ABSTRACT OF THE DISCUSSION

Mr K. Foroughi, F.I.A. (introducing the paper)**:** Embedded value reporting is undergoing rapid and significant change. Until recently, it has broadly followed the principles outlined in Anderson (1959), where one discount rate is applied to surpluses arising from a projection of best estimate cash flows. This discount rate is theoretically based on the shareholders' required return, given the risks in the business, and may be set using the top-down weighted average cost of capital (WACC) approach, as described in Brealey & Myers (2003).

Embedded value disclosure practice has broadly followed Pearl's 1989 appraisal value report, issued in its defence of the hostile takeover by AMP.

In recent years, we have seen various enhancements, both to embedded value methodology and to disclosure practice. These enhancements address some well-rehearsed weaknesses, which we set out in ¶1.2.

In 2003, AMP and Royal & Sun Alliance published market-consistent embedded values (MCEV), where the discounting and valuation of options followed a different 'bottom-up' approach. This is described in ¶B.9. The cost of capital adjustment is represented by an allowance for some of the frictional costs described in Section B.2.5.8.

With these developments as background, in May 2004, the CFO Forum published the European Embedded Value (EEV) Principles and Basis for Conclusions (CFO Forum, 2004). The CFO Forum's 20 members have committed to publishing any supplementary information under this EEV basis from the end of 2005 onwards, although earlier adoption is encouraged. The CFO Forum has kindly permitted us to reproduce the EEV Principles in Appendix A.

The Working Party recognises the considerable achievement of the CFO Forum, not least in getting so many major insurers to sign up to this common basis. We set out our views of EEV in Section 5, in particular the areas which represent a significant step forward.

So, how are the EEV principles being implemented in practice? Some companies, such as Aegon, have stated publicly that they are already broadly compliant, but, after we finalised our paper, two insurers published fully compliant EEV results: on 13 January 2005, Aviva published restated end year 2003 and mid year 2004 results; and on 17 February 2005, ING published end year 2004 results.

We thought that it would be interesting to compare and contrast the key features of these publications, although it is clearly too early to extrapolate to other companies.

First, there are the similarities:

— Both Aviva and ING published a detailed analysis of movement, split into value of in force and net worth. Both published a set of remarkably similar sensitivities to both the embedded value and the value of new business, possibly a template for consistency in the industry going forwards.
— Both Aviva and ING used the top-down WACC approach to set the discount rate, not the bottom-up MCEV approach. The risk margin did not generally vary by country or by product line.
— Both Aviva and ING used stochastic real world models to assess the time value of options and guarantees, using the WACC discount rate, and did not use market-consistent models.
— Both Aviva and ING used internal risk based capital models to work out the cost of capital, which resulted in significant differentiations by country and by product line. For example, Aviva applied the cost of capital to 200% of the regulatory minimum for its United Kingdom annuity business, and 100% for the rest of its U.K. business.
— Both Aviva and ING made an explicit deduction for their pension scheme deficits, and increased expense assumptions in the light of EEV Principle 9.

There are also a couple of differences:

— Aviva based projected new money risk free rates on government yield curves. On the other hand, ING based new money rates on the views of its economics department, which took

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

government yield curves as a starting point, but made some adjustments, particularly an increase in Asia, to allow for its views on how China would lead the region to prosperous growth.

— Aviva reduced the WACC discount rate by ten basis points (bp) to allow for risks valued explicitly elsewhere. ING deliberately did not make such an adjustment, but estimated that an adjustment would be of the order of 30bp, to allow external users to reduce the discount rate, should they so choose.

It is a credit to the disclosure of both companies that differences such as these can be identified.

The EEV principles clearly leave considerable room for manoeuvre in interpretation, subject to the requirements for disclosure, as illustrated by the two differences above. There could be more fundamental differences, such as using either the top-down WACC or bottom-up MCEV approaches to set the discount rate and allow for options and guarantees. In ¶4.8, we set out three key questions which practitioners face when they come to implement these principles:

(1) What framework should we use to measure market and credit risk?
(2) What allowance should be made in the valuation for diversifiable risk?
(3) Where should the allowance for risk be made in the valuation?

These questions are discussed in Section 8, which leads to our conclusions.

Mr A. N. Walker, F.I.A. (opening the discussion)**:** The paper covers a wide ground, which has proved, and will continue to prove, useful to both experienced practitioners and to beginners to the subject alike.

This is a timely paper, coming as some companies are starting to publish information under the CFO Forum principles on EEV reporting, and others are considering, and in some cases have published, information on an MCEV basis.

As the authors point out in Section 1, companies are currently making the choice between moving forwards on an EEV basis, which uses real world economic assumptions, and, generally, a single risk discount rate (and which is really an extension of traditional methodologies) or on a market-consistent basis, or even on both.

As we see in the paper, EEVs and MCEVs are not completely distinct. It is possible to use market-consistent techniques to set some of the market related assumptions within an EEV framework, and it is believed by some that a form of MCEV reporting is allowable under the CFO principles on EEV reporting, as well as the real world/single discount rate approach. This is an area where the industry needs to take some care. It will not be helpful to users of information to have companies reporting under two seemingly distinct embedded value methodologies.

In Section 2.3 the authors discuss the problems with traditional embedded value reporting. In relation to the cost of capital, one might add the relative crudeness of the calculation under traditional reporting, and the fact that the cost is dependent on the asset mix deemed to back the capital, with a lower cost generally resulting from a riskier asset mix. The ways in which the EEV and MCEV methodologies address the areas of concern in traditional reporting are then discussed in various places throughout the paper.

In Section 3 the authors discuss whether the embedded value, suitably adjusted, should drive the market capitalisation, or vice versa. As the authors point out in ¶3.11, some companies are now explicitly using the historic market capitalisation, as reflected in the beta of the shares, to help set the risk discount rate. This would certainly seem to address some of the concerns over the subjectivity of the process used to set the discount rate setting process. However, if this method is used, it still needs to be demonstrated that the risks to the shareholders' cash flows are adequately and consistently reflected elsewhere in the basis, which is not a trivial task. In particular, it is not clear how companies adopting this approach within an EEV framework, combined with a non-market-consistent methodology for setting economic assumptions, will ensure that a change in asset mix will not lead to a spurious change in embedded value, which was one of the criticisms of the traditional methodology.

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

Also, when setting the discount rate in this manner, consideration then needs to be given to what adjustments need to be made within the discount rate, or elsewhere, to reflect the fact that using the unadjusted beta of the shares of a group which is transacting more than just long-term insurance, and which is open to new business, is unlikely to be completely appropriate in setting the discount rate for in-force long-term insurance business. Such adjustments are likely to be subjective, potentially leaving scope for criticism.

