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OBJECTIVES AND METHODS OF FUNDING DEFINED BENEFIT PENSION SCHEMES

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'Let me not to the marriage of true minds admit impediments'

1. INTRODUCTION

The Objective of Funding

1.1. As every actuarial student is taught[1]:

'Pay-as-you-go is acceptable for a State pension scheme because the State is, for practical purposes, assured of a continuing existence.'

However:

'The position is quite different in the case of an occupational scheme, since an employer's business may cease to exist.'

1.2. It seems to us to follow, therefore, that the prime purpose of funding an occupational pension scheme must be to secure the accrued benefits, whatever they might be, in the event of the employer being unable or unwilling to continue to pay at some time in the future. To that end, the contributions would have to be sufficient both to pay the benefits as they fell due for as long as the scheme continued, and also to establish and maintain a fund which would be sufficient to secure the accrued benefits in the event of contributions ceasing and the scheme being discontinued, whenever that might occur.

1.3. In order to control funding on this approach it is necessary to:

(a) Determine exactly what the accrued benefits are, so that their value now and in the future may be estimated by the actuary.

(b) Make estimates of the future workforce, and the future membership of the scheme, in the employer's continuing business.

Methods of Funding Currently in Use

1.4. In 1984, the Faculty of Actuaries and the Institute of Actuaries jointly published a Report on Terminology of Pension Funding Methods[2] prepared by a Working Party of the Pension Standards Joint Committee. That report was intended only as a factual statement of actuarial practice and thus gave no indication as to the relative suitability of the various methods in use. None of the methods described in that report had the objective described above.

1.5. The prospective methods described in the report treat the pension scheme as a closed fund and are directed towards determining a level contribution rate thought appropriate for the present members in that closed fund. The resulting asset accumulation is secondary to determining a level contribution rate and is

given the name 'standard fund'. In a supplement to the Report issued in May 1986 the same figure was defined as an 'actuarial liability', although it is not necessarily a liability in any legal sense.

1.6. The accrued benefits methods described start with the same actuarial value of prospective benefits as in § 1.5. They then separate out the part of that value which is attributable to past service, and call that the 'actuarial liability' by the Projected Unit Method or the Projected Accrued Benefit Method. Alternatively, that value of past service liabilities may be reduced by assuming no increase in pensionable salaries after the valuation date and the result described as the 'actuarial liability' by the Current Unit Method. In neither of these cases is the 'actuarial liability' necessarily a liability in any legal sense. It should be borne in mind that the provisions in the Social Security Acts for early-leavers and for contracted-out pension schemes now effectively impose a higher accrued benefit entitlement than under the Current Unit Method, so that that method would no longer be used in practice.

1.7. With accrued benefits methods of valuation, the contribution rate is obtained by estimating the 'actuarial liability' at some future date and equating the value of future contributions during the intervening period with:

(i) the value of benefits paid in the period, plus

(ii) the value of the change (usually an increase) in 'actuarial liability'.

1.8. The period chosen could be one year but increasingly a longer 'control period' is chosen so as to avoid inconvenient and unnecessary fluctuations in the contribution rate.

1.9. New entrants might, or might not, be allowed for during the control period. If they are *not* allowed for and a long control period is used, the method effectively becomes a prospective closed-fund method as referred to in § 1.5. above.

1.10. The prime objective of funding identified above would be met by the accrued benefits method *if* the 'actuarial liability' reflected the members' actual entitlement on wind-up under the Trust Deed and Rules and *if* new entrants were allowed for during the control period used for calculating the contribution rate.

The Purpose of this Paper

1.11. It is our conclusion that the profession's apparent difficulty in deciding upon the 'relative suitability of the various methods' of funding currently in use, and the consequent difficulty of the Accounting Standards Committee in deriving a suitable accounting standard to accommodate the various methods, can be attributed to a general failure of pension fund Trust Deeds and Rules to record the true intentions of employers in a wind-up situation. As a consequence, traditional funding methods have come to disregard the provisions in the Trust Deed, which typically would grant no greater entitlement to members in service caught in a wind-up situation than to an early leaver.

