CURRENT ISSUES IN PENSIONS

By D. G. Fleming, K. O. Gourlay, A. B. Grant, R. D. Muckart
and K. G. Taylor

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ABSTRACT

The paper outlines some background thinking to current pensions issues. In particular it addresses areas where the profession requires to articulate clearer views or reasoning about its position.

KEYWORDS

Investment Returns; Equity Risk Premium; Pensions; Cash Equivalents; Solvency; Guidance Notes

CONTACT ADDRESS

D. G. Fleming, Hymans Robertson, 221 West George Street, Glasgow G2 2ND, U.K. Tel: +44 (0)141-248-7007.

1. INTRODUCTION

This paper has been produced by the Faculty of Actuaries' Pensions Research Group (and an invited investment contributor) to stimulate a discussion on a number of issues currently facing the profession. New regulations and what are suitable parameters to use in various calculations have prompted discussions at various levels within the profession, but a broad membership view has not emerged. As such, we are in danger of creating a poor perception of the profession in the eyes of various stakeholders. Pension issues are making the headlines every week, and, although we have berated the Government over its delays, have we done enough to put our own house in order? This paper sets the background to various issues and makes some proposals. It is not a learned work, but more a framework to promote discussion. Rates quoted are per annum. Thanks are due to various colleagues for their helpful comments.

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2. Investment Issues

So far as investment is concerned, there are a number of issues facing the different stakeholders of pension schemes. Many of these issues have contradictory viewpoints, depending upon the stakeholder group to which one belongs. The most obvious of these is asset allocation, where FRS 17, solvency of the scheme and the sponsoring employer's financial health, all influence the decisions taken by the trustees and the sponsoring employer, but may not seem to be the most natural to the employee or the scheme member, especially when he reads the headline grabbing newspaper stories about the state of many of our larger companies' pension schemes. Future returns and diversification of risk are related to this topic, but again there may well be confusion in the minds of certain stakeholders because of the manner in which data are presented to him or her. Projected benefits or illustrations are the most obvious here, where the permitted projection rates allow the use of rates that may be difficult to justify in the current environment. In this context, we are referring to the use of the highest gross or net rates for illustrations, rates that would require geared investments to achieve them, as will be shown in a subsequent section.

2.1 *Equity Risk Premium (1)*

2.1.1 This is crucial in determining what proportion of their income employees should put aside for their retirement. Definitions of equity risk premium vary slightly, but the basic equation is simply:

$$\text{Expected return on stock market} = \text{Risk free rate of return} + \text{Expected stock market risk premium.}$$

The risk free rate of return should be taken as that which is guaranteed over the time horizon being used. We have used expected returns and risk premiums because that is what they are in the context of valuations and projections. How they are determined will be looked at in a later section. We have used 'stock market', because the formula applies to all asset classes, and even can be applied to the government bond market, where the risk premium can be used to investigate term risk where our investment time horizon is different to that of the risk free rate, because of the lack of availability of a suitable guaranteed investment. This would imply that the risk free rate of return can be built up from basics, and introduces a series of variables that may impact on the eventual outcome.

2.1.2 There has been discussion in the literature on equity risk premium as to whether arithmetic or geometric rates should be used. Along with whether we should use money-weighted or time-weighted rates of return, this is a subject that could take up much of this paper. However, this paper is being written with a view to helping non-specialist actuaries and others focus

more on how we might justify the use of certain rates of return, rather than become bogged down in a vast amount of theory. Anyone wishing to read more on this topic is, therefore, referred to Fitzherbert (2002), and the references within that paper.

2.2 *Risk Free Rate of Return*

2.2.1 As we have said above, this rate should reflect the time horizon that is appropriate for the purpose to which the rate is being applied. Thus, in discounting long-term liabilities, it would seem appropriate to use a long bond yield, whilst, if we are looking at a projection that has an option after three years, it might be appropriate to use a rate based on the short-term end of the bond market.

2.2.2 However, as we postulated above:

$$\text{Expected bond yield} = \text{Risk free rate of return} + \text{Term premium}$$

and this can be further expanded to:

$$\text{Expected bond yield} = \text{Real cash rate} + \text{Expected inflation rate} + \text{Term premium}$$

where 'real cash rate' is the rate that is the average that supports government economic policy. The term premium could include an allowance for both duration risk and credit risk, and so allow for an investment policy that includes overseas and corporate debt investments.

2.3 *Real Cash Rate*

This is a difficult parameter to set in today's low inflation environment. Back in the 1970s and 1980s rates typically ranged from 3% to 9%. However, interest rates were not used in the way that they are today. Nor were United Kingdom rates under the control of an independent policy group as they are today. Consequently, U.K. monetary history is not going to be very helpful in guiding us what a reasonable average rate might be. Data from the last ten years suggest that 3% may be about the right level. Certainly, looking at United States data, where the Federal Reserve has been in control of monetary policy for far longer, they would suggest that 3.0% to 3.5% is perhaps a reasonable range. To be conservative, 3.0% will be used, but we would not argue with any figures in the range of 2.75% to 3.5%.

