

ABSTRACT OF THE DISCUSSION

HELD BY THE FACULTY OF ACTUARIES

The President (Mr T. D. Kingston, F.F.A.): This paper is very relevant, particularly for anybody working in the insurance business, but beyond that as well, because the whole principle of fair valuation is likely to apply very widely to all companies in the future.

Mr C. J. Hairs, F.I.A. (introducing the paper): It is close to two years since the Working Party was established. We recognised early that we had to start by getting up to speed with the fair value project as a whole, which proved quite a challenge. The ideas, both from the International Accounting Standards Board (IASB) and others, both in the United Kingdom and overseas, and from industries and other financial sectors, have come thick and fast. In the event, a large part of our effort has been invested in getting and in keeping as reasonably up-to-date as is practicable for people holding down full-time jobs.

We do not claim to have covered every comment and paper on the subject that has been introduced, and, in the event, this paper focuses on the situation for U.K. long-term business, although we hope that many of our comments will have wider application.

Any paper which has to be finalised against a moving background is bound to need updating in, at least, some respects. I now update you on three areas.

The first is that the IASB's Steering Committee on Insurance is now hoping to present its Draft Statement of Principles (DSOP) to the IASB meeting at the end of November 2001. As we say in ¶3.1.4, the DSOP is not being formally published, but we do expect its contents to become widely known. The key point is, perhaps, that the DSOP is firming up on a view in relation to entity specific versus fair valuation of liabilities. We understand that the document will propose that, as long as the existing standard IAS 39 for financial instruments is in place, insurance liabilities and assets should be measured at entity specific values.

If a successor standard to IAS 39 introduces fair value for the substantial majority of financial instruments, then the IASB should consider introducing fair value requirements for insurance.

Next, concerning the debate on whether an entity's credit standing should affect the valuation, the DSOP is likely to suggest that, for as long as entity specific valuations apply, values should not be affected by credit standing. However, conceptually at least, fair values should reflect own credit standing. It is recognised that this would have practical implications that need further investigation.

Concerning diversifiable and non-diversifiable risks, both should be reflected in both entity specific and fair valuations; and, concerning profit at point of sale, in the 'exceptional case', where no reliable estimate can be made of market value margin, the market value margin should be set at such a level as leads to no underwriting profit or loss.

In relation to with-profits business, the Steering Committee had earlier suggested, as we report in ¶9.3.4, that, where an obligation to policyholders exists, but cannot be measured reliably, the unallocated divisible surplus should be treated as equity. However, the DSOP will, I understand, be saying that a sufficiently reliable estimate will always be possible, so, wherever a legal or constructive obligation exists, a liability will need to be recognised.

There will, doubtless, be other issues that emerge when the content of the DSOP becomes known. Suffice to say, the precise positioning of the goalposts will continue to be somewhat uncertain for some while yet.

The second area of update relates to developments on the Equitable Life, with the Corley Report at the end of September 2001, and the Financial Services Authority (FSA) Report in mid-October 2001. We have noted that, in ¶36 of its report, the Corley Committee referred to how much of the public confusion over the Equitable Life's situation stemmed from the differences of

approach in calculating liabilities for statutory solvency, market values and best estimates. While the matter was outside the committee's terms of reference, it seemed clear to it that clear and unambiguous reporting of the financial condition of life insurance companies, including informative reporting on risks and uncertainties of the business, would help to ensure that incipient problems were brought to light sufficiently early for appropriate action to be taken.

The FSA's Report, in Section 7.2, proposes a move to fair value accounting, with risk-based capital measures providing the appropriate capital measures. Neither report is suggesting, of course, that this will be the whole answer to why the Equitable Life situation developed in the way in which it did, but it does provide yet further support for the objectives of the fair value project for insurance.

The final area of update relates to the terrible events of 11 September. There is, in fact, a tiny reference, in ¶7.2.1.4, to such events in the context of designing scenarios for stress testing. However, this scarcely does justice to the magnitude of an event which, far from merely creating a blip in the trend of financial indicators, is causing deep seated heart searching, in the United States of America and beyond, on the very parameters of normal life. I believe that the impact will take months and years to emerge in any full sense; suffice, perhaps, for today, to remind ourselves that, with all the sophistication of our models, we can never rule out shocks to the system which, when they occur, necessitate fundamental reappraisals of where the businesses under our care are going. A question of substantial importance to regulators is whether our solvency tests should seek to allow for such contingencies. My personal view is that great care should be taken to hold back from trying to protect against the 'in your wildest dreams or nightmares' scenarios, since, ultimately, total security is beyond any earthly power to provide.

We do not pretend that our paper is stuffed full of new insights. In many ways, our brief has been to bring together considerations that were already out there, to give them a shape, and to present them so as to alert any members of the profession who thought, perhaps, that this was a topic that could safely be left on the back burner. In fact, the topic is racing along and is one with which we need to keep up. However, we have made our thinking clear on a number of points, including some new suggestions, such as our proposal of an Actuarial Standards Board.

The Life Board and the two Councils will be looking for the views of the profession as a guide to how these issues are taken forward. I and the rest of the Working Party look forward to hearing those views in this discussion.

Mr W. J. Robertson, F.F.A. (opening the discussion): Fair value is an extremely challenging concept. In business, there is an enormous pressure to identify a single fair value answer. I have always believed that most issues have a range of possible solutions. So, I was encouraged to see that, in ¶4.1, the Working Party took a practical approach to fair value, and stressed the need to reinforce the message that there is no unique 'financially correct' value, even in the most liquid and deepest of markets.

The members of the Working Party have produced an extremely comprehensive summary of this difficult subject, which covers a number of technical issues, but also seeks to introduce the practical realities which we will need to embrace if fair value is going to be adopted successfully.