1.12. It may be thought that one solution would be for the *actual* liability for accrued benefits according to a scheme's Trust Deed and Rules to coincide with the 'actuarial liability' under one of the methods described in the Working Party's Report, thus meeting the prime objective for that scheme at the valuation date. However, under the Projected Unit Method, for example, the accrued benefit is the value of past service rights in a prospective valuation, allowing for future withdrawals, promotions, etc. It is not a defined benefit to which the member

would or could be entitled as of right in the event of the scheme winding up. That, in our view, makes it difficult to explain to the member and renders the method conceptually inappropriate in the context of a defined benefit scheme.

1.13. Our purpose in writing this paper is to draw attention to the method of valuation which has been in use for some time in our own office and to commend it for general use in meeting the prime objective of funding as stated in § 1.2. above.

1.14. The first stage of the method is to explain to employers the prime objective of funding as identified above and to indicate that we correspondingly adopt what might be called a *defined* accrued benefit approach to valuation. The liability valued is thus the true accrued liability in accordance with the rules and not an 'actuarial liability'.

1.15. The second stage is therefore for the employer to decide what the members' entitlement should be on winding up and to make that secure by specifying the entitlement in the Trust Deed and Rules.

1.16. The maximum entitlement which we recommend for adoption is an accrued benefit based on past service and current pensionable pay revalued in line with expected increases in the general level of earnings up to normal pension age. This corresponds to what the member might have expected to receive on retirement for that same period of service had the scheme not been wound up. Allowance could conceivably also be made for the actuary's salary scale (which would have allowed on an *average* basis for promotions, etc, in the ongoing scheme) but we do not think it either necessary or appropriate to add this in determining *individual* entitlements on winding up. It must not be forgotten that, in this context, the Inland Revenue also have views on the maximum entitlement.

1.17. The minimum entitlement on wind-up would be the statutory minimum benefit for the early leaver, namely, an accrued benefit based on current pensionable pay revalued up to normal pension age:

(a) in line with the general level of earnings or one of the permitted alternatives on that part of the pension (if any) which represents the Guaranteed Minimum Pension to be provided by a contracted-out scheme, and

(b) at 5% p.a. or in line with the cost of living (as measured by the Retail Price Index) if less on that part of the remaining pension attributable to service from 1 January 1985.

1.18. An intermediate entitlement could be chosen, for example revaluation of (b) in the foregoing paragraph could relate to the whole of past service, including service before January 1985. Revaluation could also be at a higher rate than 5% p.a., for example in line with expected increases in the cost of living even where these exceeded an overall rate of 5% p.a.

1.19. It will be appreciated that although the word 'entitlement' is used here, the situation on actual wind-up would be that members would receive their full entitlement only if the assets were sufficient. Otherwise, some benefits would have to be scaled down. The defined benefit on wind-up is thus effectively a target benefit for funding purposes, unlike benefits awarded in other circumstances which would be paid in full as long as the scheme continued.

1.20. Contrary to what we have seen suggested elsewhere, it is not our practice to encourage employers to adopt one of the lower wind-up benefits and

corresponding funding targets. Neither is it our practice to present without comment actuarial reports which show an 'actuarial liability' which is higher than a scheme's true accrued liability. For a scheme where a conscious choice of wind-up benefit has yet to be made, what we do is to indicate the present funding level in relation to the minimum and maximum targets and to an intermediate target, and then show in each case what the contribution rate should be in future in order to keep the fund on target or to bring it on to target within a stated period.

1.21. In making the calculations, new entrants are allowed for so as to maintain the workforce and scheme membership at their present level, unless there are good reasons for making a different assumption. This enables the employer to appreciate the financial implications for his continuing business of adopting one target wind-up benefit or another.

1.22. Membership projections reflecting the employer's continuing business are invariably made for 40 or 50 years ahead, with intermediate 'snapshots' at the end of each decade. This is necessary in order to determine whether there is sufficient stability for a single contribution rate to apply in all future years. No business has an absolutely stable workforce in terms of age and length of pensionable service; in real life the contribution rate is bound to fluctuate or to exhibit an underlying trend upwards or downwards for a period of time. If the instability is material, a higher or lower contribution rate would be applied for a time, in order to avoid the funding level falling below target or getting too far above target.