2.4 *Expected Inflation Rate*

We suggest that the expected rate is between 2.0% and 2.5%, given the Government's current policy. One might argue for the top end of this range, given that that is where the Government has set its benchmark. However, the rate needs to be viewed in the context of target inflation rates in the U.K.'s

economic competitors' markets. Europe, with which we are likely to have closer ties in the years ahead, has a target more in line with the 2.0% level, whilst the U.S. Federal Reserve would appear to be happier at slightly higher levels. Thus again, the rate that one would choose therefore depends upon the time horizon. For short-term purposes, we would suggest a rate at the top end of the range, around 2.5%, given current inflation rates and policy, but, as we go longer, a rate closer to 2.0% would seem more reasonable. Of course, the inflation rate used should be consistent with assumptions in the valuation of liabilities with regard to indexation and salary inflation.

2.5   *Term Premium*

2.5.1   In the context of the U.K. market, this represents the yield curve spread, as we would expect to receive some extra return for longer-term investments, given the uncertainty that surrounds it. Historically, the range has been from -4.0% to $+6.0\%$. Even in recent times there has been a -2.0% to $+4.0\%$ range. However, over the longer term, the average appears to have been close to zero. We would argue that this value needs to be set in light of the current state of the economy, taking into account demand and supply patterns.

2.5.2   Where we wish to make an allowance for investing other than in gilts, a 'credit' spread needs to be built in. Historically, diversification was only done because returns were enhanced. However, today we see it in both a risk and a return context. Therefore, it is possible for this term to have a range of negative and positive values. The selection of values will depend upon the proposed investment strategy.

2.6   Using this framework, we have produced a bond yield range of 4.5% to 6.25% for gilts. At present (December 2003) shorter-dated gilts yield 4.5%, whilst those of longer duration are higher at 4.7%. Index-linked, however, are showing breakeven inflation rates of between 2.5% and 3.0% compared to our real cash free rate of 3.0%. This would imply that, on most timeframes, gilts are a more attractive investment.

2.7   *Equity Risk Premium (2)*

2.7.1   Historically, the equity risk premium for the U.K. equity market has been around 4.5%, although the market falls of the last three years have seen this fall to around 4.0%, based on the last 100 years. However, the last decade has seen a 'negative risk premium' of 3.3% (Source: Actuarial Examinations Core Reading 2004 for 401). Likewise, the long-term rate for the U.S. market had been nearer 7.0%. Consequently, we can see that the observed risk premium is far from stationary over even longer timeframes, and needs careful interpretation.

2.7.2   We can formulate an equity return in the same manner as we did for the bond yield. However, this poses certain issues with regard to dividends. Modigliani and Miller's theorems state that dividends are an

irrelevance in valuing shares. Looking at recent history, it is difficult to see that this is necessarily true, as there is evidence that investors have sought dividend paying companies and, indeed, have tended to reward those which have paid well financed and growing ones. However, that is to look at it in the short term, and it is possible that the dividend paying aspect will not prove to be the main valuation driver in the longer term.

2.7.3   Despite the vast literature on the subject of equity valuation, the average investor still uses some simple parameters to make these judgements. Dividend yield, book value and price/earnings (PE) ratios are common factors, whilst economic value added (EVA) and weighted average cost of capital (WACC) are now also seen. However, the average investor's interest is in his total return, and, as such, the only important items to him or her are the dividends received and the change in share price:

$$\text{Total return} = \text{Dividend yield} + \text{Change in share price.}$$

Using simple manipulation, we can break the change in share price into an earnings growth factor and a re-rating factor, i.e. a change in PE value or price-to-book value.

2.7.4   At first sight, dividend yield might seem straightforward to evaluate. However, in recent years share buybacks have become a feature of the market, and these need to be incorporated into the equation. From a theoretical point of view, the obvious way to deal with this is to calculate a per share value for the cost of the buyback and treat this as a 'dividend'. In the total entity context, that would be a correct method, but, for the individual investor, his return depends upon the action that he took. Consequently, it would probably be more correct to treat the buyback as a reverse rights issue, and to calculate pre and post buyback prices just as we do for rights issues. In this way we would get a correct theoretical return. However, explaining it to the man on the Clapham omnibus may be too difficult, and so the simpler approach may be preferable. Of course, we may feel that the impact of this is likely to be small in the future, and so, in the great scheme of things, it can be ignored.

2.7.5   Forward looking earnings growth may, at first, appear a real challenge. After all, the city has a myriad of analysts making forecasts, but without finding the Holy Grail. However, they are focusing on the short-term expectations, whilst our approach is to seek a longer-term position. Looking at the U.K. economy as a whole, corporate earnings have remained a fairly constant 22% of gross domestic product (GDP). There is no reason to assume that this is likely to change, and so we can assume that real earnings will grow in line with the economy, but be subject to volatility, due to the economic cycle. Productivity growth is also likely to see little change, and accordingly the longer-term trend of 2.0% appears realistic. However, demographics have historically added to this return.

