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# A MARKET-BASED APPROACH TO PRICING WITH-PROFITS GUARANTEES

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## ABSTRACT OF THE DISCUSSION

## HELD BY THE INSTITUTE OF ACTUARIES

**Mr P. A. P. McDade, F.F.A.** (introducing the paper)**:** The insurance industry has, from the beginning, been founded on the premise of a transfer of risk from the individual to the institution, at an appropriate price. The mechanism for that transfer of risk is the granting of guarantees. Offices do not hesitate to charge for mortality guarantees, but few charge for the investment guarantees inherent in with-profits business. The Asset Share Working Party's recent report shows a reduction in the number of companies which charge for guarantees, and also that few of those companies which do not charge intend to charge in the future. Perhaps it is felt that the guarantees are granted at a modest level and are unlikely to inconvenience the office, but is this true? The current with-profits bond market is characterised by reversionary bonuses close to the level of gilt yields, and many providers offer selective market value adjustment (MVA)-free terms. Not only are these guarantees high, there is often also an investment mismatch due to the high equity content. While the expected cost and the reserves held for such promises may be small, the true economic cost is potentially large.

There are two factors which have encouraged offices to take a relaxed view. First, the strong investment returns over the past decades have, in retrospect, resulted in the guarantees costing very little. The second, related, factor has been the existence of substantial free estates for some offices — arising partly as a result of implicit charges which offices may not have been aware that they were taking from past generations — which have provided a comfort zone in the event of a market fall. Neither of these factors can be assumed to continue indefinitely into the future.

The work of our research group has shown that the potential cost of with-profits guarantees is substantial. Of course, the precise numbers in the paper are, to some extent, a function of the model structure and the parameters. However, there is a growing volume of research which supports the idea that these guarantees are far from negligible. Nowadays there is extreme pressure to make the operation of the with-profits fund much more transparent, and the ability to charge via smoothing may be constrained. We are investigating a charging method that is more directed to the source of the costs.

Our paper does not say that the with-profits policyholder should necessarily pay for the guarantees granted, but that the office should, at least, be aware of the extent to which guarantees are being subsidised by the estate or by other policyholders. In the long term, only the strongest offices can afford not to charge.



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One consequence of an office's decision not to charge for guarantees is that with-profits policyholders, as a class, may receive a better deal than corresponding unit-linked policyholders. If we assume that an office's smoothing policy is designed to pay out asset share on average when guarantees are not biting (any less than this and the office *is* charging), then the presence of a guaranteed floor means that the with-profits policyholder can expect at least as high a return, while incurring a lower risk, as the unit-linked policyholder. Can Appointed Actuaries be comfortable with the implications of this apparent inequity between classes? This may be regarded as part of the with-profits concept, smoothing across generations, but is it sustainable? Any change in practice clearly has implications for policyholders' reasonable expectations (PRE), and would need to be managed carefully.

In the paper we develop a comparison between two methods of supporting with-profits guarantees. The first is the more traditional method of setting aside sufficient capital to give a desired level of security. The second approach is to purchase that security through the derivative markets. There are a number of practical problems associated with the latter strategy. It must be stressed that we are not advocating the purchase of vast quantities of hedging instruments. Rather, the intention in the paper is to suggest a benchmark for setting a market consistent level of charges for an office operating the capital backed strategy.

Insurance policies are either not traded or, where this is possible, are relatively illiquid. Can we price the risks transferred in these illiquid instruments by inference from the market price of more liquid instruments such as derivative securities? The life office effectively writes a put option when it sells a with-profits policy, so it should not be surprising that the market price of put options can provide a benchmark for the market's assessment of the cost of this benefit. The task that we set ourselves was to find appropriate combinations of derivatives to ensure that the ruin probabilities under the two strategies were similar, and then to examine what the market was telling us about the pricing of the risk being underwritten by the insurer. The inferred charge may be viewed as an upper bound, because of the profit margins in the option prices.

In recent weeks the Government has determined that a form of with-profits policy will be admitted within the stakeholder pensions framework. The practical details of how with-profits can be operated within a 1% cap on annual charges remain to be clarified, but the announcement can be seen as confirmation that the with-profits concept is not obsolete and still has much to offer the risk averse investor who, nevertheless, wishes equity participation. Ringfencing of stakeholder with-profits, however this will come to be defined, will force companies to think very carefully about the level of guarantees that they can offer, and how the cost of these guarantees can be met. An important issue which remains to be settled is whether any charges for the cost of capital support can be taken in addition to the maximum administration charge. If this is not permitted, companies may attempt to cover the guarantees via the derivative markets — the cost of such security would be met via the investment policy of the fund, and not out of the 1% administration charge. Such a route may represent poor value for the policyholder, given the demand/supply imbalance that would result in the derivative markets. Competitive pressures may perpetuate the culture of non-charging. Therefore, it is important that offices are aware of the risks that they are running.

**Mr A. Saunders, F.I.A.** (opening the discussion)**:** The concept of with-profits is facing many challenges at present. There is considerable pressure on life offices, and therefore on the profession, to come up with ways to make the operation of with-profits business more transparent.

Historically, consumers were generally happy to leave the operation of with-profits funds to life offices, trusting the offices and their advisers to run the funds appropriately. Recent events, including guaranteed annuity options, potential mortgage endowment shortfalls, and a public suspicion that life offices have 'squirreled away' policyholder money over many years in the form of orphan estates, have made the public and the consumer press less inclined to trust life companies and the 'black box' processes of the traditional with-profits fund.

There is a demand for greater openness. A challenge for the profession, and for life offices, is

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to find ways to meet this demand without placing so many constraints on with-profits funds that they are no longer able to deliver the benefits. This is not going to be easy. One important aspect of this challenge is the subject of with-profits guarantees, and how (and who) should bear their costs and when these costs should be borne.