1.23. Our experience is that it is a minority of employers who choose the minimum security benefit. The majority adopt the maximum target or one intermediate between the maximum and minimum. However, whatever the choice, it has to be accepted, since it is for the employer and not the actuary to decide upon the wind-up benefit provisions in the scheme, which in turn determines the accrued liabilities.

A Brief Outline of the Paper

1.24. In the next section of the paper we present some background material, including reference to recent events which have a bearing on the matters under discussion, such as:

(a) The prevalence of surpluses, some large, in pension funds.
(b) The statutory valuation basis to be used for identifying (for tax purposes) excessive surpluses[3].
(c) ED 39 on accounting for pension costs in company accounts[4].
(d) The Judgment in Hillsdown Holdings Ltd v Imperial Foods Ltd[5].

1.25. This is followed by sections dealing in more detail with:

(a) taking steps to get the legal framework right;
(b) indicating, with numerical comparisons, how the various methods of valuation in use fit the legal framework; and
(c) deriving a suitable accounting standard.

That, in our view, is the correct sequence. The first thing is to get the legal framework right, so that actuaries may then operate within that framework and, in this more orderly situation, make it easier for the accountants' needs to be met.

2. BACKGROUND

2.1. The method of valuation outlined above, to which we have given the name 'Defined Accrued Benefit Method', is not new. As already mentioned, it has been in use in our office for many years – in fact since 1970. The method's first public airing was at an international conference in September 1978, reported in *Pensions World* in November of that year[6]. Since then it has had wider publicity in numerous articles in the accounting, pensions and financial press (e.g. Setting a Standard for Pension Costs, *Accountancy*, March 1980)[7]. One reaction to these articles was outright rejection in the paper 'Valuation of Final Salary Pension Schemes' presented to the Institute of Actuaries on 26 April 1982 by R. B. Colbran[8]:

'I believe that a strong lead should be given by *Council* to discourage members from any association with the discontinuance target method' (the general category into which he had placed the method).

2.2. The paper by Mr Colbran included a number of statements which in our view did not explain matters as fully as they might, such as:

(i) "The general effect of the (discontinuance target) method is to produce a lower contribution rate, often appreciably lower, than results from the aggregate method."

It was perfectly true that the method had produced a lower contribution rate than the Aggregate Method for new schemes starting up. If the actuary's assumptions turned out to be correct, though, the first would gradually rise and the latter fall, so that the contribution rate by the Aggregate Method would ultimately be the smaller. However, variations from the actuary's assumptions have been quite dramatic in the past 20 years or so and have affected differently the results obtained by the two methods so that today, in practice, it is impossible to generalize on the relativity of the contribution rates. The contribution rate resulting from the Aggregate Method is inversely related to the ratio of existing assets to total projected liabilities for past and future service of present members and could lie anywhere within a very wide spectrum.

(ii) "It would be natural to fear that the projected unit credit method would result in a steadily rising cost as percentage of salary."

The essence of the Projected Unit Credit Method (or Projected Unit Method) is that, even with a new scheme, it may be expected to produce a *stable* percentage contribution rate for a stable workforce, although within that rate the cost of each year's accrual is smaller for young employees than for elderly employees. To fear an increase in the contribution rate is thus to foresee a dramatic ageing of the membership, not a very realistic prospect for an ongoing scheme and certainly not of general application.

2.3. Mr Colbran's rejection of the accrued benefits valuation method appeared to stem mainly from his disapproval that:

"many employers have installed insured final salary schemes without being aware of the potential cost for the *present membership*."

The words italicised (by us) are important. They indicate that it is not just the increasing contribution rate for an immature scheme, which would result from the use of some accrued benefits methods, to which Mr Colbran would object; to be acceptable to him, and to others who supported him in discussion, a method

would have to build up sufficient funds to avoid any increase in the contribution rate in the unlikely situation of the scheme being closed to new entrants and yet continuing in operation until the last of the ageing present members retired.

2.4. Much more could have been said in favour of accrued benefits valuation methods in general, and the method described in the article in *Accountancy* in particular, than was brought out by Mr Colbran, both as regards the principles involved and the implications for contribution rates and funding levels. A paper, 'A Financial Framework for Pension Funds' was therefore presented to the Faculty of Actuaries on 21 February 1983[9], which dealt more fully with both these aspects but it is apparent to us that there still remains a substantial measure of opposition to the method by some and misunderstanding of it by others, so that a further presentation is needed.