Section 4.3 introduces the concept of systematic and non-systematic risk, and starts the discussion of how these should be treated in embedded value reporting. As the authors state, financial theory suggests that the market will not reward the taking on of non-systematic, or diversifiable, risk beyond an allowance for frictional costs. This highlights one of the main areas of debate for MCEV reporting, in particular as to whether it really is sufficient to allow for non-systematic risks solely through frictional costs, and, if it is, what the level of frictional costs should be.

In Section 5 the authors discuss some of the considerations arising from the EEV Principles issued by the CFO Forum. As the authors state in ¶5.2, it is one of the aims of the CFO Principles to bring greater comparability and consistency to published embedded value information. This is a challenge for the industry, given the wide scope for interpretation within the Principles. While the Principles' drive for greater disclosure will be applauded by users of the information, the devil may still be in the detail; for example, how transparent will the impact of different companies' approaches to management actions within the value of guarantees be?

Remaining with the value of guarantees for a moment, the authors raise the possibility of benchmarking a non-market-consistent value of guarantees against a market-consistent one. If companies do this, it is then useful to ask what a company should do if the market-consistent value is much larger. If such a difference is not reflected elsewhere in the basis, is a small allowance for the time value of guarantees really that much better than no allowance, where the market believes that the allowance should be much higher?

Section 5.3.4 discusses the setting of non-economic assumptions, with some focus on the treatment of 'one-off' expenses. The suggestion to link the definition of one-off expenses back to the underlying expense drivers, and consider whether these drivers are, indeed, one-off in nature, is a valid one. In common with other areas of CFO guidance, the approach allowed is flexible, but with a requirement to disclose what has been done.

In ¶5.3.4.1, the authors appear to call for full disclosure of non-economic bases used, although the CFO guidance on disclosure requires only key economic assumptions to be disclosed, along with the approach taken to determine these and other assumptions. Companies have not so far tended to disclose non-economic assumptions within an embedded value context.

In Section 6 and Appendix B the authors discuss MCEV calculations. As the list in ¶6.1 indicates, there are a number of areas to consider when implementing an MCEV framework, and, due to the relative infancy of MCEV reporting, an established methodology has not yet emerged in the market in all of these areas.

Nevertheless, as the authors point out in ¶6.7, MCEV reporting addresses some of the criticisms which have been levelled at traditional reporting. In particular, it allows a less subjective discount rate calculation, a market-consistent value of financial options and guarantees, and the possibility of a more explicit cost of capital calculation via frictional costs. However, frictional cost calculations are one of the areas where an established methodology is yet to emerge. One view of the current state of MCEV methodology might be that subjectivity within the basis has moved from the risk discount rate, where it lay under traditional methods, to the definition of frictional costs.

Appendix B offers a very useful description of the items which need to be considered when developing an MCEV framework, and is reflective of the fact that established methodologies are yet to emerge in some areas of definition.

In Section 7 the authors discuss the development of embedded value disclosure in the U.K. through the 1990s and into the early 2000s. They refer to the general convergence of

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

methodologies over this time, culminating in the publication of the ABI guidance on achieved profits reporting in 2001 (Association of British Insurers, 2001). Nonetheless, as the authors point out in ¶7.2.1, the quality and extent of disclosure still varies widely. The CFO Principles and guidance offer companies the opportunity to have another look at their disclosures, and may, therefore, drive more consistency in the U.K. and, it is hoped, across Europe as well. I see one of the major potential advantages of the CFO framework as being increased detail of embedded value disclosure in respect of major European life operations.

I agree with the authors that the development of the EEV Principles represents a significant step forward, but with the potential drawback that they still leave considerable room for manoeuvre. I also agree that market-consistent reporting, in itself, can provide a more objective solution to some of the areas of subjectivity allowed under EEV reporting, but it does open up other areas of debate.

Mr P. W. Wright, F.I.A.: I am a supporter of the conceptual framework of MCEV, but I should like to make some comments on what I will term 'agency costs' and the related issue of diversifiable risk, in part emphasising points made by the opener.

Agency costs, for this purpose, include costs of financial distress, but do not encompass other frictional costs. Regarding these other costs, I was pleased to see a reference to the cost of double investment expenses, which are frequently ignored in traditional embedded value calculations, along with any corporate governance costs charged directly to the shareholders' accounts. Clearly, both of these costs should be allowed for.

It was not clear from the paper whether or not the authors were of the collective view that margins should be incorporated into the embedded value basis in respect of persistency and insurance and expense risks, which are diversifiable by an ultimate investor. This is an important debate within the International Accounting Standards Board (IASB) on Phase 2 of its insurance project, and clearly covers general insurance as well as long-term business.

The paper seems to conclude that, in theory, all that is necessary is for a capital haircut to be taken in respect of agency costs, and this will automatically do the trick for diversifiable risks. However, the paper also suggests that further work is needed in the area of agency costs, and, for the time being, it is suggested that MCEVs could be presented without incorporating these costs, but with suitable sensitivities provided to enable users of the information to formulate their own adjustments. This seems to be unsatisfactory, and the profession needs to come up with something more concrete if we are not to avoid the charge that we have simply replaced one subjective area of the calculation of the embedded value with another. Is agency cost the new risk discount rate?

The paper correctly draws attention, in ¶3.7, to perceived shortfalls in the IASB's current thinking on fair value, to which I would add the deposit floor. It was pleasing to see that our own Accounting Standards Board (ASB) backed away from implementing these restrictions in FRS 27. However, the problem has not gone away, and could be more important than many people think. This is because the ASB, although no longer the standard setter for listed companies, has the power to prohibit or to insist on modifications to the publication of supplementary accounting information, such as MCEVs and/or EEVs. The ASB may use this power if the industry, and the actuarial and the accounting professions, do not come up with a sound theoretical approach to embedded value reporting. Reporting embedded values, which are known to be too high and which rely on sensitivities in notes, is unlikely to impress the accounting regulators in the longer term, particularly when they believe that the primary accounts are already on a fair value basis.

I stress that I am sold on the basis that agency cost is a better theoretical approach to costing diversifiable risk than alternatives based on market value margins or on risk discount rates. However, deriving the agency costs for this purpose is not going to be easy.

Mr T. J. Sheldon, F.I.A.: The closing sentence of the first paragraph of the paper, referring to the actuary's dilemma, begs two related questions: first, "Whose assessment of risk are we talking about?", second, "Why is it the actuary's dilemma rather than anyone else's?"

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

Why, when market prices are available, would we not want to calibrate to those market prices, preferring some subjective measure of risk? How many people would knowingly vote for a market-inconsistent method?