In Section 1.1 the authors comment on the other initiative of the IASB — Mr Hairs referred to this earlier — in relation to financial instruments or IAS 39. They mention, later in the paper, how this initiative underlies much of fair value accounting for insurance contracts. It is likely that this initiative, in relation to financial instruments, will progress at a much slower pace than the insurance project. This is very unfortunate for a couple of reasons. First, it was going to help to codify and to clarify a number of issues in relation to valuing cash flows for insurance contracts. However, secondly, and more importantly, it would help to ensure a level playing field for the various contracts which exist in the financial services marketplace — a situation which does not exist today. For example, it is difficult to understand any real difference between a mutual fund and an insurance bond, or a regular premium ISA and a unit-linked insurance contract. However, the accounting treatment of these different products could continue to offer

arbitrage opportunities if fair value applies to insurance contracts and no similar approach applies to mutual funds. Paragraph 3.2.2 covers a definition of an insurance contract which involves acceptance of what is called 'an insurance risk'. It is not clear that a unit-linked contract involves any insurance risk. The problems associated with splitting a contract for an individual person, where you are trying to look at premiums allocated to with-profits, which would come under the insurance accounting regime, and premiums allocated to investment-linked, which would come under another accounting regime, is not an attractive option for us. Again, this situation is not helped by the slowdown in the financial instruments project. However, there are encouraging signs, in that the DSOP seems to be adopting a reasonably practical approach to this particular issue.

In ¶1.1.4 the authors' comment that the IASB Steering Committee's thinking seems clear. I think that that is a reasonably fair statement to make from a principle point of view, but, from the actuary's point of view, who has actually to implement the detail, there are many unresolved issues, and some of them are going to be pretty formidable. In ¶C.7.3 the Fair Values Calculation Group list a number of areas where judgement will be needed. Many of these are areas where we, as actuaries, already exercise judgement, but the one that concerns me most relates to the need for stochastic modelling. I have attended a number of meetings at the Faculty where experts have discussed the relative merits of the Wilkie model and other models. It is, perhaps, indicative of my level of understanding that I have been less than 100% clear as to why so much heat was generated about the differences between these models. This paper also introduces deflators — a relatively new concept for me. In ¶10.1 it is commented that the International Actuarial Association (IAA) suggests that the profession is in a strong position to assume responsibilities relating to fair value, and the Working Party supports this view. I have real concerns that knowledge amongst actuaries on stochastic modelling and option theory is narrowly held, and that, probably, as a profession, we are less capable than some areas of the banking sector. We have enormous strengths in the insurance sector, but I believe that a major education drive is needed in relation to stochastic modelling. The latest seminar on financial economics was a good first step, but it needs to be followed up. Equally importantly, work will be needed with all parties — auditors, accountants, financial analysts and the press — to educate them about the impact on the results from different models. Full disclosure will be absolutely critical to this issue.

At various points in the paper the authors mention the establishment of an Actuarial Standards Board. In ¶10.4 it is noted that the IAA is also intending to develop professional standards for actuaries. This is going to be necessary, and the accounting profession will be looking to actuaries to have a robust set of standards which ensure consistency and comparability of accounts in place. While not seeking to underestimate the size of the task here, it is worth noting that the existing accounting methods involve a considerable amount of judgement. They are not just a simple statement of facts. Actuaries, under the current proposals, as well as under previous proposals, have been using judgement. The proposals should be seen as evolutionary rather than revolutionary, from a judgement perspective.

Appendix B covers the issue of entity specific values. I think that the Working Party's view that entity specific assumptions are acceptable is both logical and practical. However, I am not sure that I agree with the comment, in ¶1.3.2, that any differences between the two are small. As an example, for expenses, fair value would suggest the use of a market rate of expenses rather than a company specific figure. Anyone who has been involved with expense apportionment will know just how many company specific figures can be produced for one office without too much effort on your part. Equally, they will be aware of the very significant differences between companies — the gap between low cost and high cost is certainly not small. A move to an average market expense level could have a major impact on some companies' fair value results. My concern is that, while I agree with the Working Party's preference for entity specific values, I suspect that fair value of expenses may reappear on the agenda once the financial instruments project is complete. I am not certain that the accounting profession really understands the difficulties involved in producing a market level of expenses. As mentioned in ¶4.12, third party

administrators give some assistance, but they certainly are not going to give the whole answer. So, while I agree with the conclusion that entity specific expenses make sense, I do not agree that the impact of this conclusion will be small for everyone. We could also go through a very similar argument if we were to consider issues such as lapses, where we look at market related lapses against entity specifics.

Appendix B3 provides a very good summary of the arguments for and against the use of credit standing in valuing liabilities. I have sat through quite a number of IAA meetings where we have gone through the arguments. It is not an easy subject, and I thought that Appendix B3 was a very useful summary of the issues. There is clearly a really strange logic that results in a drop in credit standing, resulting in a higher discount rate applying to liabilities, and hence lower liabilities, and, coming from that, an increase in your credit standing and, as a result, higher liabilities. This just seems to go on and on and on. On top of that, I do not believe that the credit rating systems, in their current form, are sufficiently sophisticated to support fair value calculations. However, I do not think that I agree with the authors, in Section B3.8, where they suggest that a strong company acquiring a weak company's liabilities would immediately see an increase in the liabilities, and therefore use of credit rating is inappropriate. In these circumstances, it is certainly a possibility that the strong company would require some kind of financial incentive to take this liability onto its books. The problem with this issue is that financial logic indicates that strong companies should put a higher value on liabilities, and should be able to charge higher premiums to reflect that strength. However, in the practical world, financial logic presents the difficulties outlined well in Appendix B3, so we are likely to see credit rating ignored, at least for a while. When the financial instruments project is complete, this will become a thorny issue.