2.7.6   The final factor is the current valuation of equities, and whether there will be a change in this. For the U.K. market, the PE ratio is around 18.5. This is high compared with historical levels. However, as with the equity risk premium, there would appear to be good reasons why the range of values may have changed. To understand this, we need to look at how a business might value itself rather than what value the market places upon it. In this respect, WACC becomes the important factor. The cost of equity to the market as a whole is usually taken as the ten-year bond yield plus the equity risk premium, since the market's beta is equal to 1.0. We know that the equity risk premium appears to have fallen, and, as a consequence, the cost of equity has fallen faster than the cost of debt. However, companies have been happy to buy back their equity at today's levels. This suggests that finance directors view the cost of debt as more attractive than the cost of equity. Given this, it seems reasonable to assume that there will not be a contraction in the PE ratio, and so no re-valuation adjustment is required.

2.7.7   Adding all this together suggests that the return on U.K. equities should be 8.0%. This is based on a dividend yield of 3.2%, an earnings growth rate of 2.5%, and an inflation rate of 2.3%. However, as in the case of bonds, there is a range of estimates from 7.0% to 10.0%, based on different timeframes.

2.7.8   Our basic estimates give us an equity risk premium of 3.0%, which seems reasonable in the current climate. However, on the basis of the arguments above, we could make a case for a lower rate of 2.5%. It is up to each stakeholder to decide what they are comfortable with.

2.8   *Conclusion*

2.8.1   From this, it is evident that the highest projection rate which should be used in illustrations is 8.0%, where it is a 100% equity allocation. For the average pension fund, a rate equivalent to 6.2% seems more appropriate, whilst, for very defensive or mature funds, a rate close to 5.0% is called for. Each stakeholder needs to understand the implications of these rates. We have a major education exercise ahead of us. One area where there will be much discussion is over the time horizon to which we are working. It may be difficult to get any of the stakeholders to focus on the longer term, and we may have to consider using shorter timeframes and appropriate rates in framing our advice.

2.8.2   There are also other issues relating to asset allocation that we need to address. In a low equity risk premium environment, fixed income, absolute return and tactical asset allocation (TAA) strategies become attractive, because of the risk reward trade-off. Market neutral, currency overlays and convertible arbitrage also have their merits, as investors seek higher returns from investments which are not correlated with market returns. Hedge funds will also have their place, but it is important to fully understand what is

being done, and how it fits into a fund's asset allocation as a whole. For instance, the use of a long-short fund alongside a conventional managed equity portfolio will have the effect of gearing the total investment decisions made on certain sectors or stocks, and therefore not reduce the risk over shorter timeframes that the diversification is supposed to have produced.

2.8.3   Costs will also be an issue. When equity returns are low, investors are likely to pay more attention to both costs and performance. Whilst returns are between 15% and 25% before expenses, there is no issue with expense ratios of 1.5% to 2.5%, but when returns are only 8.0%, even 1.0% seems a lot. How costs are charged for could well become a feature of product development. However, as advisers to major funds, it is important that we get expenses in perspective, and do not try to push producers to levels where it could be detrimental to the management of the fund. In this respect, all-in charges are an area of possible concern.

3.   Cash Equivalents

3.1   This section discusses the assumptions that can be adopted when determining cash equivalents. Particular attention is paid to the different approaches that can be used when setting the discount rates for the periods before and after retirement. The paper also considers the impact on cash equivalents of the Government's proposals for a Pension Protection Fund (PPF), and the new debt on employer regulations where a pension scheme is wound up and the participating employer is solvent.

3.2   *Background*

3.2.1   A cash equivalent represents the actuarial value of a member's accrued benefits. In principle, the cash equivalent is calculated by discounting the expected future payments to the member and his or her dependants.

3.2.2   Guidance Note 11 defines the basis of calculation of cash equivalents, and also states that trustees may pay transfer values higher than cash equivalents. GN11 also states that this value should represent the expected cost within the scheme of providing such benefits, and should be assessed having regard to market returns on equities, gilts or other assets, as appropriate. The Guidance Note does not set out how these market returns should be determined; this is left to the discretion of individual actuaries.

3.2.3   Guidance Note 11 also specifies a minimum cash equivalent. This minimum value is the value of the member's accrued benefits, as determined under the Minimum Funding Requirement (MFR). Guidance Note 11 does not specify the maximum cash equivalent that can be offered, although the Inland Revenue Practice Notes do comment on maximum values.

3.2.4   Where a pension scheme is underfunded, the cash equivalent

offered can be reduced to more closely reflect the member's share of the pension scheme's underlying assets. The decision whether or not to reduce cash equivalents rests with the trustees, acting on actuarial advice.

3.2.5   If the trustees wish to pay reduced cash equivalents, they must commission an actuarial valuation report (commonly known as a GN11 report), which shows a comparison between the assets and liabilities (calculated using the principles of GN11). The maximum reduction which may be applied to the cash equivalent is that which reflects the funding level (taking account of priority orders) shown in the GN11 report. However, as a minimum, the cash equivalent must at least equal the MFR value, reduced in line with the MFR funding level, as disclosed in the most recent formal MFR valuation.

3.3   *Brief History*

3.3.1   Guidance Note 11 has been in existence for many years, and, up until 1997, individual actuaries had significant latitude to determine the basis on which to calculate cash equivalents, resulting in substantial differences in the calculations of the value of identical benefits.