I now consider the second question, about whether the choice of method is the actuary's, or the Actuarial Profession's, problem. Two major criticisms of the interim assessment from the Morris Review are that we do not work closely enough with other professions and that we need better standards. When embedded values are used for public reporting, the choice of method is not solely the preserve of the actuary. There are accounting and commercial considerations as well. However, where we, as actuaries, are advising clients on value for other purposes, then the profession may be able to recommend a particular approach, and endorse this in appropriate standards. That should not prevent us from acting in accordance with a client's instructions to use a different approach, but robust standards would enhance the concept of market-consistent embedded values.

The work of the CFO Forum in developing the EEV Principles is of great value in promoting better standards and disclosure across the European insurance industry. As pointed out in ¶5.3.3.2, the Principles allow considerable scope in the choice of methods and assumptions, particularly in respect of options and guarantees. Whether disclosure will be sufficient to enable comparisons to be made between companies using different methods remains to be seen. The Principles do seem to permit the use of the market-consistent approach, should a company wish so to do. In the U.K., where we now have market-consistent reporting of with-profits liabilities, consistency with that reporting regime is desirable.

The Working Party considers the question of how allowance should be made for diversifiable risks. The EEV Principles follow the traditional embedded value approach of making such allowance in the discount rate, and therefore make little attempt to progress this tricky problem. Financial theory provides us with the framework of frictional costs, but this theory applies at the level of the total value of a company, whereas embedded value focuses on just part of that total value. There is, therefore, an arbitrary decision to be made for accounting purposes as to which frictional costs, if any, should be included in financial statements. For example, it would be inconsistent to allow for that part of financial distress costs related to the loss of franchise value in an embedded value calculation, since goodwill or the value of future new business is excluded.

As frictional costs affect shareholder value, and are not a liability to a third party, there is an argument that they should be excluded from accounting statements. As stated in Appendix B.13, this seems to be recognised by the IASB, and is consistent with the practice of other industries. Full allowance for company taxation and investment management expenses on all assets should be made, since these are liabilities to third parties. If certain frictional costs are to be included, it would be helpful if they could be disclosed separately.

It is necessary to allow for frictional costs when pricing, and consequently valuations for internal purposes would benefit from their inclusion, even though, in practice, it is difficult to make an accurate allowance.

I agree with the authors' overall conclusion that market consistency provides a solid foundation to valuation, and that it is a useful check against other, more subjective, measures.

Mr P. R. Collins, F.I.A. [an augmented version of what he said at the meeting]**:** My comments focus on issues raised in the paper, and on the next steps for the profession.

Although the paper gives a balanced summary of the different embedded value techniques currently available, it 'proposes the MCEV framework as a way forward'. MCEV has many theoretical attractions, but, as the paper notes, its inability to deal with non-market risk in a robust way is a significant disadvantage. Market consistency is an important tool for measuring the performance of short-term market trading books, but it is still not clear that it is the right tool for managing and reporting the performance of a long-term insurance company. An approach used under EEV (for example, by Aviva and ING) is to calculate the WACC as an overall risk, and then adjust it, in an open and transparent way, to allow for risks recognised elsewhere in the calculation.

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

The CFO Forum's development of the EEV Principles has been a step forward, and has been well received by the investment community. It would be instructive to gather views from users of accounts on the relative merits of the EEV and MCEV approaches. It is important that we work with any industry consensus as it develops. Actuaries must be careful to be seen to be working with, not against, the insurance industry, as it develops its thinking.

I now provide a few insights from the work which Aviva has undertaken over the past year, in order to fully implement the EEV principles for our external supplementary reporting. Much effort was required to interpret the high level EEV principles into detailed company policy and guidance. However, the biggest single task was the development of stochastic investment models. Companies must invest time and resources to make sure that these models are working properly, and that the results are fully understood. It is believed that all of the hard work has been worthwhile, both from the additional information which has been gained about the company's financial position and from the positive reaction from the investment community. However, I think that more work is needed to converge different CFO Forum members' interpretations of EEV, particularly on approaches to allowance for risk.

I now have some thoughts on the next steps for the profession. In my view, detailed U.K. professional guidance on embedded value reporting is not required. In particular, this could put U.K. companies at a competitive disadvantage compared to European insurers. However, further guidance on applying embedded value techniques to U.K. specific products, such as with-profits funds, would be appropriate and welcome.

The profession should work with standard setters to ensure that embedded value reporting is robust and technically accurate. For example, an ABI working party is currently considering revisions to the achieved profits guidance note, which is one area where we could work together. It should be noted that many of the technical challenges are the same for EEV and MCEV.

We should also consider links to International Financial Reporting Standards (IFRS). I understand that value-based measures, such as embedded value, are not popular with the IASB as a form of primary reporting. However, they are used by life insurers to price and manage their businesses, and are of immense value to investors. Hence, value-based measures should be permitted within the IASB framework, either as notes to the accounts or as some form of supplementary disclosures.

Mr C. M. Johnson, F.I.A.: First, companies do not increase value by loading up on asset risk. This is a clear consequence of a market-consistent treatment, but it is worth stressing, as companies have taken higher asset risk as an intended solution to financial difficulties, and have paid a price for so doing. As actuaries and managers, we need to give careful counsel to others about increasing the financial bet in this way.

I now comment on where the profession should be heading, in the future, on the issues of value assessment and management. We should recognise that, over the last few years, the profession has updated itself in the application of financial economics techniques, albeit that there is still some way to go on the continuing professional development front. With the advent of MCEV as a development of these techniques, we have a way to link powerfully independent, current market asset pricing to our businesses. We can throw important light on the links between risk, value and capital, whilst addressing the valuation of options and guarantees and the selection of risk discount rates along the way. There are some issues which need further work, but we are well on the way to the best financial measurement and management tool which we have ever had available.

The CFO Forum's work on EEV also represents a huge step forward. As the authors note, there are different ways of implementing EEV, but the best use of the framework will be made if we take a market-consistent interpretation.

I do not agree with everything which the Financial Standards Authority (FSA) has done and is doing, but it has led us correctly with its focus on realistic balance sheets, risk and individual capital assessment. They are further important moves in the right direction.

Given all of these developments, the profession needs to get behind the use of MCEV as a core part of financial management. MCEV sheds many insights on the nature of our business,

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

and provides what is, perhaps, our best and most comprehensive view of the economic capital of insurance enterprises.

The techniques should also be applied to funded pensions schemes. There, much more light needs to be shed on issues of risk and capital in the schemes and their interaction with risk and capital in the sponsoring firms. This is an area where neither actuaries, nor shareholders, trustees, rating agencies and investment analysts have yet properly grasped the nettle.