Paragraph 5.1.2 mentions the regulatory arbitrage possibilities that are available today. Any system that strives to ensure greater consistency across markets must make sense. It is very difficult to argue that we do not have an issue to address if a guaranteed annuity option (GAO) has one value in the U.K., a different value in Ireland, and another value in Bermuda. Similarly, the insurance industry and the banking industry in the U.K. have, for a long time, offered guaranteed funds which seem to be treated differently, depending upon whether they are insurance contracts or bank deposits. I am not sure that many customers actually know that there is a difference. Addressing this via regulation and accounting standards must make sense.

Section 6.3 addresses risk-based capital. The appropriate level of market value margins is an area where there is little detail to-date. I do not think that the thinking, in terms of the size of market value margins, has gone very far. However, I have a sense that the 80% upper bound covered in the paper looked a little high. Equally, I wonder if 95% certainty of solvency is high enough — the 99.95% mentioned in ¶6.5.1 as the IAA's proposal, however, seems too high. I suspect that most U.K. life companies would have some difficulty in demonstrating adequate capital to meet a 99.95% test now. This is likely to be a very difficult issue, particularly now, when almost all offices will have depressed capital reserves. Having said all that, on the one hand, customers will not want to hear that there is a 5% chance that their insurer will not be able to meet and absorb all difficult conditions — on the other hand, 99.95% maybe means that they do not actually have any insurers. The answer may end up between these two figures.

On risk capital, the paper outlines, in a number of areas, the two options of the building block approach and probabilistic/stochastic models. Events of the last 12 months have certainly taught me that we have to embrace stochastic modelling fully, difficult though it may be. I believe that, as a profession, this is an area where we should be unequivocal. The quote in ¶4.7.1: "that companies which cannot afford to measure complex risks should be discouraged from assuming those risks" must be absolutely right, and exactly the right message for the profession to give. Equally, any companies which have assumed risks in the past must have the appropriate systems in place to measure the impact of any risks that they have assumed. We cannot, as a profession, sit on the fence on this particular matter.

My final comment relates to Section 9 on with-profits. It would be possible to spend an enormous amount of time on this section, as the Working Party have covered a lot of ground.

There are many other subjects to be covered, too. I restrict my comments to an observation that with-profits is exceptionally complex in this fair value world — not that it is not complex now, in current investment conditions. Having said that, much of this complexity is associated with exposing the mismatch, and consequent real costs, involved in providing guarantees backed by equities — exposing this mismatch must be a good thing, but could it be the death of with-profits? The point that I would like to bring out here, though, is that, as the authors recognise in Appendix C, the calculations are much more difficult for with-profits than for other insurance products, and this will undoubtedly make the challenges faced by the U.K. industry more significant than those faced by other countries, where with-profits is less prevalent.

I have spent the last few years heavily involved in fair value accounting, and am well aware of the enormous amount of information that has been pulled together in this paper. So, I congratulate the authors on providing such a comprehensive summary of the issues relating to this subject, and also for linking fair value accounting to the equally important matter of prudential solvency reporting.

Mr S. Creedon, F.I.A.: I have, on more than one occasion since 11 September, heard executives of Continental European insurers and reinsurers suggest that transparent accounting would be a threat to confidence in the insurance industry. I believe that this paper, in the way in which it embraces aspects of prudential regulation, is the best riposte to that argument that I have yet come across.

As the authors observe, in Section 3.3, there are sharply differing views as to the appropriateness of the likely IASB proposals, and I have to acknowledge that discussions, even with colleagues actively involved in the formulation of those proposals, can generate more heat than light. It seems moot that we will have a standard for insurance contracts by 2005, when the European Union envisages that quoted companies will be obliged to comply.

It is appropriate to make the case for fair values again now. Fair value accounting facilitates alignment of the interests of investors and of management. Less transparent accounting frameworks include scope for discretion — such as, for example, the categorisation of assets under U.S. GAAP — and create the potential for management to pursue objectives which are not necessarily in the interests of investors. These agency costs increase the cost of capital, and generally make for a less efficient industry.

Fair value accounting in insurance is likely to enhance competition, as investors become better placed to distinguish between competent and less effective managements. This should be good news for those managements which have the ability to succeed and to explain themselves to investors.

Fair value accounting has, as the paper excellently demonstrates, the potential to be the basis for effective prudential supervision of financial resource adequacy and risk management. It will enable local and supranational regulators to apply stress test overlays more effectively than under any alternative approach.

The insurance industry is as much concerned with the availability of capital as with its cost. Transparent disclosure will be a positive for the sector in the context of global capital markets, and will make it easier for competent management to attract the capital resources which recent sad events have demonstrated that the industry will undoubtedly continue to need.

The question of how best to supervise life assurance business is one which seems more open today than at almost any time in my 30 years' direct experience. I believe that this paper makes an important contribution to the achievement of a rational basis which has the potential to be consistent with other elements of the financial services industry, such as banks and others. My comments are from the perspective of basic strong agreement, even enthusiasm.

The paper deals principally with the quantitative rather than the organisational aspects of risk and capital management. Nevertheless, I agree wholeheartedly with the suggestion, in ¶5.3.3, that educated actuaries can have a considerable part to play. I would, however, suggest caution in linking this too closely with the Appointed Actuary system as it stands — I believe that that system has, at times, operated to complicate sound corporate governance.

The question raised in ¶6.6.1 is a fair one. If, as I believe, we should, as actuaries, be trying to suggest approaches which can be applicable beyond life assurance, then I would argue for the expected cost of ruin approach as being easier to implement, for example, in the casualty insurance context also.

Like the opener, I recognise the dilemma as between stochastic modelling and stress testing, posed in Section 7, although I agree with the authors' implication — if that is fair — that the dilemma is more apparent than real. Certainly, best practice risk management in banking uses both approaches in tandem.

I now turn to the interesting question of an Actuarial Standards Board, with a specific brief for fair value comparability. As an actuary who is also obliged by his status to be an affiliate member of the Institute of Chartered Accountants, I share the reservations expressed about the creation of an extra body in this particular area. I should say that this is a personal view only. I can, however, recognise the arguments for an ASB, which, I believe, if taken to their logical conclusion, would argue for a similar body to the U.S. North American ASB — with a similarly broad brief.