3.3.2   The introduction of the MFR in April 1997, for the first time established a basis for determining the minimum cash equivalent that could be offered to members of defined benefit pension schemes in the U.K. Many actuaries adopted the MFR basis as the sole basis for determining cash equivalents, establishing some consistency in the cash equivalents offered by pension schemes. Apparently, actuaries were satisfied that the minimum MFR basis also complied with the fundamental principles of Guidance Note 11. Over time, the MFR has been weakened and cash equivalents calculated under the MFR are now widely considered inadequate to meet the requirements of GN11. The final nail in the coffin for the MFR, as a basis for calculating cash equivalents, occurred in March 2002, when a weakening in the MFR basis resulted in a one-off reduction of about 7.5% in MFR values for young members.

3.3.3   Prompted by a note from the Pensions Board, actuaries reviewed the MFR in relation to the principles of GN11. It was noted that, as a result of falling interest rates, increasing life expectancy, falling equity markets and the weakening of the basis by Government, the MFR could no longer be agreed to satisfy the principles of the Guidance Note. This has led to many actuaries adopting a more generous cash equivalent basis, explicitly reflecting the principles of GN11. Current practice is now to carry out two calculations — using obvious notation, these are commonly referred to as the 'GN11 basis' and the 'MFR basis', the latter acting simply as an underpin.

3.3.4   Recent falls in equity markets have resulted in many schemes being underfunded. In these circumstances, as already noted, trustees can reduce cash equivalents to better reflect a member's share of the scheme's

underlying assets. This is to protect the security of the benefits of the members who remain in the scheme.

3.3.5   In the absence of additional funding from the sponsoring employer, many trustees have decided to reduce cash equivalents. This means that schemes may offer cash equivalents which are less than the GN11 value, and, in some cases, less than the unreduced MFR value.

3.4   *The GN11 Basis*

3.4.1   Guidance Note 11 only specifies the assumptions which should be used for determining the minimum cash equivalent that can be offered — the MFR cash equivalent. The assumptions underlying the more generous GN11 basis are left to the discretion of individual actuaries. Individual firms have developed bases which are designed to meet the requirements of GN11, and this has established some consistency, at least between actuaries working for the same company. The key assumptions are:
— pre-retirement discount rate;
— post-retirement discount rate;
— pension increases in the periods before and after retirement;
— pre-retirement mortality; and
— post-retirement mortality.

3.4.2   Most of the debate centres on the choice of discount rates. Some options are discussed in the next section. It is generally accepted that modern mortality tables should be adopted. Usually, tables should be projected to reflect the anticipated improvement in longevity.

3.5   *Discount Rates*

3.5.1   Guidance Note 11 states that the cash equivalent should represent the expected cost within the scheme of providing benefits, and should be assessed having regard to market returns on equities, gilts or other assets, as appropriate. Many actuaries believe that the scheme's investment strategy should be considered when establishing the discount rates, although there is some support for the notion that the discount rates should be independent of the investment strategy. We believe that there are a limited number of possible ways of determining the discount rates to satisfy the requirements of GN11. Some commonly used methods are:
— current long bond yield (gilt or high quality corporate) for both pre and post retirement discount rates;
— pre-retirement discount rate based on expected equity returns, post-retirement rate based on current bond yields — we believe that the implicit assumption should be that the assets backing the post-retirement benefits are predominantly bonds and that the outperformance assumption over gilts is relatively modest; and

— on occasions, long-term rates of discount are used, and a final market value adjustment is applied in order to reflect market conditions on the calculation date — normally such a methodology is for administrative ease, the intention being to arrive at the result derived from the application of current market rates of discount.

3.5.2   If the scheme is fully invested in bonds (adopts a gilts-matching strategy), then it seems appropriate to use the current bond yield to discount pre and post retirement. For a scheme invested predominantly in equities, a commonly used method is to discount with reference to expected equity returns pre-retirement, and with reference to a return between gilts and equities post-retirement (reflecting a notional switch towards bonds when a member retires in the scheme).

3.5.3   Current market redemption yields from gilts and corporate bonds are readily available. These yields will vary by duration, but, in the majority of cases, it would seem reasonable to consider the yields available on stocks with a term of 15 years or more. The exception to this might be the discount rate that should be used for a pension already in payment, which might be required for a valuation of pension rights for divorce purposes.

3.5.4   Assessing the return which can be achieved on equities is much more subjective, and is discussed in detail in Section 2. The return on equities is often defined in terms of the equity risk premium (ERP). As noted elsewhere in this paper, the ERP is defined as the expected additional return that can be achieved by investing in equities over and above the risk free return that can be achieved by investing in government gilts. The following approaches are commonly used in relation to the ERP:

— *fixed ERP* — based on the analysis in Section 2, a 'best estimate' value in current market conditions is 3%; however, we believe that, for the purpose of determining cash equivalents, a range of 2% to 3.5% may be easily justified; and

— *variable ERP* — we are aware that there are several models which link the ERP to equity market levels; for example, if the equity market is depressed (on a suitable measure), the ERP will be higher than if the equity market is buoyant.

3.5.5   Regarding the additional return expected on the assets backing post-retirement benefits, we believe that up to +1.5% relative to gilts is appropriate, since this can be justified on the basis of corporate bonds and a small proportion of equities backing the post-retirement benefits. In summary, we believe that the following ranges of assumptions are appropriate for the discount rates:

— pre-retirement − gilts yield + 0% to +3.5%; and
— post-retirement − gilts yield + 0% to +1.5%.