To make the subject manageable, the paper inevitably has to make some pretty drastic simplifying assumptions. The possible impact of these assumptions on the results needs to be borne in mind throughout. In particular, the paper considers individual model points and does not (apart from some comments in Appendix A) develop the possible benefits of being part of a diverse portfolio of similar policies. In the projections the guarantee levels are fixed at outset, even though the asset accumulations are projected stochastically. Similarly, the equity backing ratio (EBR) assumed is not readjusted during the projections. In reality, all of these would be adjusted from year to year in the light of unfolding circumstances, and holding them fixed must have increased the volatility of the results obtained.

Section 3 discusses the choice of stochastic model and its parameterisation. The choice of parameters, in ¶3.4.5, seems to be a reasonable reflection of current conditions, although a real dividend growth rate of 2.5% p.a. feels, perhaps, a little optimistic. Paragraph 3.6.4 comments on the authors' reasons for not rebasing the EBR during the projections. Given the focus on the tails of the distribution of outcomes when considering guarantees, I would be interested to see what the effect of allowing rebasing would be. I suspect that it could be significant.

Paragraph 4.2.6 sets out the assumptions made for bonus declarations. The decision not to increase guarantees at all, once the stochastic projection starts, must result in a significant understatement of the probability of shortfall. This may have been offset by having a fixed bonus assumption during the deterministic roll up in the earlier period. Unitised with-profits (UWP) bonus rates are covered in ¶4.5.3.2. In this case a fixed growth rate of 5% p.a. is used. I assume that this has been chosen to be broadly consistent with the levels of guarantee implied by the conventional assumptions. I also assume that, like the conventional case, no further increases in guarantee are assumed once the stochastic projections start. However, in the case of UWP it is usual for the minimum guarantee to be of no fall in unit price after deduction of annual management charges, so the projection assumption of no increase in guarantee is a little weak; an assumption of a continuing 1% p.a. guarantee would cover the management charge.

Paragraph 4.3.3.3 comments that the current resilience test does not appear to be uniformly strong. I hope that the Resilience Working Party will take this point up in their deliberations.

Paragraph 4.3.4.3 indicates that the ability of with-profits business to provide capital to the office may not be as great as we, perhaps, tend to assume. Alternatively, it may be simply an indication that the assumed bonus rates are too high relative to the investment assumptions — but, perhaps, this is a reasonable approximation to the current environment! I was unsure how the comment in ¶4.3.5.4 tied in with this paragraph.

There is scope for further work, investigating the sensitivity of different future bonus policies and also the impact of the size of the current terminal bonus cushion at the time the projections start. It is a concern that bonus levels on current new business are being maintained at levels that are unlikely to enable adequate terminal bonus cushions to be built up in the future, increasing the future cost of guarantees.

Section 4.4 establishes the use of a 1% shortfall probability. While agreeing with the authors that, for the purposes of the paper, the particular choice is not greatly relevant, it would be interesting to see some comparative results on other percentages, for example 0.1% and 5%.

Section 5 moves on to consider how a charge for capital support should be made. I agree with the authors' conclusion, in Section 5.2, that explicit charging for capital is likely to become more widespread. As well as the reasons given in the paper, I suspect that the structure of some recent demutualisations, in which with-profits funds are ring fenced and capital support supplied from an external source, requires whatever charge is being made to the fund, in general, for this external support to be apportioned to the policies enjoying the support. However, a counteracting force is provided by competitive pressures. It will be very difficult for some funds to make charges for capital if others are not, as their relative positions in 'past performance' league tables would suffer.

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It is also a concern that most offices do not make any charge for capital in respect of UWP policies. There is a risk that this means that the life assurance industry, in general, is providing investment guarantees 'on the cheap'. In this context, it is worth noting the growth in mutual funds investing in with-profits insurance policies (both second hand and new), which may indicate the start of the retail exploitation of a potentially underpriced guarantee.

Historically, I suspect that offices have not bothered to charge for capital for a number of reasons. In the case of mutual offices, it is possible to argue that the whole process becomes circular, given that the policyholders, themselves, own the available capital resources. If charges are made, asset shares are reduced and the free estate increased. If the guarantees do not 'bite', then it becomes possible to distribute some of the built-up free estate back to asset shares, getting policyholders back to where they would have been without charging. If the guarantee does 'bite' and no charge had been levied, asset shares, generally, would have to be reduced at maturity either to meet the guarantee cost or to replenish the reduced free estate. However, this argument is only true if the strengths of the guarantees given on the various types of policy in the fund are broadly similar. Historically this might have been the case, but I suspect that this is much less so now. There may be a case for charging for capital (and giving credit for capital supply) in order to maintain equity between different classes and generations of policies. The extent to which this is necessary will depend on how 'broad brush' a view of equity any particular office takes.

In Section 5.7 some important points are made. I agree that charging for capital support provides a much better 'fit', but it would clearly be more difficult to implement in practice. The choice may depend on the degree of precision that an office feels necessary to maintain. Presumably, whichever method is used, for presentation to policyholders the effect of the charge could be translated into a reduction in yield, which ought to be reasonably understandable.

Section 5.7.3 asks whether high EBRs are necessarily a good thing. This is a very important question, and worthy of further study. It also raises the question of exactly what the cost of internal capital is. If capital is short, it may be appropriate to use the market cost, in which case pricing against the derivative market may be appropriate. However, if there is excess capital available, which is also effectively 'trapped' within a long-term fund, it might be appropriate to charge only for the risk of ultimate loss.

Section 6 introduces the derivative-based alternative. I am no expert in this area, but I note that the results in the paper were related to real market conditions at a particular time. The pricing of derivatives can be very volatile, and I wonder what has happened to them today. I wonder to what extent comparisons made between this method and the internal capital alternative are a fortuitous consequence of the particular market conditions. I would like to have seen the results of the derivative alternative based on market conditions on a few other dates, for comparison. If there is, indeed, a considerable variation with time, then there is a need for some way to determine a 'smooth market cost', if this is to be used as a benchmark to derive an appropriate level of internal charge.

