 years ago. In today's world asset-liability models do not take weeks to run. The concepts of asset-liability modelling have been included in the actuarial curriculum for a long time now, and there is no excuse for actuaries not to be treating the stochastic approach for budgeting with the same reverence that has been applied to discount rates in the past. Actuaries should be standing up and admitting that, for helping trustees and companies assess their budgeting plans for schemes, the discount rate approach should be seen as a second-class option. This goes along with what Dr Hare was saying about the users of actuarial information.

More generally, the Profession is making a strong push to be at the forefront of risk management advice. Understanding uncertainty is being seen as the essential expertise and there has been a goal stating that actuaries should be seen as trusted advisers to do the right thing because it is the right thing and not because they are told by rules and regulations. By persisting with a focus on the use of discount rates for pension scheme budgeting, the Profession, and pension actuaries in particular, threaten the chances of achieving this goal.

This paper gives the Profession an opportunity to deliver a step change in the development that has been called for and could be a standard bearer for how actuaries are viewed in the future. Without the direct worry of being responsible for setting technical actuarial standards, I would like to see the Profession be bolder in setting out what it sees as the best practice across areas, and if this means pointing out the flaws in the existing regulation, and even majority practice, we should be brave enough to do so.

Mr P. O. J. Kelliher, F.I.A.: I have a concern with recommendation number 9, that the Profession should call for pension liabilities in company accounts to be calculated on a matching framework basis making no adjustment for sponsor default. I have two problems with this.

First, I do not believe it is market-consistent. Pension liabilities are bond-like in nature and the market would discount similar bonds allowing for counter-party default.

The second point is that it is inconsistent with the measurement of other liabilities. If you take the example of fixed interest debt, if we had to discount this on a risk-free basis consistent with recommendation number 9, rather than allowing for counterparty default, you would end up with a strain every time you raised debt finance which doesn't make sense. I do not believe we should exclude sponsor default in pension accounting.

I note that the nature of the pension scheme and the pension liabilities have a lot of similarities to covered bonds when you consider the scheme as a ring-fenced pool of assets, which is regularly topped up. If you look at the discount rates for covered bonds, the AA rated corporate bond yield used by International Accounting Standards 19 (IAS19) is probably not a million miles away from that. Where we are at the present is not a bad place to start from.

Another point I would make is regarding matching calculations. As previously mentioned, one of the advantages of a matching calculation is that adopting a more aggressive investment strategy does not change the value of liabilities. I would twist that around. What happens if you have a liquidity premium element included in the value of liabilities and you then invest those in a much more conservative way, say, in gilts? A portfolio of assets, equal to the value of liabilities, invested in this way would ultimately fall short as it would not generate the liquidity premium included in the valuation discount rate.

Dr L. M. Pryor, F.I.A.: This paper will help actuaries and others think and communicate clearly about discount rates and, I hope, about other assumptions too. All practising actuaries who work with discount rates, which I suspect is most practising actuaries, should certainly read and be familiar with the ideas behind the framework, which will help actuaries to make judgements concerning discount rates in a reasoned and justifiable manner. Like my colleague on the BAS, I shall refer to the TASs quite frequently. Also, like him, I am of course speaking in a personal capacity.

This paper sets out a coherent and consistent approach to thinking about how to set assumptions, particularly discount rate assumptions, and should encourage clear thinking about other significant assumptions too.

In particular, section 5, setting out the framework, is a very clear exposition that does not attempt to hide the undoubted complexities of the process, and it quite rightly highlights potential grey areas and talks about the need for judgement.

There is a large area of overlap between many of the recommendations in this paper and principles that appear in the TASs, and it is possibly a pity that there is so little reference to the TASs in the paper. The principles in the TASs concern assumptions and modelling in general, whereas the recommendations focus on discount rates. But there are a number of clear parallels.

Firstly, the TASs require the limitations of the models that you use to be clearly explained, and this obviously applies where the limitations are imposed by the assumptions that you use. If you are using assumptions focused on a particular purpose, then the model is probably not suitable for other purposes, and this is echoed in a number of the recommendations – I picked out recommendations 4, 14, 15, 16 and 19.

The TASs require the use of consistent assumptions across a model, and recommendations 9, 13 and 18 imply that you should look at consistency between assets and liabilities.

If you use an assumption that is required by legislation or by a user, or possibly by a recommendation from the working party, and if you think those assumptions are not appropriate, the TASs say that you should say that you think that they are not appropriate.