Mr R. W. King, F.I.A.: I have comments on two sections. In particular, in ¶7.2.1.3 the authors state that stress tests should be updated as investment conditions change, but point out that the specification of such tests is not easy. I agree with both of these points from practical experience.

In that same section the authors refer to difficulties encountered by the Resilience Reserves Working Party in designing appropriate life office resilience tests. I was a member of that Working Party. Our report was presented at last year's Life Convention, and I would like to share with you some of the practical issues that we encountered, for I believe that they are relevant to this paper, and that they have already been alluded to by earlier speakers.

As many here will be aware, the standard resilience tests were specified in letters from the Government Actuary to Appointed Actuaries. To a degree these tests did reflect changing investment conditions, as evidenced by modification letters in November 1998 and September 1999 and, more recently, by two letters from the FSA in September 2001. However, such modifications are unpredictable, both in their timing and in their content. That is unhelpful, especially where an office is trying to model its future financial position under various future scenarios — be they stochastic or deterministic approaches. Therefore, our Working Party sought to produce a set of appropriate dynamic tests, which would vary as investment conditions changed.

I consider that we achieved this — eventually — but not by the route upon which we embarked. In fact, I am led to believe that our recommendations met with some alarm within the profession. The figure that we came out with, based on end-December 1999 values, suggested that, for our 'equity fall only' test, the Appointed Actuary should allow for a 31% fall in U.K. equity values. For the more onerous 'equity fall fixed-interest-free yield rise' test, we suggested an equity fall of 44%. To those of us old enough to remember the 1970s, I do not think that that was unreasonable. In fact, by 21 September 2001 the All-Share Index had fallen 34% from its level at the end of December 1999.

I said that we achieved this objective eventually. Our initial approach was to derive appropriate tests from stochastic modelling of both assets and liabilities. We began with a fairly simple approach. The liability model was simply a closed book of 15-year level annual premium accumulating with-profits policies, and we intended then to extend the model to other product lines. However, we did not even manage to complete the work on simple Model 1. We encountered a number of practical issues that are relevant to this discussion, for many of them are flagged by the authors in Sections 6 and 7. For example, in ¶6.6.3 the authors ask to what extent it is reasonable to allow for management actions in modelling the probability of ruin. Allowance for management action cannot be avoided, but this proved to be our major stumbling block.

Unsurprisingly, we discovered that the insolvency risk to a with-profits office depended upon the guarantees within the contract. They, themselves, relate to the bonuses declared. That is

management action. We also found that a reluctance to alter smoothing practices, for example by having a rule that payouts of equivalent policies should not fall by more than 10% year-on-year, would particularly give rise to solvency problems in sharply falling markets. In other words, a judgement has to be made on how swiftly management would recognise a crisis and on its willingness to then react to it.

We concluded that a flexible smoothing policy is of critical importance in containing the risk of insolvency. It is to be hoped that this important point will be taken on board by the various parties currently reviewing with-profits products.

In ¶6.6.5, the authors ask: “Over what timescale should the risk of ruin be measured?” Is the question one of statutory solvency, which is a continuous requirement on the company’s directors, or one of ruin — in other words, that the assets will be exhausted before the liabilities? That is an important question. In our Working Party, we were focusing on short-term statutory insolvency, for we had been advised by the GAD that the purpose of the resilience test was to give the regulator comfort. An office meeting the resilience test scenarios would be unlikely to require statutory intervention before the next annual return was due. However, when running the stochastic asset/liability model, we calculated the probabilities of absolute ruin and of statutory insolvency at any time in the future, as well as just in the short term, which we took to be two years.

Our general conclusion was that the probability of short-term statutory insolvency was higher than the probability of absolute ruin, and that the probability of statutory insolvency at any time was significantly higher still. That could lead to a much higher capital requirement if you are trying to focus on never being statutorily insolvent. However, statutory insolvency is only meant to be a leading indicator to ultimate ruin. I should say that, perhaps, these results were the consequence of the model that we used, which we termed ‘Wilkie with jumps’. We did so in order to address short-term stresses. We wanted something that was more volatile than the normal Wilkie model. This does underscore the authors’ comment that it is very important that you choose a stochastic model which is appropriate for the purpose.

Mr P. K. Joshi, F.F.A.: This is a very lucid and timely paper. I support the principal conclusion on prudential reporting, that a risk-based capital framework under fair value is a good future basis, and I will confine my remarks mainly to that aspect of fair value.

I note, in ¶8.9, that the authors suggest bringing in some conventional aspects of valuation into a risk-based capital framework, such as ensuring that the liability assessed covers surrender values, and that no future valuation strain might occur. I did wonder whether that was not an implicit admission that they doubted the validity of risk-based capital under fair value, although, at least with the aspect of future valuation strain, I must admit that I did not manage fully to see the implications of risk-based capital on valuation strain.

One of the fundamental questions that a number of speakers have already recognised — in particular, Mr King — is the term over which the risk-based capital is intended to be sufficient. Is it intended to be sufficient over one year, two years, or, in fact, the lifetime of the portfolio?

The authors suggest that we should look at the long term — 20-30 years, no doubt, and perhaps longer for some insurance portfolios — and look at acceptable run-offs in those situations, rather than maintenance of constant solvency. It may be that a better financial economist than I can actually understand the implications of a framework in which there are frequent insolvencies and regulatory interventions required, but a lot of acceptable run-offs, and demonstrate that that is impossible. However, I would be surprised if a regulator was happy to see a framework for risk-based capital in which we expected a substantial number of insolvencies and regulatory interventions followed by acceptable run-offs.