2.5. Only one of us was involved in the events described above, i.e. in developing and adapting the method and in explaining its use in various articles and in the paper presented to the Faculty in 1983. The other, only occasionally concerned with occupational pensions during a long career in Government service, had nevertheless harboured doubts for some time about the appropriateness of using the Entry Age or Aggregate Method for an ongoing valuation (as most actuaries did) yet transferring only the value of past service liabilities when a scheme had to be apportioned (as most actuaries did). Moreover, the allegation that there was something reprehensible about adopting an accrued benefits method became less convincing as time passed. (It had been made much earlier than in Mr Colbran's 1982 paper.) This raised the questions as to which method was 'right' and, if both were admissible, how and by whom was the choice of method to be made. These questions, of considerable importance to the profession, remain unanswered.

2.6. Although not concerned with the finances of individual pension funds, long-term projections of the totality of occupational pension provision were made on a somewhat simplistic basis for purposes of the paper 'Pension Problems and their Solution' submitted to the Institute of Actuaries on 24 January 1983[10]. More detailed estimates were made in an article by Mr J. L. Field (*J.I.A.*, **110**, 243)[11]. A major difficulty in making such estimates is deciding upon the level of funding to be assumed for the future.

2.7. Should it be assumed that actuaries generally will be persuaded to use only prospective methods, with the consequence, in our view, that schemes would generally build up funds well above what was required to cover their liabilities in respect of past service? Would funding to this level be reasonable from the point of view of individual employers, and desirable or undesirable from a macro-economic point of view? A closed-fund level-contribution funding criterion for all pension schemes individually would mean that the combined funds would be sufficient to cover the closure of *all* occupational schemes to new entrants and their gradual run-down. Would this be a realistic funding target to adopt, or would it be over-cautious?

2.8. If ever there was a time when the need for a closed-fund level-contribution approach to pension funding would be put to the test, that time would be in the difficult economic conditions of the present. But there is no evidence that we know of which suggests that funds have been closing and running down gradually. On the contrary, the weight of evidence points to redundancy, high turnover,

contribution reductions and surpluses in pension funds. One estimate puts the total surplus in pension funds relative to the 'actuarial liabilities' at £8 billion. Another estimate of the total surplus is given as £50 billion, but doubts have been expressed about that result so it must be viewed with some caution. However, if an accrued benefits approach had been used as standard in estimating 'actuarial liabilities' in the first of these estimates, it would presumably have produced a larger figure than £8 billion.

2.9. Among recent converts to the accrued benefits approach to valuation has been the British Government (presumably advised by the Government Actuary). Under new regulations to be prescribed under Schedule 12 of the Finance Act 1986[3], liabilities will have to be valued by the Projected Accrued Benefit Method on stated assumptions. If the assets, also valued on a prescribed basis, exceed that value of the liabilities by more than a specified percentage, the surplus will be deemed excessive and the scheme will be required to take steps to reduce it or suffer tax on part of the fund's investment income.

2.10. It is possible that a prospective valuation, including the future service liabilities and the value of future contributions of the present members but calculated on weaker assumptions than in the statutory basis, would produce an actuarial liability no higher. Nevertheless, the Finance Act 1986 appears to postulate that, in principle, prospective valuation methods result in overfunding and that the accrued benefits approach to valuation should therefore be used.

2.11. That means that in almost all cases a real liability calculated by our Defined Accrued Benefit Method should be acceptable. The statutory method sets a *maximum* for the liability or the 'actuarial liability'. A smaller figure would be of no concern to the Inland Revenue unless the employer sought a refund of a surplus calculated by reference to the lower liability figure.

2.12. In a Statement of Financial Accounting Standards No.87 published in December 1985[12], the Financial Accounting Standards Board in U.S.A. announced that, for consistency between companies, all companies should, after a transitional period, show in their financial statements either an asset or an unfunded pension liability, according to the extent to which their pension fund's assets exceeded, or fell short of, accrued liabilities calculated by the Projected Unit Method. Here is a further endorsement of the accrued benefits method of valuation, although only indirectly applicable to some schemes in the U.K.