The TASs place a great deal of emphasis on the suitability of the assumptions for the purpose of the calculations in which they are being used. That is fully recognised in this paper and I am very pleased to see that the framework takes that as a starting point.

Most importantly, though, recommendation 3 emphasises the importance of explaining the rationale underlying assumptions in terms that users can understand. This is a central plank of the TASs and I do not think that its importance can be over emphasised. It is here that I would sound a note of caution. This paper is written for an audience of actuaries. This means that actuaries trying to explain their discount rate assumptions to users should be very wary of lifting explanations directly from this paper. They should take account of what they know about their users, their technical backgrounds and their ability to understand technical discussions. We may not think of parts of this paper as being terribly technical but, to someone who is not an actuary, it may appear very technical indeed.

Professor A. D. Wilkie, F.F.A., F.I.A.: I should like to take up one point about allowing for the default risk of the company, with which I disagree with Mr Kelliher.

The simplest way of looking at this is to imagine an investment trust which invests wholly in shares but whose capital is partly loan stock and, to begin with, quite a lot of its own shares. If the value of its assets goes very badly down, the value of its loan stock may also go down below a market average of top quality bonds because of the possibility of default. If it then puts that reduced value in its balance sheet, it may remain solvent. The value of its assets can go down and down and the value of its loan stock goes down and down until they are a penny each and the company is still solvent. This is obvious nonsense.

There may be a very small premium for the quality of loan stock of investment trusts as opposed to gilts. But always to assume that the value of a liability is the same as the value of the asset in the market is a law of one price that is going far too far.

The same instrument may be an asset to one person and a liability to another. They may very well put different values on it, and it is appropriate in their valuations to give them different values. There is only one price at which assets are actually transferred in the market. To that extent you can

argue about a law of one price. But I doubt whether in a pension scheme the members put as much value on the benefits that they are going to achieve as the company puts on them or the pension scheme puts on them as liabilities. None of the parties is trading them at all so it does not matter that they put on different values.

But the idea that if a company is likely to default you can write down the value of its loan stock, which is the simple example I started with, seems a mistake because this gives the value of the liabilities as a risk-free liability of the loan stock minus a large amount because of the possibility of default.

If the investment trust is making up its accounts on an ongoing basis, you have to assume that it is not going to default. Therefore the reduced value for that is wrong.

The same thing applies through to pension schemes which might default. You still cannot reduce the liability because of the chances of default.

I can give an even simpler example. I owe Joe £1,000. He doubts whether I can pay it, and sells the right to the loan to Bill for £500. But I still owe Bill £1,000, not £500. I might of course agree with Bill to pay him £500, or a little more, to pay off the loan in full. But, unless I do that, I still owe £1,000. Likewise, the directors of the investment trust may be able to buy in their own bonds in the market at a discounted price, and cancel them profitably; but unless they do that they still owe the full amount, which should be valued as if it will be repaid for certain.

The President: I should like to remind you of three of Dr Hare's questions. I am interested to hear people's views on whether the proposed framework is helpful, and to the extent that Dr Hare compared it and contrasted it with the BAS framework, and whether in fact people found it more helpful than the existing BAS framework.

I am very interested in your views on what the Profession should do with these recommendations, as and when they have been revised to take into account the various comments.

Dr Hare's final question was: what would you like to see more of in the final version, or at least in subsequent research, and what is the next phase?

Mr D. G. Ballantine, F.F.A.: May I answer a couple of the questions that the opener asked in the context in which he raised them?

Firstly, is the framework helpful? It is a very helpful approach, and the Profession should continue to develop this sort of framework. I would, however, enter a word of caution. The fundamental split between a matching approach and a budgeting approach, while extremely useful, is not the Holy Grail. I was concerned that some of the specific recommendations in the paper appear to be propounding only one possible approach – the matching approach – for a whole range of different areas where it might not be the only approach. For example, I am thinking in particular of recommendations 10 and 11, dealing with member options in pension schemes.

The second comment I want to make is on the opener's question about more prescription or less prescription. I am very much in the camp of less prescription. There is a flavour in recommendation 10 that the legislators have got it wrong, and a flavour in recommendation 11 that the scheme

sponsors have got it wrong if they are using anything other than a market-related commutation rate. We need to be very careful as a profession before we go out on a limb, unless we have a rigorous mathematical proof that the matching approach is the only possible approach in such cases. Other interested parties may well have different views or different objectives that can be validly brought into the equation.