I think that the main issue, in terms of the length of the projection, and the conclusion that we need to look at a long-term rather than a short-term projection, arises from unmatchable guarantees; liabilities that cannot be closed out. In a conventional banking framework it is much easier to close out your liabilities at the end of a quarter or a year, and therefore one can look at value at risk over that period. The authors suggest using a stochastic investment model for a

long-term projection of the cost of these guarantees and other aspects of the long term. I think that, in the U.K., this is a particular issue for us, because the guarantees inherent in with-profits business and the fact that, as the opener recognised, these guarantees are backed by equities, leads to a guarantee that is fundamentally not hedged and is very difficult to close out.

As someone who worked on some of the calculations underlying the risk-based paper from Hylands *et al.* (1993), I was fascinated by the interaction that Mr King highlighted between management action, whether on investment policy as things developed or on bonuses. However, I was left with a feeling that the capital requirements which were derived, at least when I did this, were extremely judgemental, because the allowance for management action was extremely complex.

I have also been very uncomfortable with stochastic models that I have looked at in the past, in that, for risk-based capital requirements, we are looking at the tails of a very-long-term projection of equity values. I find it very difficult to have any real confidence that a purported 1% confidence interval on 30-year equity returns really was 1%, or anything close to 1%. My personal preference would, therefore, be to use stress testing for the long-term investment return assumption, coupled with a recognition that short-term fluctuation in equity values is probably reasonably well modelled by existing models used by banks in the value at risk framework. This should be combined with a long-term view of equity returns that might be specified, or a range of equity returns. I also think that stress testing might lead to a better dialogue with our regulators. If we talk about the potential long-term assumption for equity returns, I think that we can talk to regulators about: "Well, provided equity returns remain above this level over the long-term", rather than talking about 1% ruin probabilities under speculative stochastic investment models.

Another issue that I have been wondering about is whether or not, when we talk about ruin probabilities, we should differentiate between company-specific ruin and industry-wide ruin. I have not seen much written about this subject yet, but I think that the issues of industry-wide ruin and unmatched investment guarantees are quite different in nature from company-specific and relatively diversifiable risks.

Dr A. J. G. Cairns, F.F.A.: Of the many nice statements in the paper, I liked, particularly, the separation of fair value for accounting purposes from solvency reserving, but trying, on some level, to keep consistency between the two. I think that it is a very important part of the role of actuaries to look at both of these and the relationship between them very carefully.

I now make some comments which go back to first principles, and which look at the definition of what is fair value, because this is what we need to know if we are going to come up with any sensible answers.

In ¶1.1.2 the authors state that: "Fair value is defined as: "the amount for which an asset could be exchanged or a liability settled between knowledgeable, willing parties in an arm's length transaction." " Let us think about this for a moment, and consider some of the key words in that definition. There is 'arm's length', which means that the price is fair, or is not rigged in any way. That is a perfectly good statement. The word 'knowledgeable' is a very clever inclusion, because I think that it means that both parties in such a transaction are using full information, but they are not just using full information, but they are probably also using the same model and parameter values. That is very important, because, in contrast, if you use different models or different parameter values, then it means that you will end up, potentially, with very different prices. (See, for example, Cairns, 2001.)

What concerns me about this definition of fair value is what we mean by 'willing'. What does that actually mean in terms of the calculations that we do? Let us consider the transaction. One party would give another party the liability plus some cash to take over the liability. 'Willing' means that it must be beneficial to both parties. I now give a very simple example (and if we cannot get the definition to work for a very simple example, then we cannot expect it to work for a more realistic situation). Suppose that we have two investors, A and B. Investor A has some uncertain liability, which we will call L . That is in one year. Along with this liability, the investor

will also invest in other assets in the market in a way which will optimise his expected utility, taking into account the fact that he has this liability in one year's time.

Alternatively, the investor could pay an amount P to the second investor B to transfer this liability. Once he has done that, he will then reorganise his assets in order again to remaximise his expected utility. This is a very important point. He is always acting in an optimal way. The expected utility will go up or down, depending on the price exchanged between the two investors. In this transaction, there is what we would call the indifferent price PA , the price at which investor A's expected utility is unaffected by the transfer of the liability. With this particular price the expected utility is not changed, and if the price that is exchanged is less than the critical level, then investor A will gain, because his expected utility is going up.

Similarly, investor B will have some minimum price, which we will call PB . This is the minimum price which B is prepared to accept to take on the liability. For both investors to be happy with the transaction, the actual price must be both greater than PB and less than PA . The problem is: "Which price in this range do they choose?"

That is one problem. There is another problem that both of these prices, PA and PB , depend upon the two investors' utility functions and their other liabilities. In what sense can this be transparent to outsiders? Also, the price per unit of liability will depend upon the number of units of liability being transferred. This violates one of the key principles of fair value: if you take the fair value of one liability plus the fair value of a second liability, or alternatively calculate the fair value of the combination, you should get the same answer, but you will not in this case. Another problem is: "What if the two acceptable intervals for the two investors do not overlap (that is if PA is less than PB)?" Then they are never going to enter into the transaction in the first place.

Finally, if investor A is indifferent to keeping the liability or not at the price PA , then there will be an intermediate point at which his expected utility is higher. It may be that he, in fact, sells half of the liability, and that will be better than getting rid of it.

To conclude, the definition which is given in the paper is, in some sense, fundamentally flawed. It is open to much vagueness. It is not precise. Surely, preciseness, at least in the basic definition, is something that we are aiming for. If we stick with the present definition, it will lead to the usual subjective assessments of values which we used before.

The alternative definition of fair value, which says that it is the best estimate of the price at which it would be bought and sold if a liquid market existed in such an asset, as mentioned in the paper, is a much more awkward concept, perhaps, but it is much more fundamentally sound. It requires an honest and fair assessment of the market prices of risk for the non-market risks, such as insurance risk. So, even though the definition given in the paper is a widely accepted definition around the world for life insurance and non-life insurance liabilities, I would strongly recommend that we go back and review that definition.

REFERENCE

CAIRNS, A. J. G. (2001). From financial economics to fair value. *Proceedings of the 11th International AFIR Colloquium*, I, 135-168.