Younger actuaries have played a great part in moving us to where we are today, and I urge them to continue to take us forward and to make market-consistent methodologies central to insurance and pensions business management in the future.

Mr J. Hele (a visitor)**:** Although ING applied the EEV Principles in a more traditional way, it did take a step towards a market-consistent approach. It changed its capital model, which is used in its embedded values, to be calibrated to economic capital, where economic capital is dealt with using a fully market-consistent approach. It did not specifically adjust the discount rates for the risk in a particular product. It used the capital, and the cost of holding that capital, as the way to reflect that risk.

My second point is that disclosure is very important, because embedded values can be interpreted in different ways.

My next point is on MCEVs. ING Group is still looking at that, and, in particular, is studying the whole subject of frictional costs or non-diversifiable risks. Their approach is to apply their economic capital methodologies, which are consistent with a Solvency II framework, to non-diversifiable risks, and to apply that capital on a cost of holding the capital basis. It might not be perfect with regard to frictional costs, but it is a framework which is consistent with Solvency II and other frameworks which will be more understandable to the users of the information.

As an actuary, but also as a former investment banker, I think that the insurance industry does need to move to one system. I applaud the Institute's leadership in moving forward in that direction.

Mr A. R. Proctor (a visitor)**:** I am an equity research analyst, looking at a wide range of European insurance companies, with a view to presenting their relative merits, including insight into their valuations, to a range of institutional investors. As such, I have naturally been encouraged by the CFO Forum's efforts to overcome the well known and documented issues associated with the traditional embedded value approach, which has already been discussed.

While it is early days, I am, nonetheless, somewhat disappointed with the EEV disclosures that we, as outsiders, have seen to date. A couple of examples to illustrate some of the issues may be helpful. First, with regard to ING and the previous speaker, the EEV data discussed have illustrated the highly capital intensive nature of the back book of its Asian life operations, while providing little by way of detail on the capital intensity of the Asian new business. Second, I am concerned about the use of fixed income new money rate assumptions which are materially above prevailing market rates. It is not unusual for this assumption to be 100 basis points (bp) or more higher than prevailing bond yields in the markets, in fact a level which has not prevailed for almost three years. This may be compensated for by the discount rate or elsewhere in the basis, but it could naturally lead to a negative variance, which is difficult to assess from the outside. There may also be a lack of confidence in the work of outsiders, such as myself, regarding the extent to which the reported value of options and guarantees captures risk in a properly market-consistent manner.

I recognise that investors and analysts will always demand more information. However, more could be done to ensure at least a better optical consistency of EEV disclosures. For example, with regard to the value of options and guarantees, the authors say that "the principles allow considerable scope in the choice of methodology and assumptions, and it appears unlikely that comparisons between companies will be straightforward." As an outside constituent, that is unacceptable.

It is crucial that the treatment of risk should be able to be readily assessed and, most

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

importantly, simply and quickly compared across different companies by analysts and other outside observers.

Mr D. W. Dullaway, F.I.A.: I shall speak about how MCEV and EEV fit together. Firstly, getting 19 disparate companies to agree over anything is an impressive achievement; getting an agreement over a new embedded value standard which introduces an explicit allowance for options is even more impressive. Nevertheless, the EEV guidance is at a relatively high level, and companies trying to apply it must work out how so to do. My view is that an MCEV is probably the best way of doing this.

My reading of the guidance, in particular the 'Basis for Conclusions', requires that the risk discount rate should make full allowance for all financial risk, and that this should reflect all available market information. This would outlaw the setting of risk discount rates 'in line with everyone else', which is probably the most common method of setting them at the moment, and would appear to be very much in line with a market-consistent approach. Indeed, the Basis for Conclusions states that: "... the Principle [setting risk discount rates] should be applied so that shifting between asset classes does not have a material impact on embedded value." I cannot think of any approach that is not market-consistent which achieves that.

Unfortunately, the guidance also perpetuates a form of the 'risk-neutral vs. deflators' debate, similar to the one in which the profession got bogged down a few years ago, before we all realised that both approaches gave exactly the same answer. In the case of the guidance, it is couched as a 'risk discount rate vs. risk adjusted cash flows' debate, with a long discussion over which is correct. To be clear, both approaches are mathematically and provably equivalent — a market-consistent valuation using the appropriate risk discount rates will give exactly the same answer as one using a risk free discount rate and risk adjusted cash flows. This debate must stop.

The Basis for Conclusions appears to argue against using market-consistent option prices, on the grounds that option pricing uses risk adjusted cash flows, and therefore there is a 'disconnect' between the intrinsic and the time values of the options.

It is a shame that such a basic technical mistake mars an otherwise excellent document, and it is to be hoped that it will be corrected in a later version. For the present, it gives companies and their advisers an interesting task in deciding how to interpret the guidance.

This aside, the guidance is a good step forward, and that an MCEV is a good way of meeting the EEV guidance, as it fully allows for financial risks in a rigorous way, makes maximum use of market information, and should give very good consistency between companies.

Some people are concerned that an MCEV does not put a price on some elements of insurance risks, such as diversifiable risk. The 'top-down', CAPM-based approaches do not put a price on such risks either. Hence, this is not a sensible reason to choose such an approach over a fully market-consistent approach. Also, a market-consistent approach can always be adjusted to allow for such risks.

It may be that work on a 'frictional costs' basis is not fully developed yet, but, as the paper points out, all of these things should reduce embedded values. It therefore seems unarguable that a market-consistent valuation should form at least an upper bound for any acceptable embedded value. This is a point which companies, their advisers and their auditors might ponder carefully before going down any other approach.

It is now up to the industry and the profession to move matters forward. An MCEV would be a significant step in the right direction; equally, I find it hard to see what anything less offers compared to the developments in fair value and prudential reporting which we have seen.

Mr E. Morgan, F.I.A.: My points focus on disclosure.

The authors point out that, to the extent that a market-consistent model is perceived not yet to fully allow for all risks, the EEV should produce a lower value. This is a key point. If the values are consistent, then they should give the same value. If the embedded value also has an element of insurance risk included, then it should give a lower value.

If there were disclosed sensitivities to variations in the risk margins within the risk discount rate and to variations in the equity risk premia and the credit spreads within the protected

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

investment returns, then it would be possible to calibrate those two together, to estimate the part of the risk margin in the risk discount rate which is due to market and credit risk. It is to be hoped that this is less than the entire risk margin. If it is not, then the embedded value will be higher than the MCEV. If it is, then the embedded value should be lower than the MCEV. That would be a very useful piece of information to somebody reading those accounts.