Paragraph 6.5.6 comments on the need, in practice, to operate a dynamic hedging strategy. This reinforces the need to consider whether the equivalence demonstrated in the paper is robust over time and through changing market conditions. If not, it may be difficult (or prohibitively expensive) to maintain adequate cover entirely through a derivative strategy. If this is not so, why has no office established a pseudo with-profits fund operated entirely on these principles? In practice, there is unlikely to be sufficient market capacity for this to be viable.

The paper identifies a potential three-way trade off when managing guarantees. Potentially there could be occasions when it might be cost effective for a with-profits fund to match its guarantees through the purchase of derivatives. However, there may be other times when other influences on the derivative markets mean that the cost would be high and that the use of internal capital could be cheaper, or, indeed, it could actually be better for policyholders for the fund's EBR to be reduced. The management of such a process would need to take account of the whole portfolio and the interaction of different generations and types of policies. In order to manage such a process, an independent approach to the pricing of internal capital support is needed. This looks like another fertile area for further study.

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**Mr A. D. Horn, F.I.A.:** Opportunity costs are considered in Sections 5.3 and 5.4, where the costs are applied according to the equity backing ratio. I wonder whether that is realistic. If alternative sources of capital are considered, I wonder whether linking the cost to LIBOR or to gilt funding rates would be more appropriate.

**Dr D. J. P. Hare, F.F.A.:** I think that you can define the opportunity costs in many ways. "What would the money have been invested in otherwise?" was our starting point. If you consider equity investment to be desirable, but are being forced to move towards gilts, then it seems sensible to tie the opportunity cost into the resulting equity backing ratio. Starting from the rate at which money may be borrowed could suggest entering a different realm, namely gearing up the with-profits fund to have more than 100% in equities. We were not thinking of taking things that far.

**Mr Horn:** I am not suggesting that the with-profits fund should be geared up — only that the true cost of capital could be argued to be independent of the equity backing ratio.

**Dr Hare:** I understand the point that is being made, but the authors were not trying to find the 'right' answer. Rather, we were seeking to explain a thought process, illustrating it through qualitative, rather than quantitative, numbers. I agree that we could take certain assumptions in different ways. That would be one example of how to work out different opportunity costs. Another would have been working out prices on different dates. While we had used numbers on different dates in the past, we chose not to present them in this paper, lest we made it appear as if we were looking for the 'right' answer, which we were not. It was a qualitative approach that we were following.

**Mr N. J. Dumbreck, F.I.A.:** The paper notes that, where charges are made for guarantees, they are usually expressed as a percentage of the asset share. It is also common practice to express any credits for miscellaneous profits as a percentage of the asset share. There is no scientific justification in either case, it is just convenient. In the past, perhaps, the charges and the credits have tended to cancel each other out. I suspect that that has changed, and that the cost of guarantees has increased in the low inflation environment, and the scope for making any miscellaneous profits has diminished, so that the method of charging for guarantees is more of an issue nowadays.

The paper looks at the possibility of charging for guarantees based on the excess regulatory capital required. That cost will tend to increase when asset values are depressed, and vice-versa, which is the opposite to an asset share based charge. That might simply lead to an increase in the volatility of asset shares and a greater need to smooth payouts. Of course, it is also much more difficult to apply. I suspect that the right solution is the one proposed by the authors; namely to determine an appropriate level of charge for each block of business using the methods in the paper, and then to re-express it as a level percentage of asset shares.

The paper tells us what should be done in theory. We should be charging for our guarantees; they are valuable, they have a cost and they should be charged for. The paper also makes sensible assumptions about the proportion of investment return declared as reversionary bonus, and about the relationship between payouts and asset shares. I think that typical practice, at the moment, is rather different, as Mr McDade mentioned. It is quite common not to charge anything for guarantees, even though, in many cases, particularly for historical business, they are very generous. It is quite common to declare annual bonuses which exceed the levels supported by gilt yields. As Mr McDade said, it is common to give generous no-MVA guarantees on unitised with-profits business without any obvious charge for those guarantees; and also to pay out more than asset shares, even in conditions such as those at the end of 1999, when asset values were high.

So, there is quite a big difference between the theory and the practice. I think that there has been a recognition for some time, within the profession, that this is unsustainable, but also a reluctance to take the lead in doing something about it.

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As the opener mentioned, that may be changing, particularly in those companies where shareholders are having to put up real money themselves to support the writing of with-profits business. However, I think that that will be slow to take effect. Obviously, it puts those companies at a competitive disadvantage. We should not be surprised if the regulators are keen to tighten up the valuation regulations to encourage greater financial discipline in this area. The unfortunate aspect is that this may lead to only a few strong companies staying in the game, because tightening the valuation regulations might cause behavioural changes which reduce the real risk of insolvency over time, but it is also likely to increase the risk of technical insolvency.

With-profits business has served the insuring public very well in the past. It has produced very good returns, partly, as has already been noted, because policyholders have not really been charged for the guarantees that they are getting, but even if it were soundly priced, I think that there would still be a significant role for with-profits business for those people who are not good at getting the timing of their investment decisions right.

The calculations of the capital required for a 1% ruin probability and the comparison of that capital with the statutory reserves were interesting. The authors suggested that it was difficult to draw any firm conclusions about the adequacy of current statutory reserving standards from those comparisons. I am inclined to agree with that. Unless you look at a portfolio rather than at a single tranche of business, you cannot judge how the offsetting effects between different generations of business affect the overall picture. This must be an area where further work would be helpful.

The fairly substantial difference in the cost of the guarantees for different equity backing ratios is another significant point. The contrast was slightly greater than I was expecting. It suggests that much of the problem is caused by the current high equity backing ratios of around 70% or 80%, and that, at slightly lower equity backing ratios, with-profits business would be much less capital intensive.