Mr J. Goford, F.I.A.: This excellent paper passes the communication test; it is interesting, kept my attention, and brings out the fact that actuaries are comfortable in the land of balance sheets. Having tried to bring in the accruals method, which was an attempt to come up with an accounting system based on matching costs and revenues, we were forced to think about applying rules on when to bring through profits. There was a fundamental part of the basis which I always thought was nonsense. So, it is a great pleasure to see us firmly in the land of the balance sheet, and to see the accountants with us, too.

So, what dangers does it bring? I think that there are two main ones. The major one is that we are now dealing with profit being the change of net worth, and the net worth being the difference between two large numbers. Hence, we have the problem of volatility and how to cope

with it. This is in direct conflict with the desire of analysts for smooth, steady growth in earnings. Even when they get their smooth, steady growth in earnings, they will apply a price/earnings multiple to the accounted earnings and allow implicitly for intangibles. So, these are the two main issues which are outstanding.

Nevertheless, I think that we can add value to help to resolve these issues further. It would be through the analysis of those items that are volatile, to isolate them from those which are not, to help the analysts in their natural process of applying multiples to earnings. This will also help finance directors get off the hook of having to produce a smooth, steady growth in earnings, and will remove the definition of a finance director as someone who takes the wobbly earnings from the accounts department, and the actuary who has to smooth them. I think that it might also help the European insurers off the hook of fear of what real accounting is about.

The analyses that I think we should add on are quite specific:

- (1) This is the analysis of movement of the expected values; in other words, if the value is calculated at the beginning of the year, we use all the assumptions that are in there, and, if we do it at the end of the year, we can demonstrate how we get from one to the other in a meaningful way for communication.
- (2) This is the analysis of the surplus of distributable profits, particularly in a with-profits fund.
- (3) This is the analysis of variance from the expected.

By getting these analyses performed and well communicated, we will build that learning loop, both with ourselves and with the accountants.

There is also the problem of the tail. I am now confused, because, in ¶7.3.1, the authors state that there is a problem with the tail. Mr Joshi said that there was not, but I am reminded here of the work that Mr John Pemberton did, where he said, particularly about the tail, that if we are very uncertain about what the tail is, and it is difficult to model, then why do we not use the data that we have? Indeed, the paper mentioned the data. We know that we had problems in 1974, 1987, 1998 and September 2001, so why do we not use those as the tail? You could have data on the tail and smooth the rest of it. It is crucial to model management action. This is an area where we need some further research.

Mr G. D. Clay, F.I.A.: The Working Party has produced, throughout the paper, a clear distinction between what is relevant for prudential supervision and what is relevant for Companies Act general purpose reporting. I will comment on two broad areas.

I think that it has been a Holy Grail of this profession for well over 100 years that you can measure either the balance sheet or the profit and loss account; you cannot measure both. This point used to appear in 19th century discussions at the Faculty and at the Institute, on the relative merits of the net premium and the bonus reserve valuation methods. We may, at last, have a solution to that — congratulations!

However, the paper also addresses the elements of the realistic valuation. Can we all be very careful to be as clear as the authors as to which sort of valuation we are talking about at any time? I think that valuation is a subject where we can very easily trip over ourselves, as result of using loose terminology. It is also important that we put in the effort required, firstly, to tidy up the inevitable loose theoretical edges that exist at the moment, and, secondly, to make sure that we identify the inevitable practical difficulties of implementation, and then address how we manage those difficulties.

The other broad area that I would like to touch on is the mooted Actuarial Standards Board. I have a certain responsibility for the *Manual of Actuarial Practice*: directly for the Professional Conduct Standards (PCS); and indirectly for the guidance notes (GNs). The Professional Affairs Board has sought the assistance of the Practice Boards in the elimination of examples from the GNs, because our experience with the PCS is that the examples get out of date and do not actually help. Detailed discussion has demonstrated that people read different degrees of significance into any example, which can lead the reader who does not get into such discussion to

go off in a rather eccentric direction — I put it no more strongly than that. The ASB seems likely to produce examples.

If the profession decides to support an Actuarial Standards Board for life insurance, there is quite a major question for it on what it should do in the other areas of practice. On the pensions front, there are many GNs, which I am inclined to refer to as tertiary legislation. The Government knows that it cannot set out suitable permanent rules in black and white, so it asks the profession to try to manage the problem on a more flexible basis. Are we heading off down some remarkably slippery slope with the ASB? In that context, I was rather concerned to find, in Section C.7, suggestions that the ASB might try to determine suitable parameters for best estimate assumptions, for instance of mortality or correlations of non-economic assumptions. It would be a very brave board which thought that it had better ideas on that than anyone else, even if it felt that it would be inappropriate to publish assumptions with any sort of professional imprimatur on them.

I agree with the Working Party that this is an area which is clearly worth exploring, but, before we commit ourselves to it, can we consider some of the potential wider ramifications?

Mr H. J. A. Scott, F.F.A. (closing the discussion): I have a concern about fair value — it is all a bit of a 'black box'. I could work out a traditional actuarial reserve if you gave me a book of tables. I could work out an embedded value if you gave me a little bit more time. However, I am not at all sure that I could ever arrive at a fair value just working at my desk with a pencil and paper. I worry that fair value might be quite difficult for us to understand. Some others in this discussion have also expressed some doubts about our abilities to handle these things properly.

Mr Creedon referred to some fear of transparency among some of our European colleagues and other insurers. That must surely be a cause of concern. Mr Goford was concerned about volatility, which is a problem. We have seen, in some of the pensions areas, that volatile results could influence the ways in which people behave, purely to avoid the volatility, and not necessarily because the underlying actions are the best way forward. He did, however, suggest that we might get around this, to some extent, if we could produce a proper analysis of the emerging profits. That is a line which we must follow a little more.