The second point is about the disclosure of assumptions. The CFO Forum document takes that process forward, but not to give full disclosure. For example with persistency rates; in single premium whole of life business, the long-term persistency rate is very similar to a risk discount rate, however, the guidance does not require disclosure of the long-term persistency rate, merely to disclose the method used to derive it. Particularly in fairly new classes of business, such as unit-linked business, which has been in existence in some European countries only for a small number of years, the long-term persistency rate is inevitably subjective, and, if it is not disclosed, then alternative subjective approaches could give quite materially different values.

Mr S. P. Taylor-Gooby, F.I.A.: MCEV is maturing rapidly, and, if used in a properly controlled away, with appropriate checks on the parameters and assumptions, can be more robust than the paper gives credit. The paper rightly points out that there are two areas which need further work; namely the appropriate allowance for diversifiable risk and frictional costs. However, despite talk as to whether or not subjectivity has now moved from the discount rate to frictional costs, it is clear, from some analysis, that the extent to which these allowances are uncertain is relatively immaterial compared with the inaccuracies which can be present in other systems. They do not, therefore, constitute a reason for not moving ahead with MCEV.

On the other hand, practical work with the EEV system is showing that, although it is a very major improvement on previous standards, it still needs more development, particularly in setting the correct discount rate. I have seen a number of WACC calculations which are being used by companies to calculate their discount rates, and it is clear that these include areas for judgement. For example, how do you derive a beta? Do you calculate a beta over the last five years or the last six months? I have seen companies which use both methods, and the answers are very different. What we really need is an up-to-date, forward looking beta which can be calculated.

Secondly, how do you 'parse' the beta, that is, how do you break down the total risk included in the cost of the company's capital between different elements of the business; for example, between life insurance, non-life insurance and banking? Then, how do you 'parse' the beta between in-force business and new business?

Each of these areas requires quite a lot of judgement, and this gives a great deal of leeway in the selection of a discount rate. I have seen calculations where the same company could arrive at discount rates which differ by up to 250 bp, which is a very significant margin. This can be seen either as a weakness of the EEV method or as a strength, depending on your standpoint, as it may be used to give respectability to the desired answer.

There are considerable dangers in treating the subject too lightly. The metric used for measuring corporate performance in external reporting inevitably becomes suffused throughout other aspects of financial management. In some, such as pricing, it is very important to be accurate.

This brings me to the second issue with the EEV method. Although a WACC analysis can give some guidance on discount rates at a business unit level, it does not help in setting the appropriate discount rates to use for pricing or measuring the performance of a given product. So far, the only reliable method which I have seen is to carry out an MCEV calculation and backsolve to find the discount rate, which rather destroys the point of using a different method from MCEV.

I fear that the authors are being a little over-optimistic in the expressed hope that the two methods will converge with time to give the same answers. Without such convergence, the profession should continue to promote the MCEV method as the best available for the financial management of long-term business.

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

Mr G. A. Collard, F.I.A.: My remarks focus on two areas: market consistency, with emphasis on credit risk; and the use of a formulaic approach to the selection of risk discount rates.

As other speakers have said, two important aspects of this topic are disclosure and transparency. In the banking world, the regulator effectively ignores inter-bank credit risk, and balance sheets reflect this. This is somewhat similar to the familiar argument about swap curves and gilts for a balance sheet standard, so what really is 'market-consistent'? Analysts, ratings agencies and investors are the people who are going to drive what actually happens in the marketplace. We therefore cannot impose a methodology which is not acceptable to the market. There is a common benchmark in terms of what the regulators are doing. It is not just the U.K. regulator which is moving to a fairly robust standard about market consistency. Similar changes about capital requirements and balance sheets are occurring in Denmark, Switzerland and Holland.

If we take a completely different view about what fair value is in calculating an embedded value, then the analysts will start making adjustments of their own. Therefore, it seems prudent to disclose these numbers and show some leadership. U.K. actuaries have, in the past, had a leading role in these kinds of methodologies.

There is a strong argument for providing information about shareholder value which is consistent with the local impairment and regulatory capital measures.

I have some comments about a formulaic approach to the selection of risk discount rates. I had hoped that the move to an MCEV would make some of these arguments disappear, but, clearly, there are two camps in this discussion. A few years ago, we seemed to have a choice of WACC, CAPM or whatever, based on economic theory, but applied out of context. A formulaic approach led to nonsense, and there is a danger that we might do this.

Something which we have learnt over the past few years is that, as one of the other speakers suggested, you cannot use risk discount rates found in that way to do option pricing. You only know the right risk discount rate to use if you know the answer. So, why do we not go straight to the answer?

Mrs P. J. A. Coulthard, F.I.A.: One area of disclosure required in the CFO Forum Principles is the analysis of movement in the embedded value. Whilst an embedded value can be a useful number, it is the movement in the embedded value from one year to the next which provides information on how successfully the company has been run. The analysis of movement in the embedded value tells us how profits or losses have arisen, enabling management and shareholders to check that the business is being run in line with their expectations.

The new embedded value techniques described in the paper provide us with a clearer understanding of the sources of these profits and losses. For example, within an MCEV framework investment risk is more accurately reflected, due to the explicit allowance for options and guarantees. As such, the investment profit or loss is more meaningful, and hence more useful. By publishing this investment profit, shareholders will be able to get a clearer insight into the investment risk which they have taken on by investing via an insurance company. It is not only the investment profit which is more meaningful in an MCEV framework. For example, the persistency variance in a with-profits fund will better reflect the impact of lapse experience on the burn through cost as well as on the value of shareholder transfers. This helps management understand the balance between the loss of future shareholder transfers, on the one hand, and the need for additional capital, on the other.

Whilst it was possible to calculate these variances under a traditional embedded value framework, the implicit allowance for options and guarantees within the risk discount rates distorted the items of variance, and so could give misleading results. For example, the investment profit could be smoothed. The paper seeks to address the issues of transparency and consistency in embedded value methodology across companies. In addition, it is important that the analysis of movement in a new embedded value is also consistent and transparent, so that investors and management have a clear understanding of the company's performance.

Mr S. J. Keane, F.I.A.: I would like to talk about EEV as set out by the CFO Forum

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

Principles. The initiative is encouraging, and an example of our industry proactively setting the agenda. There is a common recognition by the key European life insurers of the need for change in traditional embedded value reporting to counter the problems which the authors have set out in Section 2.3.

At the heart of the CFO Forum Principles is a move to the explicit valuation of the time value of options and guarantees. As a member of this profession, it does not make sense to sit down with other finance professionals and discuss the time values of options and guarantees in any framework other than a market-consistent one. I recognise that the basis is wider than this one element, but, as a profession, we do not need another 'actuarial' value which bears no resemblance to equivalents traded in the market.