Mr A. M. Eastwood, F.F.A.: Picking up on some of Dr Hare's comments, there is almost a sense that he was suggesting that we should not see papers presented here with technical recommendations, and that technical recommendations are the preserve of the BAS. I do not agree with that and I hope I have misunderstood him. It is all important that papers proposing frameworks with strong recommendations can be brought here and discussed sensibly. If that in due course results in a new technical standard from the BAS, so be it.

Likewise, I do not think there is anything wrong with examples being produced that are entirely consistent with the requirements of the BAS. It is good to see the examples.

Returning to the President's question of what more would we like to see, I was disappointed to find the paper stopping short of extending the framework to deal with the issues of credit risk and illiquidity premium. Those are all-important. We have already had some discussion on how appropriate it may be to include some allowance for credit risk in the discount rate. I should like to see professional reports explicitly disclose the extent to which credit risk and illiquidity of the liabilities has been allowed for in the discount rate, particularly where a matching approach is adopted.

Some of the recommendations seem to be suggesting that the matching route alone may be sufficient. There is certainly a recommendation that the budgeting approach on its own is not sufficient. However, as Mr Kelliher suggested earlier, one can think of examples where the reverse is equally true. The matching approach is insufficient on its own, particularly if an illiquidity premium is included in the discount rate when valuing pensions or annuities in an insurance company that are matched with highly liquid instruments. For solvency purposes, the matching route is not the one to go down if for some reason matching with assets of equivalent liquidity is not the practice of the entity concerned.

I would like to see an extension of the framework to cover the issues of illiquidity and credit risk.

Mr M. A. Potter, F.I.A.: I find the matching and budgeting frameworks inherently more understandable, and many of our clients would too, than the planning and the valuation exercises that the BAS framework proposes, because matching and budgeting is much closer in description to what many of our pension schemes are actually engaged in day-to-day.

I also want to pick up on one point about TAS pensions which I consider is going in the opposite direction to a lot of the recommendations in this paper. I agree with recommendation 4, which calls for an assessment of the security of members' benefits. The TAS pensions' insistence that we include best estimate figures in valuation reports or advice is unhelpful and goes very much in the opposite direction when, in fact, a technical provisions valuation is very much a budgeting exercise. I agree it does not help, as in recommendation 4, with assessment of security.

A possible example to the working party is the Pension Protection Fund's (PPF) funding strategy. They have produced some reports describing, in probabilistic terms, how they have approached the risks that they run in what is indeed a pretty challenging matching and budgeting exercise.

That style of describing how the PPF is tackling this issue may be helpful for many pension schemes. This would be contrary to the suggestions in recommendation 8, to focus on the solvency position, which I do not think many readers or users of pension fund information will find all that helpful. Indeed, many of the solvency estimates will be pretty unreliable and difficult to get hold of.

Ms R. L. Loseby, F.I.A. (responding): Dr Hare has given me a helpful structure in order to pull together some of the strands that we have spoken about tonight.

Firstly, I want to emphasise the consultation on a common framework. The Management Board wanted a full and open debate on the significant issues.

Let me go through the questions posed by Dr Hare in his introduction.

First, is the proposed framework helpful? We have heard various views, but they were generally supportive of the work we are doing. We have heard that it is a useful framework with a matching and budgeting calculation that can, it is hoped, help in communication, especially with non-actuaries. The language is clear and the way of thinking through the issues has been very helpful and perhaps could be extended on to other assumptions.

We have had quite a lot of discussion about how it links in with the TASs. Generally, it seems to be helpful and supportive of the general issues covered in the TASs and that it is also useful to have debate in areas such as this so that people can discuss the issues.

As a note of caution, we must make sure that we do not use a framework like this to stop actuaries thinking about their individual circumstances, in particular when they are dealing with users and the individual circumstances and interests of those users.

Moving on to Dr Hare's second question: what should the Profession do with the recommendations? We had a mixture of views coming through. Some people felt that perhaps the paper did not go far enough and that we need to do more to encourage best practice, whereas others felt less prescription was the better route forward. I will come on a bit later to what we will be going on to do next.

We did not make very much comment on what individual actuaries should do, but the report was felt to be helpful in communicating clearly and might be one of the things in the toolkit of things that actuaries could use. It perhaps is not the only answer on discount rates.

Dr Hare's fourth question was: can you over-emphasise the importance of risk discount rates? Certainly, one of the messages is that discount rates are only one tool in a toolkit. There are other approaches. Discount rates are still used by most actuaries and therefore anything that helps us in our communication and understanding and thinking is helpful.