2.13. In Exposure Draft 39 published in May 1986[4] the Accounting Standards Committee in the U.K. has invited comments on its proposals for this country. In general, the proposed accounting standard would be met by any actuarial method which resulted in the cost of pensions being charged against profits on a systematic basis over the service lives of the employees in the scheme and produced a regular pension cost which was a substantially level percentage of current and expected future pensionable payroll.

2.14. Accounting standards are considered further in section 5 of the paper. We examine there the extent to which methods currently in use satisfy the criteria of ED 39 and might therefore appear suitable in the eyes of the Accounting Standards Committee.

2.15. A recent Judgment by Mr Justice Walton at the Royal Courts of Justice[5] concerning apportionment of the funds of the Imperial Foods Pension Scheme and payment of a bulk transfer value to a new scheme set up by Hillsdown

Holdings Ltd appeared to us to highlight the present unsatisfactory situation concerning levels of funding and the definition of accrued benefits in Trust Deeds and Rules. A detailed examination of that Judgment will form a suitable introduction to the next section of the paper on getting the legal framework right.

3. THE LEGAL FRAMEWORK

Hillsdown Holdings Ltd and others v. Imperial Foods Ltd and others[5]

3.1. The Judgment in this case by Mr Justice Walton, dated 7 February 1986 at the Royal Courts of Justice, received a great deal of publicity. It was reported at the time in the National Press and this was followed by detailed consideration in the Pensions Press, so that most actuaries will by now be aware of the Judgment's reasoning and conclusions. A brief note was published in *JIA*, **113**, 298. In our view, one of its most important features was that it showed clearly the present inadequacy of pension fund Trust Deeds and Rules concerning the rights of members on winding up or on apportionment of funds and bulk transfer to another scheme. Only one scheme was, of course, under consideration, the Imperial Foods Pension Scheme, but, in our experience, that scheme was typical of pension schemes in general.

3.2. The circumstances were that two subsidiary companies of Imperial Foods Ltd were being sold to Hillsdown Holdings Ltd. The employees were to be transferred to a new pension scheme and the matter to be determined was the amount of the transfer value to be paid from the Imperial Foods Pension Scheme. (There were other matters before the Court but we shall confine our attention to this one.) As the Trust Deed did not say what should happen in this event, it was up to the actuary of the Imperial Foods Scheme to decide what was best in the interests of all concerned.

3.3. The exact words of the Judgment concerning the actuary's duties are important. They were:

> "The function of an actuary *in any situation which is not governed precisely by the provisions in the Trust Deed* is to achieve the greatest possible degree of fairness between the various persons interested in the scheme."

This confirmed the conclusion in a previous Judgment by Buckley, J. in 1969[13] in a somewhat similar situation (in Re George Newnes Group Pension Fund, 3 July 1969, *J.I.A.*, **98**, 251). On that occasion the Judgment had said:

> "The function of an actuary in advising how a pension scheme of this kind should be dealt with on the determination of the Scheme is to achieve the greatest practicable degree of fairness between various persons interested under the Scheme *consistent with the rules governing the scheme. He cannot ignore or contravene those rules*, and in the pursuit of fairness he may also have to pay regard to the spirit of those rules in respects which are not controlled by their express terms or necessary implication, but, consistently with the rules, he must do his best to achieve as fair a distribution of benefits as the size of the available fund, the character of the Scheme and the circumstances of the contributors make possible".

3.4. In 1969, as in 1986, the Trust Deed and Rules had not determined what

should happen on winding up or on apportionment and recourse to the Courts was necessary because the actuaries concerned had formed different opinions on what was fair and reasonable. We have italicised, in both Judgments, the words which seem to us to get to the heart of the matter. Of course actuaries are well able to express an opinion and even exercise a judgement when the interests of the various parties are uncertain, but what a pity that pension fund Trust Deeds and Rules are not as definitive on members' entitlement on winding up or apportionment as they are on retirement, death and withdrawal. Why should such an important matter rest on an actuary's opinion?

3.5 The Imperial Foods actuary, Mr L.J. Martin, told the Court that, in theory, he could have used any of the following methods of apportioning the funds or calculating the amount of the transfer payment:

(1) Numbers of members.
(2) Cash accumulations.
(3) Value of accrued rights calculated by reference to current salaries.
(4) Past service reserve with allowance for future salary and pension increases.
(5) Total (past and future) service reserve method.
(6) Share of fund.