3.6 *Pension Increases in the Periods Before and After Retirement*

3.6.1 The starting point for increases before and after retirement is normally price inflation. On the basis that a market rate of price inflation is required, the commonly accepted method is to determine the geometric difference between fixed-interest and index-linked gilts of appropriate duration. For example, if the yield on fixed-interest gilts is 5.2% and the yield on index-linked gilts is 2.4%, then the market rate of price inflation is 2.7% $(1.052/1.024 - 1) \times 100\%$.

3.6.2 If there is a collar and/or a cap, a stochastic model may be used to determine the explicit assumptions (there is such a model on the Institute and Faculty web-site). Often, a more pragmatic, less theoretically precise approach is appropriate, however.

3.7 *Consistency between Bases*

3.7.1 It is clear from the above commentary that there is substantial scope for two actuaries to propose totally different actuarial bases for cash equivalents from the same pension scheme. Although not a new phenomenon, there is increasing worry that the general public may well find this difficult to understand, and there is a school of thought that GN11 should be more prescriptive, in order that there is greater consistency between cash equivalents calculated by different actuaries.

3.7.2 We have carried out some sample calculations, comparing cash equivalents on various bases and at different ages. In each case, the member's accrued pension has been taken to be £1,000 and the retirement age 65. Using obvious notation, Figure 1 shows cash equivalents in current financial conditions on the following assumptions:
— MFR;
— GN11: +3.5%/+1.5%;
— GN11: +2%/+1%; and
— GN11: +0%/+0%.

3.8 *Inadequate Assets*

3.8.1 In the current climate, given the recent negative returns on global equities, many pension schemes find themselves in deficit, both on an ongoing and on a GN11 basis. Our observations concerning the payment of cash equivalents are shown below.

3.8.2 Many trustees are minded to protect the security of benefits for remaining members, and therefore have chosen to commission a GN11 report and to reduce cash equivalent payments. A policy of reduction has often not been applied if the theoretical reduction, as stated in the GN11 report, is small. In some cases, the employer has agreed to make top-up payments, in order to allow the trustees to pay the full unreduced cash equivalent.

3.8.3 At the time of writing, there are proposals on the table to alter the priority order on wind-up. The new priority order may well impact on the
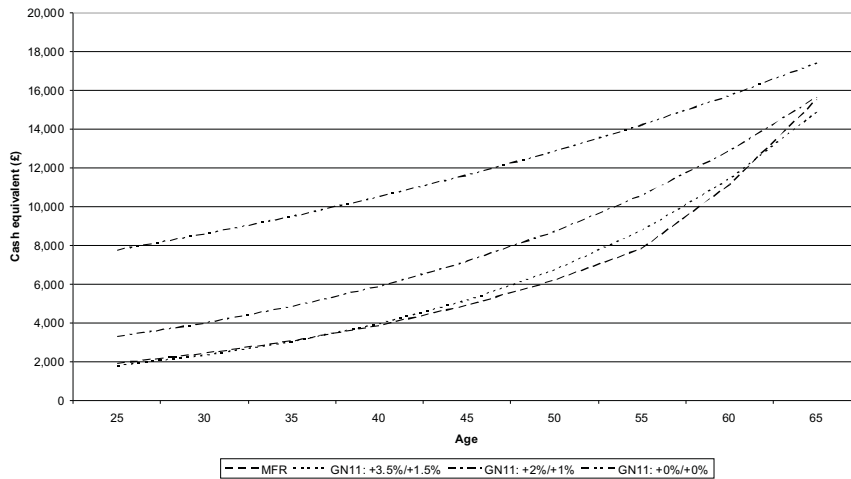
Figure 1.   Comparison of cash equivalent bases

actuary's advice in future GN11 reports, and indeed may cause him or her to revisit the advice given in previous GN11 reports.

3.8.4   The reductions may lead to the cash equivalent lying between MFR and GN11 values, or, in many cases, the cash equivalent may actually be less than the unreduced MFR reserve. Given that the reduction is restricted by the last formal MFR valuation (Regulation 14 statement), the result may be that the trustees have to pay out more than the member's share of the fund. If the number and magnitude of cash equivalents are small, such payments of more than the member's share of the fund may have little impact on the funding of the pension scheme. However, this is not necessarily the case if a member's cash equivalent represents a significant portion of the scheme assets.

3.8.5   There is evidence to suggest that, in the current financial climate, many cash equivalents are not proceeding. Normally, in order to pay a cash equivalent from a defined benefit pension scheme into an individual money purchase arrangement, an element of independent financial advice is required. In many cases the cash equivalent is determined on a relatively weak basis, and, indeed, the cash equivalent may be subject to further reductions resulting from the GN11 report.

3.8.6   Against this background, the independent financial adviser may find it difficult to advise the member that a cash equivalent represents the better option than the alternative deferred pension from the scheme. We have, however, noted instances where individual financial advisers have been able to advise members to take a cash equivalent, on the grounds that the

covenant of the employer and the security of the occupational scheme are less than strong, and it may be in the member's best interests to take the (reduced) asset prior to the possible insolvency of the sponsoring employer.