So, the challenge is that, if we say that the time values of options and guarantees are dealt with market consistency, how do we handle the rest of the basis? The answer lies in some form of MCEV, but, as the authors point out in ¶6.4, this term currently means different things to different people. Having worked with a number of companies which intend to adhere to the EEV guidelines by using market-consistent techniques, it is apparent that this is a workable, transparent calculation, which would comply with the principles.

It is important that, as a profession, we crack the issue of comparability, not just between two different companies, but also between two different actuaries. Market-consistent techniques are a major step in the right direction.

Mr P. D. Needleman, F.I.A.: The world has moved on since embedded values were introduced, and it is important for the industry and the profession to move on with it. When the concept of embedded value was first introduced, it was a far better measure of profitability and value than either of the existing accounting or prudential reporting systems. Now, both the global accounting profession and the U.K. insurance regulator have adopted approaches which explicitly use market-consistent techniques to measure complex options and asset risks. Traditional embedded values, as we know them, have been left behind. So, we must welcome moves by the CFO Forum to address the deficiencies in traditional embedded values through the introduction of the EEV Principles. A market-consistent approach will help inform companies as to how to implement EEVs and what allowance to make for risk for different types of business.

How does an MCEV relate to a company's actual market value? One school of thought says that, if we already know the market value of an insurance company, we should be able to reconcile the MCEV to this. Another, my tendency, says that an MCEV should be calculated independently of the market value.

In theory, the difference between an MCEV and a company's market value should be the franchise value of the company, that is the value of its ability to write profitable new business in the future. This is an extremely difficult figure to calculate, and it is bound to be subjective. In reality, we are more likely to calculate it by subtracting the MCEV from the actual market value than to be able to calculate it separately as part of a reconciliation.

Moreover, with the information available in current embedded values, it is hard for analysts and the market generally to work out the market-consistent value of the in-force business, let alone the true value of future new business. Market-consistent valuation techniques will quite possibly change market perception, as they give investors new information on the risks and cash flows within the business. Therefore, MCEV may inform the market price of insurance companies rather than be driven by them.

How do I square the use of an MCEV to changing market prices? The key point is that an MCEV is consistent with the prices of assets which closely resemble the cash flows in an insurance company. As they are calculated by the company with a far deeper knowledge of what those cash flows are than the market has, so the MCEV can provide a more accurate value of these cash flows. The market price of a company will reflect investors' views of these cash flows, but, currently, those views may be based on imperfect information. If MCEVs, or indeed EEVs, improve the information available, it should not be a surprise if companies' share prices change to reflect that new information.

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

There has also been some concern that recent trade sales have been carried out at prices below the embedded value, or the MCEV. This has raised the question of whether MCEVs are appropriate.

There are two important points to make here. Firstly, any market-consistent value reflects the price in a deep and liquid market. This is suitable for reporting, for pricing and for hedging purposes, but it is only the starting point for a sale or an acquisition. A trade sale is not equivalent to a deep and liquid market, and the final price will reflect negotiations between the different parties. The buyer will always want to pay a cheaper price, and the question is whether the seller has pressures which make such a price acceptable. An MCEV merely represents an appropriate starting point for such a negotiation.

My second point is that the price may actually be closer to an MCEV than many imagine. If allowance is made for the various frictional costs, and if we recognise that the impact of operating assumptions on value is often non-linear, so that, in practice, it may be necessary to use more prudent operating assumptions to arrive at the best estimate of value, then MCEV values may well be closer to the traded values than might be apparent at first sight.

Mr R. J. Baddon, F.I.A.: As a mergers and acquisitions (M&A) practitioner, the majority of my time is spent trying to understand the inner workings of very complex insurance groups, without having the benefit of the years of knowledge and experience locked in the heads of the management team. To this end, the introduction of both EEV and MCEV are a godsend, but there is still the major issue of being able to take a balance sheet item and to transform it into a series of cash flows which can be used for business planning. More challenging is being able to convince bankers and financiers that they should lend money, supported by these cash flows, to finance an acquisition. The inexorable move towards market consistency makes this increasingly difficult. While the information provided can inform us as to the true costs of guarantees and, if carefully analysed, their distribution, it makes it difficult to break down the numbers into a basis which equates clearly to the cash through the income statement.

A further concern is the confusion around what these methods actually mean to the investors in the insurance industry. MCEV has the attraction of being able to show that it does fully value all the market risks. However, the other risks embedded in the business have not been fully costed. This is exacerbated by the fact that the traditional views of the world, as presented by embedded value and the market-consistent view, appear to converge, without there being a clear bridge to unify them. In the M&A context, as previous speakers have mentioned, the market reaction has been to discount significantly for this uncertainty.

My second comment is around the future of financial reporting. Unlike the shortcomings of some insurance accounting systems, both EEV and MCEV seem to avoid the failing of having the tail wagging the dog. However, it is unclear to me as to whether we have yet achieved a position of having full consistency between the way in which management teams run their businesses, the way in which profits are reported, and the way in which markets view them. The increased level of disclosure will help, but, at present, does not fully address the issue.

If we add to this the introduction of IFRS, the future shape of financial reporting remains uncertain. I look forward to the day when we can fully understand the implications of writing a piece of business from the initial stages of pricing through reporting, and, finally, in considering the capital and risk implications of that business in a company's individual capital assessment. It is only then when we can truly believe that we have a consistent reporting system.

Mr S. C. True, F.I.A.: My comments are on two business issues, the practical implications of MCEVs and the volatility of the results.

There is concern that fully market-consistent techniques are too difficult to implement. However, many companies have already done it. We are agreed that calculating an MCEV is more onerous than the traditional embedded value, but, with the advent of realistic balance sheets and, to a lesser extent, individual capital assessments, many of the tools have been developed which can be utilised within an MCEV framework.

My second issue is volatility. There is a genuine concern that market-consistent reporting will

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

lead to very volatile results, which is probably true. If this volatility reflects the underlying nature of the business which has been written, what right have we to hide that fact from shareholders? Life insurance companies have run significant mismatches in the past, in particular around embedded options and guarantees, duration and credit risk. Any company which runs a significant level of mis-matching should have volatile results. The way to deal with this is by good risk management, not by obfuscating the results.

Professor R. Macve, Hon.F.I.A.: I shall pick up three brief points. The focus of the paper is primarily on the new valuation approach, with some references to the issues relating to financial reporting. In terms of selling this to other professions, in particular the accounting profession and the IASB, there are some issues which need specific attention.