3.6. We recognize that whilst, for example, Method (1) might have been acceptable *in theory*, it is obvious that Mr Martin would not have considered employing it in practice. However, in our view, what he told the court should be seen as a serious indictment of pension scheme design, in that the wording of the Trust Deed and Rules apparently was so indeterminate that any one of these significantly different methods could be regarded as legally admissible. We would stress that whilst this criticism is levelled against the particular Deed referred to in the Judgment, our experience suggests that such provisions are widespread.

3.7. In the event, Mr Martin chose Method (4). There was apparently a substantial surplus in the fund over and above the liabilities for all members calculated by this method. Of particular interest from an actuarial point of view are Mr Justice Walton's remarks concerning the nature of this surplus, which he thought 'temporary' and to 'err on the side of being in credit':

> "This really represents, of course, additional payments made by the companies above and beyond the 'balance of cost', which is what they have strictly undertaken to meet. But, certainly, at the moment in question, the fund was in excess of the actuarial liabilities of the Scheme in respect of service to 18th May 1982 attributable to the whole membership of the Scheme."

> "But what is called, in this connection, a surplus, having no existence in reality, represents, in a case of the present nature, what may be termed a temporary surplus funding by the employing company."

3.8. We do not know what method of funding had been employed for the Imperial Foods Pension Scheme but, had it been the Entry Age Method or the Aggregate Method, at least part of the surplus as defined above would *not* have been temporary and would *not* have resulted from an explicit intention to err temporarily on the high side of (4) but from the pursuit of a different funding objective. Apparently nothing was said in the proceedings to inform Mr Justice Walton that, even if it was not relevant to the case before him, it was nevertheless customary practice, and not temporary or exceptional, for schemes to be funded

by Method (5) on Mr Martin's list. He remained unaware that many actuaries adopted a higher funding objective than is implied by 'the obviously generous treatment afforded by the Past Service Reserve Method' used for apportionment.

Defined Accrued Benefits

3.9. We advocate that all pension schemes should state clearly in their Trust Deed and Rules what the members' entitlement would be on winding up, or on apportionment and bulk transfer to a different scheme. We take the Judgments referred to above as saying that, in that case, in the eyes of a court there would be no uncertainty and therefore nothing to be left to actuarial judgement except where necessary to put a value on the accrued benefits.

3.10. In our view, that is how it should be, but we are aware that many actuaries would disagree with us. They would appear to take the view that, once a scheme has decided that the retirement pension is to be, say, one-sixtieth of final pensionable pay for each year of service, there is an unwritten rule that the scheme should then secure for each member an amount equivalent to the value of the accrued benefits based on service to date which would have been payable on death, withdrawal or retirement in the ongoing scheme, allowing for future pay increases. A sufficiency of assets to meet this 'reasonable expectation', irrespective of what the Rules might say, would be secured by adopting the Projected Unit Method of valuation and they would require other actuaries to do as they do by having the Faculty and the Institute forbid their members to use a weaker valuation method than that. Some would wish to go further and outlaw even that method, insisting upon the closed-fund level-contribution method.

3.11. The question which must be answered is this: Is it admissible in law for a pension fund's Trust Deed and Rules to define the members' entitlement on winding up or apportionment, or is it not? Believers in the 'unwritten rule' mentioned above are clearly of the opinion that it is not admissible and that members of all schemes have a reasonable expectation which overrides any choice which a scheme might attempt to exercise in the matter. We do not share that view, and we do not think that employers or their legal advisers would find it acceptable if it were put to them in those terms. Only primary legislation can properly deny employers the right to choose, for example as the provisions in the Social Security Act 1985 for revaluation of early leavers' deferred pensions overrode pension scheme rules providing smaller benefits. We do not believe that actuarial convention can deny schemes the choice.

3.12. If we are right – and it is a matter of law and not of the weight of actuarial opinion which will decide whether we are or not – then it is the Defined Accrued Benefit Method of valuation which fits this legal situation by acknowledging that there is a difference between schemes which have consciously chosen different benefit entitlements on winding up.