**Mr S. J. B. Mehta, F.I.A.** (in a written contribution that was read to the meeting)**:** The title of the paper is, I suggest, a little misleading, since the only significant reference to the use of a market value based approach that I could see was in Sections 6 and 7, where the market value cost of purchasing derivatives was allowed for. However, there is much happening on market value based approaches, with J. van Bezooyen, C.J. Exley, A.D. Smith and myself looking into the use of market value based asset models, combined with market value based asset/liability modelling, to examine capital strategy and other topical issues surrounding with-profits. There will be a training seminar for life office actuaries on asset models and asset/liability modelling, and several sessions planned for the year 2000 Investment Conference. Some specific issues that arise relate to capital requirements as market values fluctuate and capital requirements for bearing alternative types of risk. A closer examination of actuarial assumptions on lapse rates and bonus philosophy is also planned. There are now a number of market value consistent asset models, and it will be interesting to see how their results differ from those emerging from the use of the Wilkie model. Product smoothing and guarantees generate cross subsidies between different generations and product lines, and warrant further scrutiny. The cost of capital is also an interesting topic for research.

**Mr R. G. Gillespie, F.I.A.:** There has been discussion about the need to reduce guarantees. At a recent seminar on with-profits, the results from some market research on with-profits customers and independent financial advisers (IFAs) showed that they valued the reversionary bonus much more highly than the terminal bonus. If we are to give our customers what they want, we should be trying to find ways to make the reversionary bonus as high as possible.

**Mr A. J. Pelkiewicz, F.I.A.:** I shall make a few comments about Figure 7.1, which supports many of the conclusions of the paper.

I do not find it surprising that the put spread approach is fairly level, as this is a consequence of the assumptions made in pricing options. The close tracking of the 1% capital support charge

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approach against the put spread approach may suggest that this is a theoretically appropriate way of charging for capital backing. However, I suggest that the method used for charging for capital backing should be regarded as part of the office's with-profits philosophy. I feel that the outcome of adopting the asset share charging approach rather than the capital support charging approach is likely to be more satisfactory in practice, and any resulting cross-subsidy could be regarded as consistent with the overall philosophy.

I would observe that, in practice, offices would not adopt the very high equity backing ratios at the right of the graph unless there is a very strong fund which is being used to support a high equity backing ratio, with the aim of maximising policyholder returns. In this situation, there are important factors which this model does not take into account, as the office would be concerned with its overall position. The capital support charging approach may not meet the office's objectives.

**Mr H. D. Sutherland, F.I.A.:** I am rather taken by the idea of qualitative numbers! Looking at ¶4.1.5, the authors say that they assume that, where there is the need for additional capital support, this will be invested with the same equity backing ratio as the associated asset share. Therefore, if I understand that right, you are saying that if we have high equity content, and that seems to be giving us the problem with the guarantees, then the capital that we will call upon to support that will also have an equally high equity content. To me that seems entirely counterintuitive. I would have thought that, if we had a perceived problem of market fluctuations giving rise to a danger of guarantees, the last thing that we should be doing is putting the supporting capital at risk just as heavily.

**Dr Hare:** I too was rather taken by the idea of qualitative numbers when the opener at the Faculty discussion used the phrase. Given that he is a university lecturer, I presumed that the term was a legitimate one. I thought that it was rather an elegant phrase, but we could use the adjective 'indicative'.

Turning to the investment of the capital support assets, I am not sure that our approach is counterintuitive. It all depends on the philosophy underlying the with-profits fund in question. We have started from the mindset that the policyholder asset shares, along with any additional capital support, form one large 'pot' with a common investment strategy, as far into equities as is allowed by the fund. That being the case, it is quite logical to think of the capital supporting sum being in the same equity backing ratio.

Of course you could follow a different approach, and, say, assume that the support capital was invested in gilts. However, that may not necessarily result in a lower overall charge for the support. While the amount of support capital would probably be different, so would the appropriate opportunity cost, particularly if the capital would otherwise have been invested in new business rather than in equities (as we assumed).

**Mr P. A. C. Seymour, F.I.A.:** The Report of the Maturity Guarantees Working Party (1980) was written in the context of a capital base for unit-linked business. At the time I was working with a company which had shareholders. One thing that we concluded, quite quickly, was that offering maturity guarantees on unit-linked business was very expensive, and we soon discovered that the customers would not pay the price. The result was that maturity guarantees on unit-linked business simply disappeared. Ever since then I have been wondering when those who write with-profits business would fully wake up to this issue and would ponder what they were doing. So, in that sense, I am extremely pleased to see this paper. At least it starts to examine the subject from the point of view of running a with-profits fund.

Several things that have been said in the discussion have worried me. The idea that a mutual might have so much capital 'sloshing around' that it thinks that it will write the guarantees for nothing, because it has nothing better to do with that 'sloshing around' capital, is, to me, horrific.

I chair three trusts which buy traded endowment policies of which mention has been made. It is true — although we do not calculate this precisely, and, indeed, none of the shareholders

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presumably calculate it — that one of the things that appeals to people buying these policies is the fact that they offer a very good return with a reduced risk. This suggests to me that the market is beginning, perhaps intuitively, to recognise that providers who are not putting the proper price into the risk are actually offering something for nothing — which seems rather a mistaken thing to do. If any offices were to continue to do this, some of those who own many of their policies indirectly might begin to wonder whether it would not be better to return that 'sloshing about' capital to the people who actually own it; namely, the members. Using that capital to support uneconomic business, in effect giving policyholders a free ride, would be crazy. If I were an existing member, I would say: "Please give me my money back."