The first of these is the one which was raised earlier by Mrs Coulthard, about the analysis of the change from one year to another. How we analyse the contributions to a particular year's performance is crucial in making things comparable to the profit and loss accounts with other businesses with which people are familiar. At the beginning of the 1990s, a lot of the 'accruals versus embedded value' debate was about which method brings out the factors which are driving performance more clearly from a management and investor perspective.

The second issue is that we do not know where we are with the IASB, because, in the latest announcement, the chairman said: "We are starting with a clean slate again." However, from previous discussions, one particular issue which was raised in IFRS 4, as a tentative conclusion for the next step, was that IASB does not like day one profits. If your MCEV method produces day one profits, then it is going to have to pass the test which the IASB laid down, which was that there has to be very good market evidence. Therefore, we have to ask: "To which markets are we calibrating for all the various elements of this embedded value?" Some of the markets are clear, e.g. the investment markets. Other markets, e.g. those in insurance liabilities, we have always argued are not deep, liquid and transparent. So, we have to be clear as to what is being calibrated and how reliable that is.

I have never understood the concept of locked in capital cost. You have some capital; some of it you use in your insurance business, and some of it, let us suppose, you have to keep, because the regulator says that you have to, and let us suppose that it is all in gilt edged stock. Why is the value of that gilt edged stock not the value of the gilt edged stock? You say that that is because of company frictions. In other words, it means that investors would rather be having the gilt edged stock themselves than entrust it to an insurance company investment manager to ruin value for them — not a very good advertisement for your business. Why do people invest in unit trusts and investment trusts and everything else? Take investment trusts, which stand at discounts to their asset value. They always have done, but nobody has ever suggested that you would not use the market values of the assets in the accounts; you would then address elsewhere, as it were, the price at which the company, as a whole, trades.

In the paper, there is some ambiguity about whether the authors believe in locking in capital cost or not.

Mr I. R. Moran, F.I.A.: I am speaking as chairman of the ALG and the Life Accounting Issues Committee.

I have three points. One concerns a point mentioned earlier by Mr Needleman. He referred to the gap between the value at which closed funds have been sold and the previous reported embedded value, whether that is on an MCEV basis or on a traditional embedded value basis. I would like to know what this says about the relevance of the current embedded value or MCEV base. In part, it is explained by the willing buyer/willing seller, but there must be more. There is an opportunity to learn more, and to see whether we can understand it, so that we can demonstrate that the values which we produce are relevant to investors.

Next, I would agree with Mr Johnson that we ought to be considering whether some of the techniques described in the paper could be applied in a pension scheme context.

Then, we should try to understand how the MCEV approach is linked into IFRS, and what it tells us in addition to IFRS, in particular reconciling the two reporting measures, so

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

that we can communicate more effectively with investors, who will see multiple measures of value.

Mr T. W. Hewitson, F.F.A.: I am pleased to hear that almost all of the speakers have been very much in favour of the MCEV approach. This is the sensible benchmark, going forward, even if it is going to be difficult to assess accurately the market-consistent value of some of the longer-term options which exist in many life insurance company liabilities.

A number of speakers have referred to the frictional, or agency, costs, which could be a significant item in assessing such long-term liabilities. Part of that might be the uncertainty which exists, both in the models and in the underlying parameters. For example, if we are looking at longevity, some people might say that that is a diversifiable risk. As actuaries, we know that we do not know for certain what the best estimate really is of longevity in the longer term. So, there may well, indeed, need to be some margins for uncertainties which are included, even in an MCEV, by use of the so-called market value margins.

Mr J. Goford, F.I.A.: I regard this paper as a culmination of the progress which we have seen in financial reporting over the past 20 to 25 years. We started with profit tests, and then we added up profit tests to give us the cash flows and the earnings of the company.

Then the discussions started with the accounting profession. Differences arose very quickly, in that the accountants were trying to match costs and revenues whilst the actuaries were essentially working from balance sheets. We have been debating this difference with the accountants for the past ten years or so. Arguments like: "Why would you not give your financial results to the market in your accounts in a way similar to the way in which you are running the company?" That is, if you are running the company using profit testing to price your products, why would you not put the results of those into your financial results? These arguments all led to the development of embedded values.

We then had the clash of the Titans between the accruals basis and embedded values, and ended up with a basis where you could use either. I am very pleased to see MCEVs and EEVs come through as strongly agreed methods.

I am pleased to note that no speaker has used the words 'deferred acquisition costs' — that devil incarnate!

The next moves, as Mrs Coulthard pointed out, are not just the analysis of movement of embedded value, but also a statement at the beginning of the year by the management and directors on how they think that the MCEV is going to move during the year, and then, at the end of the year, an analysis of how it has moved. The management can be expected to justify the variances down to the drivers of profitability and to the increase in value. These variances can be used to identify those managers responsible for above-expected increases in value and below par performances.

Mr N. B. Masters, F.I.A. (closing the discussion)**:** One main theme, which came out time and again, was disclosure, and, in particular, how all of these methods provide the analysts, the main readers of the supplementary information, with a great deal more information.

I particularly support Mrs Coulthard's comments on the importance of the analysis. I think that the greater analysis is very important.

The great debate has been whether MCEV is the right, or only a, direction forward. I was struck by Mr Dullaway's comment on the implications of the EEV principles, for example on asset mix, and does that imply that the approach needs to be consistent with the market? It does imply this. If you start shifting your mix into, say, a lower credit rated bond, because you want more yield, the impact then is that you hold more economic capital. It is that interplay between the elements of the basis which implies consistency with the market.

The interesting thing is that both MCEV and EEV are themselves developing with usage. Eighteen months ago we had an MCEV approach which was not comfortable with diversifiable risk, having a cost. I was interested to hear Mr Taylor-Gooby making the point that MCEV is moving to including diversifiable risk. That is the kind of movement which will then allow the

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

EEV approach, which has been very concerned with the broad aggregate of risks, to converge. Certainly, a greater clarity around frictional costs is going to continue to develop. As the greater understanding of that comes through, then it may well be that frictional costs and distress costs pull together the costs in the marketplace and the WACC. After all, the WACC should be a reflection of costs.

This is a time when we can actually bring some of this together. A single method has been called for on a number of occasions during the discussion. I am aware that within the CFO Forum there was a very strong desire to have a single approach, because that would improve the presentation to the analysts.

Turning to other areas, Mr Wright suggested that frictional costs should include corporate governance, which is a good thought. Certainly, over time, separate disclosure, as Mr Sheldon suggested, would also work for this.

There were a number of references to the accounting developments, IFRS and so on, and the work of the IASB. There is an area of difficulty, at least in practical terms, of presenting different approaches to liabilities within supplementary information. The IFRS treatment of pension funds under IAS 19 and the EEV approach are close. Do we really want to restate pension costs from IFRS to EEV? If we restate, it is a very small difference, and may call the adjustment into question.