3.8.7   In the case where a member wishes to transfer between occupational schemes, and the cash equivalent from the transferring scheme is reduced, then the pension credit offered in the receiving scheme will often not appear to be favourable in relation to the benefits given up. It is also the case that many schemes are not accepting transfers-in, because trustees and companies are taking the view that the cash equivalents offered do not adequately reflect the cost of the benefit obligation being taken on. These factors are, of course, further inhibiting cash equivalents between occupational pension schemes.

3.9   *Enhanced Security of Benefits*

3.9.1   The Government has announced measures to improve the level of security of benefits within defined benefit schemes. These measures have been prompted by recent high profile cases, where schemes have been wound up with insufficient assets, leading to substantial reductions in benefits for non-pensioner members.

3.9.2   The most immediate change is that, with effect from 11 June 2003, solvent employers choosing to wind up their pension schemes will be required to meet the cost of buying out members' benefits in full. The cost of securing benefits with an insurance company (if indeed an insurance company can be found that is willing to take on these liabilities) is likely to exceed the value of a scheme's assets. It is likely that the requirement for additional funds will prohibit companies from voluntarily winding up their schemes, at least in current market conditions.

3.9.3   The Government has also announced that it plans to introduce an industry wide insurance scheme, which will offer additional security for members' benefits in the event of a scheme being wound up with an insolvent sponsoring employer. This will be called the Pension Protection Fund (PPF). It is anticipated that this will operate in a similar way to the Pension Benefit Guaranty Corporation (PBGC) in the U.S.A., but we await final details. Currently, proposals will limit the amount of benefit which will be provided through the PPF (to incorporate a maximum salary, 90% benefit limit, and other possible restrictions).

3.9.4   Guidance Note 11 states that the cash equivalent should represent the expected cost within the scheme of providing benefits. It could be argued that the two measures introduced by the Government have made the majority of benefits virtually risk free, and that this should be reflected in the discount rates adopted by actuaries. Similarly, it may be argued that it is inappropriate for trustees to reduce cash equivalent payments to reflect underfunding, as is currently allowed under GN11. However, GN11 currently states explicitly that the cash equivalent should represent the cost of

providing benefits within the scheme. The PPF is outwith the scheme, and arguably should therefore not impact on the cash equivalent calculation basis. Moreover, the PPF only partially secures benefits (maximum salary, 90% of benefits), and so it would be arguably wrong to materially change the cash equivalent basis on the grounds that the PPF provides full protection.

3.10　*Scheme Specific Long-Term Funding Standard*

The Government has announced that the MFR will be abolished, and will be replaced by a scheme specific funding standard. It remains to be seen what principles will be adopted to determine this new standard. Cash equivalents, in future, may need to be determined using the assumptions of the scheme specific funding standard.

3.11　*Discretionary Benefits and Cash Commutation*

3.11.1　Trustees can decide, having regard to regulations, whether or not to take into account discretionary benefits when cash equivalents are calculated. Most commonly, this decision is limited to discretionary pension increases.

3.11.2　The most obvious example of a benefit option is cash commutation, where a member has the option of giving up part of his or her pension in exchange for a tax free cash sum. Where a member exercises this option, it is likely that this will prove advantageous to the scheme's finances, because the cash sum is likely to be less valuable than the pension given up.

3.11.3　The vast majority of members do take a tax free cash sum at retirement, which suggests that it would be reasonable to allow for this when calculating cash equivalents. However, Guidance Note 11 allows benefit options to be taken into account only where the option would be disadvantageous to the scheme's finances.

3.12　*Divorce and Directors' Disclosures*

We have to bear in mind that cash equivalents are not only required where members wish to transfer between pension arrangements. They are also required for divorce purposes and in company accounts where directors' benefits are disclosed. It would be desirable to have some sort of common basis for determining cash equivalents of the benefits earned by directors, since this would mean that the pension benefits offered would be comparable between companies. This may be desirable, but, given the latitude that is given to actuaries when determining the basis to be used for cash equivalents, it is unlikely that this will be achieved in practice.

4.　Solvency

4.1　The new Exposure Draft 51 (EXD51) sets out a number of important changes to the mandatory issues which must be addressed as part of actuarial

reporting under a defined benefit scheme. This updates guidance previously issued under GN9. The particular aspects of EXD51 which we wish to look at further in this paper are those under ¶2.8, 'Solvency'.

4.2 The principle new requirements in relation to solvency are as follows:
— The assets of the scheme must be taken at market value.
— The cost of buying out the benefits at the valuation date must be estimated. One possible methodology is to use the actual cost of buying those benefits from a suitable insurance company on the chosen date.
— Where a buyout quotation is not used, the actuary must seek to use those principles likely to have been adopted by insurance companies to determine such a cost.

4.3 The particular features of the buyout basis that are to be taken into account (if a quotation is not available) are as follows:
— Benefit payments must be projected using a prudent allowance for mortality.
— Market yields should be taken into account using market terms available and market instruments of high credit quality (U.K. AAA debt or higher).
— The financial instruments chosen to derive the yields should be as close a match as possible to the accrued benefit entitlements.
— The actuary must include in the valuation, a prudent reserve for the risk that benefits will not be met in the likely event that matching investments cannot be purchased.
— A realistic allowance must be made for the cost of winding up the scheme.
— It is recognised that an exact analysis of the mis-matching reserve required may be impractical, and therefore EXD51 recommends a pragmatic approximation by reducing the discount rate used by not less than 0.5% p.a.
— The actuary needs to take into consideration the actual conditions under which the solvency position would not be maintained, and set those conditions out within the report.