**Dr Hare:** I too would share Mr Seymour's concern if I felt that mutuals were misusing their capital, having more than they know what to do with, but I do not think that that has been said. Given that I am involved with the capital management of one mutual, I can assure you that there is at least one that is not misusing its capital. I suspect that there are others too, otherwise that would be an indictment upon our colleagues involved in the management of those offices.

We were very careful, in writing this paper, that we were not seen to be taking the side either of the mutual or of the proprietary company. As you may know from the mix of employers represented in the group of authors, there are representatives from both sides of that divide. I suspect that some of the activity in the traded endowment market has been on the anticipation that policy returns might be enhanced through the distribution of at least some of the company's capital. Whether the company's capital is actually owned by the current policyholders, for them to do what they want with, is another matter. My understanding is that mutual companies should be run as continuing entities, for the benefit of both current and future policyholders.

**The President (Mr P. N. Thornton, F.I.A.):** Considering the question of with-profits stakeholder pensions, my perspective is that the Treasury, in response to a certain amount of pressure, has agreed that with-profits is not ruled out for stakeholder pensions. However, it is very concerned that any with-profits stakeholder products are transparent and are managed within the 1% cost cap. Does anybody think that this is achievable?

**Mr P. D. Needleman, F.I.A.:** It is clear that we have a very urgent task ahead of ourselves and a lot of work to do to be able to quantify the cost of guarantees accurately. This will be essential, given the debate currently in progress about the place of with-profits in the provision of stakeholder pensions, and the additional charges needed to meet the cost of guarantees under these types of contracts.

It is helpful that the paper confines itself to a limited, albeit somewhat simplified, range of scenarios, but I suspect that the results in the paper would be very different looking at portfolios of business, as opposed to individual policies or even single tranches of business. We need to consider what the appropriate level of risk of ruin is to be. Is 1% appropriate, given that this is the risk of not being able to meet the real guarantees in these products, rather than the risk of statutory insolvency? Something close to 99%, maybe between 95% and 99%, is appropriate, in my opinion. In addition, I would like to see the results on alternative investment models. I accept the authors' reason for confining themselves, at this stage, to using the Wilkie model, but the reality is that most companies do tend to rebalance their portfolios back towards their target asset mixes. They may drift 5% or 10% one way or the other, because of short-term market movement, but a rebalancing approach has to be investigated. If there is a problem with rebalancing using the Wilkie model, then we need to look at alternative investment models, and see what the effects are.

I would also be interested to see what the effects of a dynamic investment policy would be, shifting from a high equity backing ratio for a given tranche of business to a more heavily fixed-interest backed asset mix close to maturity. I suspect that the effect would be quite significant looking at an individual policy or a tranche, but less so looking at the portfolio of business as a whole. Over many years I have been less than enthusiastic about that approach, as it is quite a

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complex investment policy for with-profits business, and I have always preferred the portfolio approach, whereby you assume that all policies are invested 70% in equities, or whatever, throughout their lifetimes. With the sorts of products that we are looking to provide, a dynamic approach could be quite an effective way of limiting the cost of guarantees. I should like to see some work on what impact this has, particularly on longer-term policies.

A lot of stakeholder pensions will be 25, 30 or 35 years to their retirement date, and should be aimed at providing an annuity rather than a cash sum at maturity or at retirement. The term of this business is obviously very long, and the cost of any underlying guarantees on the regular annuity payments from retirement through to death may be very different than the costs associated with a contract funding a cash sum at retirement. In any event, if the contract is to provide a cash fund at retirement, then people want flexibility with their retirement date, and if we are going to offer guarantees over a wide range of retirement ages, that could also significantly change the cost of the guarantees.

I see one other potential problem. Even if we can persuade the Treasury that it is reasonable to allow companies to take, let us say, an additional 0.5% charge or a 1% charge for the cost of the guarantee, there are so many different variations in the level of guarantees provided, and how they operate, that I cannot see how we could ever come up with a basis that precisely determines the 'correct' charge for a specific type of guarantee. The only workable solution that I could see would be a situation where there is an additional fixed charge that companies would be permitted to charge for the guarantees, for a certain minimum level of guarantee. It would then be left to competition to ensure that companies provide the highest possible level of guarantee, over and above this minimum level, which they could afford to provide within the agreed level of additional charge.

Perhaps, however, I am jumping ahead to assume that we would be allowed to take any additional charge for guarantees, on top of the 1% limit. If we cannot do that, it is going to be very difficult to offer anything that is really worthwhile in terms of guarantees to policyholders.

These are some of the questions that have occurred to me. I do not have the answers, but we do have an urgent task to investigate these issues and to come up with some practical solutions to these questions as soon as possible.

**Mr R. Frankland, F.I.A.:** I make my remarks more in the context that I work on the Transparency Working Party rather than because of any particular work that I have been doing with my own office.

Considering the issue of stakeholder pensions, which is clearly an immediate issue for many members of the profession, we have seen the issue about costs come much more into focus. The paper suggests, broadly, that, for a fairly minimal level of with-profits type guarantee, the cost for a single premium contract, guaranteed through the derivative markets, would be expected to be about 0.5% p.a., as given in Figure 7.1. This is not dissimilar to the aggregate cost of a maturity guarantee as proposed by the Maturity Guarantees Working Party. That 0.5% p.a. is the figure derived by looking at that end of the graph which is shifted towards 100% equity investment, so perhaps the correlation is not surprising. However, it is, perhaps, worth looking at, not just the investment freedom offered to a with-profits office in terms of, as Mr Needleman described it, moving closer to vesting or to where the guarantee bites, but also the investment freedom for the office as investment markets move.

The extent to which freedom is restricted by descriptions such as 'equity returns with smoothing' is, perhaps, open to doubt in these days of better promoted PRE. However, there is undoubtedly freedom for offices, particularly if threatened with capital problems or the need to protect solvency, to move more heavily into fixed-interest investment, if that assists the situation.