Mr Baddon called for more disclosure, or more insight, into the cash flow generation which sits behind embedded values. I know that a number of analysts echoes this sentiment. It is difficult to present large volumes of cash flow information, particularly the cash flows underlying the fair value of an option or guarantee under a stochastic model. Some thoughts and some developments, perhaps around internet access to cash flow information, might be useful there.

Turning to the uses which are made of embedded values, this is an area which the paper might have explored further. I was struck by the comments of Mr Goford, that embedded values were being used internally by management to manage the business. The analysts then wanted to have an insight into how the business was being managed, so management published the embedded value. That is a different usage (and drives you to different approaches) than if you are asking: "What price can I get for this company in the marketplace?" Mr Needleman's comments around the use of the various measures (MCEV, EEV, etc.), and their impact on franchise value in the situation where you are actually pricing a company, was useful in that context.

There was a call for standards and for some guidance around embedded values for U.K. products. Mr Collins made a very good point about the need to work with the ABI. As a number of people have said, using an embedded value approach is not necessarily an actuarial decision. It is a decision for the directors of companies, relating to their analysts or relating, perhaps, to the buying and selling of a company. To that extent, the actuaries assist in facilitating the management information.

Mr Taylor-Gooby brought valuable insights to the discussion around the setting of a WACC rate.

Professor Macve made a very useful contribution. I happen to be a convert to locking in capital. I think that the value of capital does get eroded if it is put at risk. On the other hand, the comparison with unit trusts was useful, and maybe that is something at which we should look. This is because an item which was not touched on within EEV, but which is going to be very important over the next couple of years, is the expansion of the business covered by embedded values away from simply life business to management companies and healthcare companies.

Mr N. H. Taverner, F.I.A. (replying)**:** My remarks are my conclusions from the discussion, and therefore may not reflect the views of the Working Party as a whole.

Several speakers raised the question of what the profession's next steps should be in respect of actuaries' contributions to embedded values. We did not make any concrete recommendations on this in the paper, largely because we did not want the paper to be exposed to the profession and to be discussed by it before any such steps were considered by the Working Party, or by the Life Board. As Mr Collins and several others mentioned, we felt that it was not necessarily the

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

profession's role to be proposing a whole new set of guidance or requirements for embedded value calculations and disclosure. The CFO Forum framework, itself, seems to contain all of the basic elements which are required by an embedded value calculation and disclosure regime. As we mention in the paper, it should be completely adequate, provided that the allowances for risk which are made in a combination of the discount rate, the locked in capital and the costs of options and guarantees, have sufficient allowance for risk, as the Principles require.

The basic approach of the CFO Forum framework does have the advantage of a familiarity and, therefore, ease of explanation. However, the potential danger with it, as several speakers mentioned, is that the allowance for risk, which is made in those three areas, does remain somewhat opaque, and they still vary from one company to another. It is certainly our view, and it seems to be the view of several speakers, that this is perhaps the key area where actuaries, both individually and as a profession, do have a particular role to play. We are a profession whose role is to assess and to communicate risk. Therefore, ensuring that risk has been adequately assessed by whatever methodology is used to calculate an embedded value, and clearly communicated to the users of that information, are of fundamental importance to the profession. That came through very clearly in the discussion.

The aim of our coverage of developing techniques in market-consistent and frictional cost type methodologies was to highlight the many new tools which we have, as a profession, to analyse and value risk from a shareholder perspective.

A market-consistent approach to valuing market risk is, at the very least, a vital benchmark in checking whether a disclosed embedded value makes adequate allowance for such market risk. As several speakers mentioned, it is difficult to see how you can justify a disclosed embedded value which is higher than a pure market-consistent value, except, perhaps, in extremely unusual circumstances.

Moving on from looking at pure market risk and onto diversifiable risk. As Mr Taylor-Gooby mentioned, for many companies it may well be the market risks which will dominate in terms of the impact on shareholder value. However, diversifiable risks do affect shareholder value in many ways, notably via frictional costs. The emerging techniques, which we touched on in the paper, to assess the impact of frictional costs on shareholder value, should really form part of the reasonableness check which actuaries should be making on the allowance for risk in any disclosed embedded value.

Several speakers agreed with us, and others were slightly more bullish than we are as to the state of development of the assessment of frictional costs. However, I agree with Mr Taylor-Gooby that, for many companies, the impact of diversifiable risks and frictional costs on shareholder value may be quite small in comparison with the impact of market related risks for some companies. There may well be other types of company where that is not the case. It is, therefore, important to understand which companies are which if we are to ensure that sufficient allowance has been made for risk, by whatever methodology has been used to communicate shareholder value to shareholders.

I agree with Mr Hele, who raised the point that frictional costs may be quite adequately reflected by the cost of capital, if the required capital, which is locked in, is actually based on an economic or on a risk based capital model. It probably should be checked within some sort of stochastic model. Such stochastic models should incorporate, not only market related risks, but non-market related risks, in terms of assessing their impact on shareholder cash flows and frictional costs, perhaps leveraging off the sorts of models which companies are building for risk based capital and individual capital assessment type calculations.

In terms of potential criticisms of market-consistent and frictional costs, there were a few speakers who did agree with the implication in the paper that it may not quite yet be fully developed enough to be robustly and consistently applied by all companies. It is also not yet in a form to be easily understood by management and communicated to the markets. However, we do think that, as a framework for calibrating the allowances for risk by whatever approach is used to communicate to management or investors, to whatever degree of precision is possible or desirable, then it seems to be a very useful framework already. It is likely to become even more so in the future.

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press

Several speakers mentioned that, particularly in the U.K., and as a profession, we are rapidly becoming very skilled at applying market-consistent and risk assessment type techniques to regulatory balance sheets. It would seem very strange not to use these techniques to assess shareholder value. Where, for example, as the cost of financial options and guarantees are being assessed on a market-consistent basis for the regulator, then disclosing them on a different basis to shareholders seems to be an excellent example of the sort of information imbalance between insurance companies' management and their shareholders, which is quite often used to justify the existence of agency costs.

To summarise, as market-consistent and frictional cost type techniques move further to the forefront, whether it is via accounting type developments, such as FRS 27, or risk based capital type developments, such as Solvency II, embedded value reporting will certainly need to keep up with these. I agree with many contributors that the profession should certainly be at the forefront of this.

The President (Mr M. A. Pomery, F.I.A.): We have had, not only a very practical paper from the authors, but also a highly productive and interesting discussion. I should like to thank the authors, the opener and the closer and all those who have participated in the discussion.

https://doi.org/10.1017/S1357321700003238 Published online by Cambridge University Press