4.4 The requirements set out in the above paragraphs represent a significant change from the 'discontinuance' position which was required under the previous version of GN9. It has been fairly widespread practice under the previous version of GN9 to take the discontinuance position as effectively the MFR position, on the basis that effectively only the MFR liabilities were 'guaranteed' on discontinuance.

4.5 The movement to showing a solvency position reflects two recent features:
— the liability for a solvent employer has been increased from one related to the MFR liability payment to one related to the buyout liability; and
— the recognition that winding up pension schemes has become much

more prevalent, so that it is in the public interest that solvency on a buyout related basis is demonstrated.

4.6   The changes to EXD51 implicitly raise a number of very important questions which actuaries need to take into account, and which can be summarised briefly as follows:
— What method of assessment should be used in arriving at a pragmatic assessment of the buyout costs which meets requirements under the new guidance?
— How much detail, and to what extent, does the actuary need to investigate potential changes in the solvency coverage following the valuation date?

4.7   The buyout position will show a funding position, in almost all cases, very much lower than the ongoing valuation position. What message should the actuary be giving in relation to the seeming contradictions generated by the 'solvency' and 'ongoing' positions? If discontinuance funding has been measured recently in a manner related to the MFR basis, what further explanation needs to be given of the changes in the way in which the solvency position is now being mirrored in the report? We look at each of these comments in turn.

4.8   *Method of Assessment*
There are four main ways in which the buyout costs can be determined. These are as follows:
— obtaining actual quotations from a life office;
— valuing the benefits in line with the rule of thumb set out in EXD51, which can be broadly set out as gilt yields less a mis-matching adjustment;
— using a formula approximating to those currently in use by the relevant life offices; and
— analysing, in some detail, the required matching portfolio on a closed fund basis, and ascertaining what proportion of the liabilities could be obtained by switching immediately into matching assets on the valuation date.

4.9   *Obtaining a Life Office Quotation*
For commercial reasons, it is unlikely that life offices involved in the bulk annuity market would be prepared to issue quotations, on a regular basis, where there is no real prospect of buyout business, and where the sole reason is for statutory valuation purposes. Even if annuity quotations were to be forthcoming, it is likely that, in many cases, actuaries would decide that, for reasons of speed, it would be more practical to estimate the underlying basis likely to be used by the appropriate life office themselves. For schemes where there is a real likelihood of a wind up, it may be practical for an actual

quotation to be utilised. However, in the vast majority of cases it is envisaged that one of the following methods will need to be used.

4.10 *Approximation to Buyout Basis*

4.10.1 The bases (or 'rules of thumb') underlying bulk annuities are fairly readily available from the appropriate life offices. This has the advantage of producing costings of liabilities which are closely related to those available from a life office, as well as allowing for the liability to be valued in a timescale which is appropriate to the client.

4.10.2 There are some aspects of the basis which could not be determined precisely unless an actual quotation was obtained. These include:
— variations in the age ratings to be applied to the mortality factors;
— analysis of average annuity size;
— occupational factors;
— regional factors;
— scheme mortality data;
— any adjustment that would be made by the life office for large cases (say, in excess of £50m) to take into account liquidity; and
— complicated benefit structures (for example LPI cases with a floor), which may result in increased capital requirements and would therefore reduce the pricing yields.

4.11 *Exposure Draft 51*

4.11.1 Exposure Draft 51 sets out a possible investment return assumption of gilt yields less 0.5%, where the gilt yield would be based on gilts of appropriate matching terms, as far as these were available. Either a conventional or inflation-linked gilt would be used, as appropriate. The actuary would also be able to make adjustments in excess of 0.5% p.a., if he or she felt that mis-matching was significant. It is envisaged, however, that the mortality that would be used on this basis would be similar to the approximate 'rules of thumb'.

4.11.2 The EXD51 basis would appear to be significantly less conservative than the costs which would be obtained by using the approximate buyout basis. This is demonstrated in Figure 2, which illustrates the solvency liability at various ages on an estimated buy-out basis, on the 'EXD51' basis, and under the MFR. In each case, the member's accrued pension has been taken to be £1,000 and the retirement age 65.