That sort of freedom, coupled with maintaining an equity backing ratio less than the 100% indicated, would suggest that it may be possible to achieve these sort of guarantees, albeit at reasonably low levels, within a range of about 0.5% p.a. of the total cost on the fund. In particular, one has to bear in mind that the asset share on a policy does build up quite

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dramatically towards vesting, and the use of a ten-year model might significantly understate the problem where contributions are regular, perhaps increasing towards retirement rather than reducing, so that the mean term between payment of the premium and vesting is actually very short, and therefore the cost of the guarantee represents a relatively high yield addition.

All in all, 0.5% does not sound that much to charge for the sort of guarantee that is provided, particularly if you approach it from the perspective that one of the earlier speakers referred to, of using the with-profits contract to protect against one's own investment mis-timing. On the other hand, 0.5% is a very large element in a with-profits contract which allows only total charges of 1% p.a. The case for allowing additional charges to represent the cost of the guarantee is fairly clear and fairly simple. Certainly, it appears from my reading of the regulations that there would be nothing to stop an investment fund investing part of its assets in equities and part of its assets in derivatives, effectively to provide similar sorts of guarantees to the with-profits contract. Operating in that way would enable it to provide the guarantees, whilst taking the additional charge, and would still be, in effect, within the stakeholder regime. That option appears, potentially, as though it will not be available to with-profits offices for which the cost of the guarantee is regarded as a charge and not as an investment. This is something which I believe that, as a profession, we should be looking to resist. It does not encourage a level playing field between providers, neither does it encourage a prudent approach to pension provision.

As always, this trade-off between investment freedom and cost becomes quite critical, and if we are genuinely to provide smooth equity returns with a minimal level of guarantee, and the cost is to be effectively nullified, we could well be driven back to the sort of with-profits contracts which came out of the 1950s, where investment freedom was more or less minimal, with almost total fixed-interest investment. That, in itself, should not come as much of a surprise to us, bearing in mind that the only recent history that we have of low inflation sustained throughout a period is exactly that time, and to maintain a reasonable level of reversionary bonus, the only way of achieving that was through avoidance of equity investment.

A number of the issues that have been referred to in passing in this discussion were actually raised at the most recent Current Issues in Life Assurance (CILA) seminar. One that is particularly worthy of consideration, I believe, is the misleading nature within the stakeholder contract of the importance of a guarantee, or at least transferability, at retirement age. Certainly the costs fall dramatically if one is looking for a with-profits annuity without a guaranteed cash option. This may be an old fashioned concept, but it is one which actually gives considerably greater investment freedom for a given level of ruin, and does seem to provide real benefits to a prospective pensioner.

**Mr R. Hobbs** (a visitor, Association of British Insurers)**:** On stakeholder pensions in particular, the ABI has been battling with the Treasury: first, to get the with-profits concept included in the investment envelope; and, secondly, then at a reasonable charge. Interestingly, on advice, we had pitched the charge, in a very preliminary way, at roughly 0.5%. What we said was that, at around the 0.5% level, the industry would begin to be able to offer something meaningful in the hands of the customer. It is the customer who really matters in all this.

My belief is that we have sold this to DSS officials very well indeed. The problem — as ever — is with Treasury officials, who simply do not understand the implications. I think that where we have landed, politically, is that Ministers have now impaled themselves on 1%, and so we need to end up with a headline 1%, particularly in the run-up to a General Election. Anything else will be seized upon by the opposition as a U-turn, so somehow the political trick, notwithstanding the very important technical work that would have to be done to make the reality, is to achieve a meaningful charge for offering a meaningful guarantee, but presented in such a way, within the way that the return to the investor is calculated, that the Government could go on saying that the investor is being charged only 1% for that list of items that the 1% was originally intended to cover.

There is some slight daylight here, because the original list of items that the 1% was to cover did not include any kind of guarantee.

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**Mr A. Arbaney, F.I.A.:** A previous speaker referred to the high cost of guarantees in a with-profits fund. To date we have had the marketing arguments for high guarantees and high reversionary bonuses. We have also heard about a policyholder survey that shows that policyholders want high guarantees. The paper gives quantified financial information on the impact of guarantees that can be used to balance against the wish for guarantees and to help assess what might be the best balance for the policyholder. The paper contains a wealth of useful information, and further information is available from the authors.

However, my main comment is that the paper cuts a one-dimensional line through what is a three-dimensional problem. The challenge of managing with-profits business is in varying the asset mix, the reversionary bonuses and the guarantees to achieve optimum results for the policyholders. I wonder if the authors will address this in future work.

Also, there is the concept of the 'revolving fund'. In this case there is no estate to back the guarantees. The guarantees, therefore, are met by other policyholders, which means that any charges from some policyholders are paid to other policyholders. There is hence nil overall charge. This point may become more important in the case of stakeholder pensions if regulations do not permit any additional charge to be made for guarantees.

**Mr M. R. Kipling, F.I.A.:** I shall pick up on two points made by Mr Hobbs and by Mr Arbaney, and reiterate some comments which I made at the CILA seminar last week.

Certainly, with regard to stakeholder pensions, I think that it will be very difficult to justify to the Government charges of more than 1% p.a. on with-profits products. However, I think that the revolving fund approach, just mentioned, does give us a clue as to what we can do. The key with stakeholder pensions, as far as I see it, is to have a ring-fenced fund from which one cannot extract more than 1%. However, one does not necessarily have to attribute the whole of the return in that fund to the policyholders there at that time.

My suggestion would be to have both a short-term and a very long-term smoothing strategy, and take what would be, effectively, a guarantee charge and put it in a 'pot', which will remain in the stakeholder fund for, say, 25 or 30 years. There would be publicly stated 'rules', which would indicate, depending on the investment conditions over that very long term, how each office's 'pot' will be released for the benefit of the stakeholder community.