The definition of fair value, in Section 1, may work in a deep and liquid market, but, as Dr Cairns pointed out, there may be some theoretical problems in other circumstances, and we need to examine these ideas a little more carefully.

I did have a wry smile from ¶1.4.4.3, where there was a reference to dialogue with the regulators. I got into trouble, a few years ago, with the Government Actuary, when I went on record as saying that a visit that my company had had from the regulators had been a singularly useless experience — at least from the point of view of the company. It may be that regulators have improved since then, but, on that occasion, there was no feedback from the regulators at all. It was all questions from one side, answers from the other. I hope that that will improve in the future.

Section 2 considers the purposes of valuation, and, if we can achieve the objective of having a single method that can apply for all the different purposes, but with different parameters, or, at the very least, consistency and reconciliation between the different valuations, then we will indeed have achieved something very valuable.

Like some other speakers, I stopped at the definition, in Section 3, of an insurance contract. I was not entirely sure that it worked. Certainly, it did not seem to cover all the things that my insurance employer currently sells. I came back to this point, in ¶5.1.3, where there is a reference to regulatory arbitrage, and the fact that very similar things are sold by different types of institutions. I think that there is a problem here. I am not sure that the definition that we have necessarily covers all the things that insurers currently sell.

The Working Party offered some views, in Section 4, on the proposals. Among the things mentioned was that fair value was independent of the statutory solvency basis. This is very different, for example, from embedded value, where the statutory basis does matter. Perhaps this is because the risk discount rate that we use for an embedded value is not usually all that close to the market rate, and so the timing of cash flows becomes important.

Section 5 gave some information about current trends in prudential supervision and referred to the FSA's draft *Integrated Prudential Sourcebook* (IPSB). I do have a worry about this. I understand that the FSA, in the follow-up to the recent Baird Review, has instituted a further review on the future regulation of insurance. I am not entirely sure how much of the IPSB will follow through into 'made' rules.

Fair value does not depend on the actual assets held by the company. That might seem strange at first, but the circle is squared when you get onto the prudential supervision consideration of risk-based capital, because that will bring in the actual assets held, and how well they match the liabilities.

We have had a certain amount of discussion about what we mean by ruin. Different people will have different views on ruin. Shareholders will be ruined before policyholders lose any money. The question of timescales, and the question of choosing an acceptable ruin probability, are both very difficult.

We have had some discussion about the relative merits of stress tests and stochastic modelling. Stress tests, to my mind, have the advantage that I can understand them. If someone tells me: "I have tested this down to a FTSE level of such and such", I know what that means. I have a great deal more difficulty understanding what it means if I am told that, on the Wilkie model, there is a 1% probability of ruin. That may just be my ignorance, and my need to get a bit more practice with stochastic models, but I suspect that I am not alone.

We were reminded, in Section 8, that there are non-financial risks, and these can be very important. It seems to me that a number of failures that we have seen over the years, in insurance and in other financial institutions, have arisen, not from financial risks, but from business and operational risks, and we need to factor these into our thinking.

Paragraph 8.9 suggests that: we might break our traditional rules of requiring our prudential valuation to have cover for the surrender values; we might be allowed to make allowance for withdrawals, even if that reduced the reserves; we might be able to treat some contracts as assets; and we might be allowed to have future valuation strains. I struggle with these ideas, although I note that at least one speaker seemed not to want to have any of what we might call artificial constraints.

Section 9 discussed with-profits. This is an area where we will need to have further discussions. There are many variations of with-profits, and it is a complex area. The question of whether to reserve for terminal bonus comes up here, as it does in the FSA's draft IPSB. I hope that many of those here will comment on that point to the FSA.

Should terminal bonus be a liability? My view is that it might be possible to have it as a liability, if we have a fair value for the underlying guaranteed liability, but I am rather doubtful about putting a terminal bonus reserve on top of a net premium valuation of the underlying liability.

Section 10 reassures us that there is plenty of work still for the actuarial profession. Judgement, estimation and things that we think that we are expert at will all be required in great quantities.

On the subject of further work, I would draw your attention to Section 11.2 and, in particular, ¶11.2.3. If the fair value project is to proceed, there is a great deal of further work to be done. We need, and would welcome, volunteers to assist.

The appendices have a number of topics in them. We have discussed one here, the Actuarial Standards Board — do we need one or not? Various views have been expressed. We have some precedents for the principle that, where comparability is important, we have set standards. Mr Clay referred, in somewhat scathing terms, to the 'tertiary legislation' that appears in some of our pensions guidance notes. Those of us who work in the life assurance sector might be more familiar with the illustrations that we have to produce for future possible benefits for new business. The bases for these are very prescriptive; but, if you need comparability, the only way to get that is to have a fair degree of prescription.

Credit standing came in for some discussion. I agree with the Working Party view, in Section B3.8, but not everyone agreed.

Appendix B6 referred to deflators. I am beginning to understand deflators, but only just. I come back to a theme that I mentioned earlier. I worry that we seem to need a tool where the result emerges as the output from some sort of black box that I, at least, find conceptually quite difficult, and which all of us, I am sure, would find computationally quite impractical without modern computing power. The problems of checking, auditing and controlling such a tool must be quite large, and that is a cause of concern.

There has not been much reference in the discussion to the sample calculations that were offered by the calculations group. These do repay study. They certainly helped me to understand things. They tended to reinforce my fears that fair values are alarmingly complex procedures. The calculations group obviously had to do a lot of work to produce the figures. That cannot be a happy thought as we go forward, and have to get the necessary systems up and running in our own offices.

Dr D. J. P. Hare, F.F.A. (replying): Nobody has taken really serious issue with what the Working Party has written in the paper. However, that is maybe because some of the things that we have written have not been mentioned. When we wrote down a list of the issues that we were expecting to get some comments on, one was: "Has fair value a future?" We are grateful that the discussion did not degenerate into an argument over whether fair value has a future or not. We were interested to hear Dr Cairns's comments on the definition of fair value that we used. We will think about that, and see whether we can make any comments to the IASB along those lines. I think that our difficulty is: "What happens if there is not a liquid market? How do you get an approximation to what the fair value would be were there a liquid market?"