3.13. If the unwritten law were to become written, by a scheme providing in its Rules for each active member's entitlement on winding up to be the Standard Fund for that member calculated by the Projected Unit Method, that would convert the 'actuarial liability' to a true liability. Valuation by the Projected Unit Method would then become equivalent to valuation by the Defined Accrued Benefit Method, although the defined accrued benefit would be the calculated amount of the member's claim on the available assets on winding up rather than the amount of pension to be secured for him. The result in practice could be

higher than our recommended maximum defined benefit if the use of a salary scale allowing for promotion, etc, was more than sufficient to offset the result of allowing for withdrawals; otherwise the result would be lower than our maximum.

3.14. We have seen suggested a method of valuation which goes some way in the same direction as the Defined Accrued Benefit Method which we advocate. While this method agrees that it is for the employer to decide, it is the funding target which the employer decides, and therefore the level of backing for the accrued benefit, but the accrued benefit itself is not defined. Moreover, the employer also reserves the right to reduce the funding target, subject to notifying the members. The virtue seen for this method is that, by reducing the target, the employer's contribution liability could be eased in times of difficulty. If the members' jobs were insecure, it is argued that they might welcome their jobs being put before their pensions and some of the insecurity being transferred to the backing for their accrued pensions.

3.15. We appreciate the reasoning behind this approach. Indeed, as our own method evolved over the years it was considered whether the choice of benefit need be made secure in the Trust Deed and Rules or if it would be sufficient merely to notify and record the choice of accrued benefit. However, the danger seen in this approach was that the same employer, or a new employer, could reduce the defined accrued benefit for reasons other than job security. Perhaps this could not be done easily or painlessly in terms of employer/employee relations. Perhaps, in the light of the previously established intention, the Trustees would oppose the action. However, in the last resort, that might not prevent a reduction if the employer or new employer were determined. To be truly secure, the employees' accrued rights would have to be made firm in the Trust Deed and Rules.

3.16. What has been said above concerns the accrued benefits of those not yet retired. We must also address the difficult situation where it is the practice to award discretionary increases when pensions are in payment. The difficulty lies in deciding when the practice of making such increases has been sufficiently regular for the members, both those retired and those not yet retired, to have a sufficiently strong expectation that the practice will continue for it to have become a commitment from which the scheme cannot realistically escape. ED 39[4] would make it compulsory for the actuary to assume that an established practice of paying such increases would continue. The new statutory valuation basis[3] also refers to allowing for such increases.

3.17. Where the employer has recognised such a commitment by electing to fund in advance for similar pension increases in future, it is our practice to recommend that the additional funds built up should be made secure for the purpose intended by providing for the increases in the Trust Deed, i.e. by making them part of the defined wind-up benefit.

3.18. Where there is at present no pre-funding for future increases, but the actuary is of the opinion that there is an established practice which it is reasonable to suppose will continue, and that it would be difficult while maintaining good employer/employee relations for it to be terminated, it would be appropriate in our view for the actuary to draw this to the employer's attention. It would then be for the employer to decide whether to increase contributions so as to pre-fund the liability in future and make it part of the defined wind-up benefit.

3.19. It is not feasible, in our opinion, to deny the employer the final decision in this matter, as ED 39 seeks to do. We would expect employers to react reasonably when it was drawn to their attention that they had created expectations in their employees' minds but any attempt at compulsion which the employer thought unreasonable could ultimately be thwarted by his changing the practice of previous years so that it was no longer an established practice and therefore no longer a commitment for the future.

The Present Form of Trust Deeds and Rules

3.20. In our experience, it would be typical at present for a pension scheme to provide that, on winding up, the assets available should be applied, broadly in the following order, towards:

(i) meeting the expenses of winding up;
(ii) securing the continuation of pensions already in payment, including any promised increases in those pensions;
(iii) (a) securing the payment in due course of the deferred pensions promised to those who have already left service; and
(b) making similar provision to that in (a) for those in active service, as if they had left service on the date of winding up.

To the extent that the deferred pensions in (iii) related to Guaranteed Minimum Pensions under the arrangements for contracting out of the State scheme, those deferred pensions would rank prior to other deferred pensions if the assets were insufficient to meet all claims on winding up.