This approach probably works quite well when stakeholder pensions will have been going for a number of years and the 'pot' has built up — although, given the rate at which pensions regimes change, it may be rather more an academic than a practical solution! However, there is going to be difficulty at start up if the bad times come early on. Ideally, one would be permitted to inject some seed capital and, perhaps more importantly, have a way to get that seed capital back to the other policyholders or shareholders who have provided it — if it has not been consumed, that is. I hope that there will be ways of making 'rules' so that seed capital can be returned in time when it is no longer needed to provide support, together with a fair return on it.

I believe that the current generation of with-profits policyholders owes it to the new generation of with-profits stakeholders to provide some form of financial support, just as they had financial support from the previous generation. Even if returnable seed capital is not permitted, I would hope that the reciprocal fairness of putting a little of the current estate at risk in the early days will be recognised.

Also, I would couple these thoughts with the request that we should start with realistic levels of bonus under stakeholder pensions; around 3% p.a., say, rather than the unrealistically high rates which prevail on some pensions products at present. Otherwise we *will* be facing an almost impossibly difficult challenge.

**Mr P. N. S. Clark, F.I.A.** (closing the discussion)**:** I put my comments under several headings, of which the first is the model itself. One of the key points, as the authors themselves make clear, was that they had taken a basically simple model. That was very useful. Also, they wanted to get some results. It is very easy to spend a great deal of time getting deeper and deeper into the complexities of the model, and then losing completely the wood for all the trees.

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Notwithstanding, Mr Needleman did want more detail on the portfolio results, whether 99% was the right probability; alternative models; some rebalancing in a dynamic investment portfolio. Mr Pelkiewicz considered whether, despite all the comments in the paper, taking the percentage of asset share was actually more in line with what might have been considered appropriate or customary with-profits thinking. There was then an interesting debate between Mr Sutherland and the authors whether such a guaranteed premium should be invested in the same way or should be in a separate pot.

That brings us to the vexed subject of guarantees, which is clearly a significant part of this paper. Mr Gillespie mentioned, quite reasonably, that our customers, let alone our marketing departments, would like a high level of guarantee, a high level of reversionary bonus, and so on. In the discussion on this paper held by the Faculty, Dr Hare referred to Hegel's comment that one thing that we learn from history is that we do not learn from history. So, one just says to Mr Gillespie: "guaranteed annuity options". We are, as an industry, quite good at giving guarantees, and guarantees have a significant cost, which we ignore, as we find, at our peril.

There is a question of what the cost of capital might be. The opener spoke about this obviously depending on the scarcity of capital. Mr Seymour spoke about mutuals with capital 'sloshing around'. There was a robust response, to the effect that the capital was carefully accounted for. If the paper has done nothing else, it must surely cause offices and actuaries of offices to look much more clearly at what these guarantees are costing; how they are being accounted for; and whether the whole thing is sustainable.

The paper Nowell *et al*. (1999) looked at the new paradigm shift: lower inflation; lower investment returns — and now is a good time to look at lower investment returns and consider that these are putting us into a new environment. We need to look at what that is costing us in terms of those guarantees that appeared, at one stage, to be cost-free.

To turn to the subject of with-profits and the concept of with-profits, again it was very useful to consider the discussion at the Faculty, where there was a robust defence of the with-profits concept, which has survived 200 years. Certainly I would want to encourage that. I believe that the with-profits concept is an excellent one.

I question whether many of our customers with unit-linked investment-linked policies do actually know what they have bought, and whether they know what the effect will be if the market falls dramatically.

At the life convention in November 1999 Mr Roger Bootle spoke about the possibility of a very significant stock market correction, and Mr Alasdair Ross Goobey made a similar comment in December 1999 at a meeting of the Bristol Actuarial Society.

So, against that background I do see a significant demand for with-profits. It is a smooth return on the back of a significant level of equity investment. However, clearly there is a heavy scepticism in areas like Her Majesty's Treasury, to name but one, of this whole concept of with-profits. Mr Frankland mentioned that he has been a member of the Transparency Working Party. A great deal of work has gone on within the profession looking at the transparency of with-profits policies. It is good news that the DSS appears to admit to the possibility of with-profits within a stakeholder environment. Again, both Mr Frankland and Mr Hobbs spoke about the way that we can actually work that within the 1% limit. In some way it depends on taking the cost of the guarantee quite separate from that 1%, which brings in some of Mr Kipling's comments. There is clearly significant work that needs to be done, but we need to understand what it is that we are doing.

There has been much talk about transparency. This is clearly a difficult issue. There is a need for transparency if we are going to persuade people, like those in the Treasury and the DSS, of the validity of with-profits. We have to explain clearly what actually is going on, and we have to do it in a way that still retains the appropriate element of flexibility, so that with-profits can still continue to deliver the benefit that it has delivered over these past 200 years. However, we cannot say: "Yes, it is a good thing", and imagine that everyone is going to believe us, because, quite clearly, they do not. The profession has done a tremendous amount of work recently, and is seeking to send a short paper to the DSS and the Treasury, following that up with discussions

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to give some more substance to what it is that we mean by the transparency of with-profits business.

It is clear that not everybody understands what is going on within a with-profits fund. If there are some actuaries here who have been challenged as a result of the paper to think that through a little more closely, it will be no bad thing whatsoever. When you have done that, when you have understood it, then you have to persuade the great British public, the Treasury, the DSS, Parliament and the media what is going on and why this really is a good thing, not just for our self-preservation, but for the good of the consumer.

## REFERENCE

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**Dr D. J. P. Hare, F.F.A.** (replying)**:** In our work we tried to show the effect of different equity backing ratios, so that the results were not too tied to a particular model office. We tried to look at different durations. Also, we tried to touch on both conventional and unitised business. Of course our modelling has been somewhat simplistic, but the closer hit the nail on the head; simple models are useful because they get results. If something is sufficiently simple that you can understand it, then you are well on the way to understanding something of what is going on underneath.