Finally, what would you like more of in the report? There was definitely a challenge that we needed to think about the language that could be helpful for communicating with non-actuaries. Dr Pryor was correct to say that the report has been written primarily to get actuaries to think about the issues involved in discount rates. The Discount Rate Steering Committee has thought that it needs to move on to think about the communication issues with non-actuaries.

We have also been challenged and encouraged to extend the issues in the paper to look at things such as credit default risk and liquidity premiums more thoroughly.

I would like to discuss issues around what we are going to do next and where we are in the process. The Management Board wants a full and open discussion on the significant issues. This paper is the next step in stimulating the debate and gives an opportunity for you all to influence the future direction of the project. As stated, the Profession does not set standards for technical work but we feel that it still has a significant role for undertaking research, in the public interest, which supports the competence of its members and the furtherance of actuarial science. The recommendations here are intended to help actuaries speak clearly and with authority in future debates about discount rates and to support actuaries in communicating impartially and effectively.

We are seeking views from inside and outside the Profession. That is going to take place throughout January and February of this year. This meeting is part of that consultation process and the first public discussion we are having on the paper.

The Discount Rate Steering Committee is committed to seeking feedback on the recommendations and hope that it will give those inside and outside the Profession a chance to discuss and engage in a dialogue. We do not need to stop with just the discussion here. We are happy to receive e-mails and written discussion.

We want to consider the potential impact of the recommendations in the paper. As well as meetings, we will be seeking the views of significant stakeholders, including regulators, and also looking to see how the recommendations might be communicated to a wider audience.

Mr Patel and Mr Daykin were commissioned to do the initial piece of work looking at current practice and current research. That was published last May. We have asked them again to help us in this process to help us seek views from individuals in a more informal way that gives an opportunity for stakeholders to contribute individually to the process.

The consultation, we hope, will be completed by the end of February and then the Discount Rate Steering Committee will consider the results of the consultation and propose a final revised set of recommendations to the Management Board. The Management Board will then consider the next steps for the project. The paper will be already in the public domain and will have an impact, by its existence, on actuarial thinking. It is for the Management Board to decide what the Profession needs to do with those recommendations and how it would act on them.

The paper has been very much focused on actuaries and we have had the challenge that the paper might not be as useful for communicating all issues with wider non-actuarial groups of users. The Discount Rate Steering Committee will now go on to look at that issue and, it is hoped, produce some helpful advice in that area.

The President: This meeting has had an excellent paper, a full house, some thoughtful provocations to the audience and some good responses. It is our determination that there should be more discussions like this.

Richard Muckart has kindly agreed to chair a committee that seeks to restore these sessional meetings and the corresponding meetings at Staple Inn to some of their former glory. We look

forward to more meetings over the next few years, in support of that pursuit of restoring the ethos of the learned society to the Profession, along with all the other more practical, prosaic things that the Profession must do for its members.

It is the chairman's privilege to make one comment on what has been said tonight. David Hare started the ball rolling by challenging us as to whether the Profession should be doing this sort of thing or whether the Profession's job should simply be to lie back and wait to hear what the BAS pronounces for us and then to try to help our members cope with whatever that is.

I am in no doubt, on behalf of Council, that being passive would be a misguided thing for two particular reasons. The first is that nearly half our members are outside the UK. They are not governed by the BAS. What this working party is doing is as much for our members outside the UK and for the global community of actuaries as it is for the people inside the UK. Second, as I have taken soundings over the last two and a half years from our members on what the Profession could do better, the thing that has come back most strongly is that people want to hear the Profession's voice on the national stage, influencing Government, influencing the Treasury.

The most effective way in which we can do that is to commission papers like this to advance the cause of actuarial science and then to use that authoritative output to help to influence entities like the BAS and the Treasury as it consults on the use of discount rates. This allows us to make a substantive contribution and seek to build a relationship with the Treasury as a trusted partner.

The Australian Institute of Actuaries has what I believe to be a concise vision statement, which is that wherever there is uncertainty of financial outcomes, actuaries are trusted and sought after. People go looking for actuaries because of the actuaries' objective analysis and their authoritative viewpoint.

This paper is absolutely on the mark in helping us build that reputation. I am particularly proud that this, the first fruits of our new approach to research, has had its first outing here in Scotland.

The Management Board challenged the working party to tackle this most fundamental and central subject. The working party has now given the Management Board a real challenge in deciding exactly how to take this forward. It is a challenge that I am very grateful that you have given us. I am grateful to the authors, especially those who have spoken tonight, to Dr Hare for opening and to Ms Loseby for closing, and to Mr Daykin and Mr Patel for their contributory work on this. I would be grateful if you would join me in thanking them all.