I think that introducing utility functions can be helpful, but there are so many confusing things, that we can probably forgive the ASB for not introducing utility value into their definition, whether they should have or not. That is something that we could discuss.

We were expecting to hear some views on the role of an Actuarial Standards Board. Our hope had been that it might have acted as some sort of mediator, a policeman, of the degree of prudence that people were building into their valuations. Recent events have shown that actuarial views of prudence can vary between actuaries. We thought that, maybe, the Actuarial Standards Board might help to bring some transparency to what is quite a complex comparison. We completely agree with Mr Clay's concerns about what that might mean going forward, and that is why we raise it only for discussion, rather than as a definite proposal that must happen.

We were also interested to hear some views on fair value versus entity value. I think that it is fair to say that we would agree wholeheartedly with what the opener said, that, when you go to market assumptions on, say, expenses or lapses, you will swing the value wildly. Whether you end up with a meaningful figure, I will leave you to debate. I think that we would have concerns over whether, in fact, the notion of fair values is valid at all; whether anybody is going to buy a book of business based on market costs when the actual experience is patently not market costs, market lapses, or whatever. One might argue about that.

We were expecting to hear views on stochastic modelling, the use of deflators, option pricing, etc. We would certainly have concerns over the readiness of the actuarial profession to take this forward. Some speakers have referred to heat and light. I think that there is a great deal of heat generated about stochastic modelling. Recent steps, the Faculty meeting held in October 2002 ('A Primer in Financial Economics', *B.A.J.* **8**, 27-74), and publications that we have seen of late, have helped to shed some light on this. We would encourage that more light be shed. There may not be an option for the actuarial profession not to be involved in this. I think that the black boxes are, maybe, waiting for us to explain them and to communicate them.

The Working Party's original remit was for this paper to be about the principles of solvency. There were actually six principles of solvency valuation in the paper. We presume that everybody agreed with them wholeheartedly, since I did not hear any dissension. If you would like to change any of these, please get in touch, because we would be glad to know them. As Mr Hairs said in his introduction, we would not claim this to be modern rocket science, rather just tried and trusted actuarial principles codified for the modern world.

What probability to use and the time period have been mentioned. We were expecting that. We, too, have concerns about 99.5% being very high. We thought long and hard over what the right figure should be for a market value. If we have got it wrong, then we will be very happy to hear more views.

I am not sure that we were actually proposing that insolvencies were all right, so long as run off had been managed, as raised by Mr Joshi. I think that we need to think about that one. We will certainly look again at what we have said. Maybe we have said the wrong thing.

In terms of risk-based capital, we were glad of the comments that we heard in this area. Some of us on the Working Party have soft spots for a stress test. The difficulty is: "How do you model management action with just stress tests? Do you not need some form of stochastic projection going forward?" We will think more about the comments that we have had there. This idea of stochastic for the short term, but stress test for the long term, is worthy of thought. However, when you are valuing options according to the market convention, are you not, in effect, doing long-term stochastic projections underneath? So, we will think a bit about the consistency of that.

We were hoping to hear more on with-profits. It is the one thing that we feel really crystallises many of the issues. We would be interested to hear views, subsequently, on the classic versus managed funds continuum that we tried to explain or tried to raise, but we could not actually come to agreement, ourselves, on just what should be done, because the more you codify management action, the more you turn with-profits into just non-profit with charges. We felt uncomfortable about going too far down that road.

I think, in terms of transparency, that we would heartily echo the comments made. We are glad that those speakers feel that what we are proposing is a way forward.

Thank you to the closer for highlighting the further work section. Various papers come to this floor with further work sections, and sometimes nothing seems to happen with them. I suspect that something is going to happen with this one very quickly, because the world is moving, whether we like it or not.

It would be wrong of me not to finish by thanking, on behalf of the Working Party, the Fair Values Calculations Group — a most unfortunate name, but we could not think of anything else, and it is transparent, meaningful and quite consistent, for the work that they did. Their work is not finished either, because the key issue is how sensitive these figures are to the different assumptions. There will be plenty of work. As Chairman of the Faculty Research Committee, I will be very pleased to hear from them.

The President (Mr T. D. Kingston, F.F.A.): Speaking personally, I have had experience, as the chief executive of a quoted life insurance company, of reporting financially on an embedded value basis over six or seven years. There is no doubt that presentation is a very serious issue. Of course, it is compounded at the moment, because life insurance companies are the only quoted companies which are, effectively, using balance sheet reporting. It would be a great deal easier if all financial institutions, at least, were to use balance sheet based reporting. At least, then, people might get used to the concept of volatility. If everybody else is using the profit and loss account as their main method of reporting, and smoothed results are an essential part of that, then it is inevitable that the minority which is reporting on an embedded value basis is expected to have similarly smooth results.

I join in the thanks to the Working Party on behalf of us all. There has been evidence from this discussion of an enormous amount of work involved in pulling together the various strands that are going on. We owe a very considerable debt to the authors for doing all this work, and, through them, various other groups which have been mentioned in the discussion, such as the Fair Values Calculations Group. There is a huge amount of background work going on to try to reduce this very complex problem to something that makes sense to the world, because, in the end, this only makes sense if we can produce something which can be communicated very widely.

I find it very encouraging that, when I came to read this paper (which I confess I thought might be one of the papers where you had to put a very cold sheet on your head before you started), it turned out to be very readable. It is very well written.

We should also follow the guidance suggested by both the closer and Dr Hare that volunteers are required. This work is not ended. It is ongoing, and I hope that many people will come forward.

I should like you to join with me in acknowledging the Working Party and the work that they have put in and for being with us to make this presentation. Thank you very much indeed.