With-profits means different things to different people, and PRE can be different. That has been shown in some of the discussion. People think about with-profits in different ways. It is difficult to get one consistent message to present to the public and to say: "It is not as simple as that''; while it might fall easily to an actuary, is not all that helpful in taking the public forward.

We were very interested in trying to tie the world of derivatives into the world of with-profits. That was why we had the quotation at the start of the paper. We were trying to look at an old friend through new eyes to see whether that shed any new light. In some cases it did, as the discussion has shown. However, you then also have the tension between marketing messages and customer desires for high bonuses, and the financial logic of how much these cost. Reference has already been made to pension annuity guarantees. The quotation from Hegel, which I used in my introduction to the paper at the discussion held by the Faculty, is that the one thing that man learns from history is that man does not learn from history. It would be sad if that were said of the actuarial profession as we seek to make financial sense of the future.

Turning to some other specific points that have been raised: in terms of allowing for future guarantees, we actually did allow for some, albeit briefly, in looking at 2% guaranteed growth in the unitised with-profits example, but, in general, we concentrated on the cost of the guarantees already on the books. Obviously PRE will mean that there are limits to the extent that you can cut bonus rates going forward, but, if the ones on the books seem to cost a lot, then maybe it would be too frightening to consider the rest. Again, we were trying to develop a methodology rather than get the answer.

The 1% was not chosen in retrospect, even though it appears that it was. We actually chose a whole selection of charges to build into that part of our modelling, and then settled on the one that we would present. If you are keen to see the other results, then we can supply them.

There is the tension of being the first to move. If, as a profession, we are presenting ourselves as being guardians of the public good, then we must square the public interest with being the first to move when there is a commercial disadvantage in so doing. The with-profits bond market is quite a good example, where somebody may have to move at some point, but who is it going to be?

A suggestion was made favouring a constant percentage of asset shares as a charge. I think that I understood that to imply not looking below to investigate the cross-subsidies. That is certainly one view of running a with-profits fund. I was interested to hear the comment about transparency. It is difficult to know how far you should go in an individualistic society, where people can buy an individual guarantee on a guaranteed bond or something like that. Inevitably, there will be other structured products that will become available, and make it much more

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commonplace even for regular premium guarantees to be done through specifically structured products. How tenable will it be for the with-profits offices to say: "It is not as simple as that", and it is all one big smoothed pot, and: "Just trust us"?

I am not saying that the person who made that suggestion would want to go quite that far. It seems to me, though, that that is the logical extension of that approach. I do accept, though, that there are no easy solutions to some of these issues.

Mention was made of the revolving fund. We actually thought of calling our paper: 'With-Profits Without Capital', but felt that that might be too tongue in cheek. The revolving fund is certainly one approach to transacting with-profits business, but, as we say in the paper, the amount of capital available will influence how much flexibility you have and will affect your product design as well as your bonus strategy and investment strategy, to name but three.

The discussion brought up the issue of whether or not stochastic modelling is better than intuition. I am not sure that it is a matter of either/or. Any model is only as good as the assumptions that go into it and the wisdom of the people who interpret the results. There are plenty of examples of people who have used models blindly, and then have found that they went astray. Our paper was written to try to help people move things forward.

**The President (Mr P. N. Thornton, F.I.A.):** We have heard how the Treasury is keen to have products that are transparent and where the costs are clear. I hope that it is still as keen on transparency now that the market is getting back to normal as they were when it was rising! There are some here who thought that the share market had got a bit overheated when it was 4,500, never mind 6,000.

Some very significant points have come out in the discussion. Mr Gillespie made the point that our customers want guarantees and want reversionary bonuses. It is important, in the profession, that we do not approach with-profits from the point of view of a product that some companies have been used to providing, and we, somehow, have to make sure that they can continue to provide as before. We have to turn it around and look at it from a consumer's viewpoint.

One thing that has tended to get a bit lost in the stakeholder debate — and Mr Frankland made this point — is that we are talking about retirement income and cash accumulation. I think that the emphasis on with-profits annuities is an important one. Annuities are causing a big problem at the moment. This is getting a little bit off the immediate subject of the paper, but it all ties together. The impact of low inflation, lower investment returns and increasing longevity has caused annuities to be regarded as a major problem and a 'rip off', and so on. While there has been the experimentation with drawdown, that is not the answer either, because people lose sight of the need to ensure that they cover their longevity risk in looking at drawdown. What we need is an investment linkage for annuities and for some equity backing, so that, now that people are retiring in their 50s and living until they are 90, they are not locked into fixed-interest or index-linked investments over that long period. With-profits annuities clearly provide a credible smoothed investment risk pooling mechanism.

I am delighted that the Government has agreed that it will permit with-profits stakeholder pensions. This is a very significant policy statement. It does now mean that the challenges are with us, in the profession, to find a way of making that happen, and also to make sure that the purchaser of a with-profits annuity actually values the guarantees provided.

The paper has been an extremely timely one. As has been said before, it helps us to get a grip on the proper price of the guarantees. I ask you to join me in thanking the authors, the opener, the closer, the contributors and our official guest, Mr Hobbs, for their parts in the proceedings.

## WRITTEN CONTRIBUTION

**The authors subsequently wrote:** We were very glad that our paper stimulated so much lively discussion at both sessional meetings. Our two closers addressed many of the issues raised, and we endorse their comments. There are, undoubtedly, a number of topics which could provide

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opportunities for worthwhile research work in the future, and we look forward to reading what is produced. If other researchers choose to investigate these issues, we would, of course, be glad to supply a copy of our model.

Since writing our paper the world of with-profits business has seen some significant developments, both in the courts (the Equitable Life case) and in the corridors of power (discussions surrounding the role of with-profits in the provision of stakeholder pensions). The cost of with-profits benefits has probably never been more topical.

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