4.12 *Closed Fund*

It would also be permissible under the Exposure Draft to carry out a precise matching exercise in relation to both the benefit outgo on a closed fund basis and the investment income on a matching asset basis. In simple terms this would work as follows:
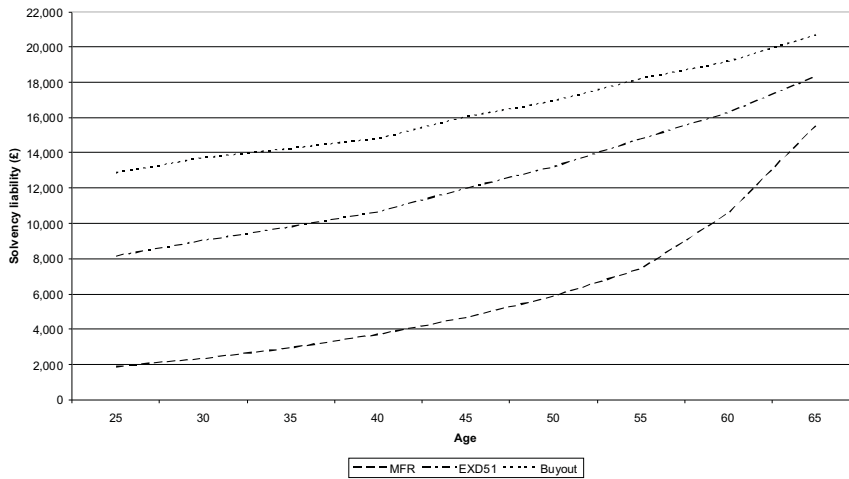
Figure 2.   Comparison of solvency bases

— estimate the outgoing in each future year if the scheme was to cease to
accrue any further benefits on the valuation date;
— by carrying out a comparison of coupon payments and redemption
yields on bonds of appropriate term, build a matching portfolio on bond
based assets (U.K. Government gilts or AAA corporate) and assess
what proportion of the accrued benefit payments could be met by
switching the existing assets directly into the matching portfolio; and
— the solvency position would then be assessed as the ratio of the
'matched' liabilities to the total liabilities.

Given the growing reluctance of many life offices to offer annuity terms,
this approach may be one which receives wider spread support in future.

4.13   *Volatility*

4.13.1   A typical pension scheme invests a significant proportion in
either U.K. or overseas equities. There is, therefore, likely to be a very
material risk of substantial changes in the solvency position, quite possibly
over a short period. It is important that the actuary makes every attempt to
demonstrate the possible changes, although the level of detail in which this
can be done will clearly be different for different sizes of schemes.

4.13.2   For larger schemes, it may be possible to carry out a number of
simulations, and assess the probability of likely changes in the solvency
position in the short to medium term. For smaller schemes, it may simply be
appropriate to look at the immediate solvency position at the valuation date

if equities were to change in their asset valuation by ±25% and gilt yields were to change by ±1%. Although one method is clearly much more sophisticated, either approach should clearly flag up the mis-matching risk involved, and would allow consideration to be given to the nature of the backing assets.

4.14 *Interpretation*

It is clearly important that the profession gives consideration to the expected reaction from recipients of actuarial reports, as envisaged under EXD51. However, with the expected greater transparency of the valuation resulting from the new scheme specific funding requirements, it is important that the profession also gives consideration to how the funding results will be viewed by the scheme membership. It is intended that the funding strategy, as well as an annual update of the funding position, will be circulated to scheme members. Obvious questions which are likely to arise are:
— What is the 'true' funding position?
— To what extent will the sponsoring employer be able to top up any deficit on the buyout position to ensure that accrued rights are fully paid out on wind-up?
— Are the trustees and the employer right to rely on expected equity out-performance over the long term, and keep contributions, in the meantime, lower than would otherwise be the case?
— Are the trustees and the employer prepared to set out a contribution plan to reach full solvency over a reasonably short period?
— Is the actuary being imprudent in assuming that equity returns will enable benefits to be paid in full over the longer term?

We think that the last question, in particular, is key to the profession, and is one which deserves wide discussion.

4.15 *Change from Discontinuance Position*

We think that some explanation is required to explain the move from measuring 'discontinuance' to measuring solvency. This should be fairly easily explained by the fact that the debt on the employer for solvent companies has moved from a payment related to MFR liabilities to one based on buyout liabilities. The wide variation between the MFR and the buyout liabilities may, however, generate a number of further questions.

4.16 *Conclusion*

4.16.1 The move to the mandatory showing of the solvency position under actuarial reports does represent a significant challenge to the profession, particularly for those actuaries who have chosen to show the discontinuance position on a basis significantly more optimistic than the buyout basis in the past (albeit, there has already been a growing tendency to

illustrate the buy out position in actuarial reports more recently). There are a number of potential difficult communication messages for the actuarial profession, in moving the emphasis of the valuation reports to one which includes a specific examination of the solvency position, rather than one which very largely focuses on the ongoing position and either touches on the solvency position only briefly or ignores it.

4.16.2 Recent changes to the debt on the employer provisions have clearly been a factor in requiring the solvency position to be shown. However, there has also been criticism in some quarters where actuarial reports have not taken a step further in the past, and shown the guaranteed benefits that could actually be secured were the scheme to be wound-up under the previous MFR based 'debt' regulations.

4.16.3 Looking forward, there are going to be a number of communication challenges for actuaries, explaining why they are relatively relaxed about the funding of the scheme, where the solvency position revealed to members under the new disclosure requirements reveals a material deficit. We suggest that it would be wrong of the profession to fall into the trap of assuming that future equity out-performance is a given, and that the profession needs to seriously debate, for an ongoing scheme, the relative importance that needs to be attached to a valuation on both the ongoing and the solvency positions.

REFERENCE

FITZHERBERT, R.M. (2002). Continuous compounding, volatility and the equity premium. Paper presented to the Finance and Investment Conference, 2002.