3.21. Any assets surplus to meeting those minimum requirements would be disposed of by the Trustees in accordance with the provisions in the Trust Deed. Those provisions might take one of the following forms:

(i) application to provide augmented benefits to scheme members, usually subject to upper limits set by the Inland Revenue, but with no possibility of the employer benefitting from the surplus until those limits had been reached;
(ii) application partly as in (i) and partly in a payment to the employer, wholly at the Trustees' discretion;
(iii) as in (ii), but subject to the Trustees' obtaining the employer's consent; or
(iv) payment to the employer.

In considering each of these, we have to bear in mind that a scheme may choose to aim at a funding level higher than the minimum, so that a significant surplus on winding up could be pre-planned and not fortuitous.

3.22. In form (i), even if the members happened to know that the employer was overfunding, and had formed an expectation that their accrued benefits would be augmented, this would last only as long as the employer continued to fund at the higher level. We have already indicated our view that it is preferable for the defined benefit to be improved so as to reflect the higher funding level which the employer is willing to adopt, thus making the higher benefit secure. Where that is done and the member's entitlement on winding up is significantly improved as a result, we would think it reasonable as a *quid pro quo* that the whole of any surplus should thereafter be earmarked for the employer – unless of course the employer chose to relinquish that right and allow the Trustees to augment benefits instead.

3.23. We have misgivings about form (ii). In the absence of prior agreement with the employer, by reference to what criteria could a Trustee decide how much of a surplus should properly go to the employer rather than to the members? Even with such an agreement, how binding would it be in the last resort if it was not incorporated in the Trust Deed itself? If the Trustee had been appointed by the employer in the first place, would there be a conflict of interest affecting his decision?

3.24. In form (iii) it is quite clear that the employer has the last word and nobody should be surprised if the whole of any surplus, pre-planned or fortuitous, were to be handed over to the employer, particularly if the company was bankrupt and the employer had been replaced by a liquidator with an obligation to collect as much money as possible in order to satisfy the company's creditors.

3.25. Form (iv) is the only one which makes it clear what benefits it is intended members should enjoy on a winding-up. In our experience it is rare to find Trust Deeds worded in this way. While this is the *form* we recommend, it should not be inferred that the *level of benefit* is the one which we favour.

3.26. It is sometimes asked why the employer should benefit at all from moneys which have been put in trust for pension scheme members. The reason is that, whereas the member typically pays a fixed contribution to the scheme, the employer meets the balance of the cost, whatever that might be, which is usually the major share. If the assets available on wind-up are more than sufficient to meet the wind-up benefits, it therefore seems to us to be quite reasonable for the excess to be returned to the employer. Borrowing the words of Mr Justice Walton[5] quoted in § 3.7. above, "This really represents, of course, additional payments made by the companies above and beyond the 'balance of cost', which is what they have strictly undertaken to meet."

3.27. To summarize:

Form (i) in practice leaves the level of the wind-up benefit to be determined by the employer's funding strategy which, in our experience, frequently means it is determined, in effect, by the actuary.

Form (ii) places the Trustees in the position of having to choose between the employer and the scheme members – an invidious choice.

Form (iii) holds out to members a prospect of participation in surplus which, in the circumstances when it is most likely to occur, may be more illusory than real.

Form (iv) states clearly what benefits will be provided for members and that any surplus belongs to the employer.

4. COMPARISON OF VALUATION METHODS

Terminology and Funding Objectives

4.1. The Report on Terminology of Pension Funding Methods[2] was an important step forward. It answered the plea in the 1983 Faculty paper[9] which began with the words:

> '1.1 This paper is written at a time when, I believe, the greatest challenge facing actuaries engaged in pension work is to communicate.

1.2 We must communicate with Trustees, with members, with employers, ...; we must also communicate with each other.'

4.2. We therefore sought first to discover whether the methods described in the Report included the one which we advocate above, and whether it was described in the same words. This method has three distinguishing features. The first is that the accrued liability from time to time is the value of the wind-up benefit specified in the rules of the scheme. The second is that the name 'security benefit' is given to that benefit, as an indication that, while it can be the same as the early-leaver's benefit, it will usually be greater. The third is that, in calculating the contribution rate, allowance is made for new entrants, so as to reflect the reality of the employer's continuing business.

4.3. The first item in the Report's Glossary defined 'accrued benefits' as the benefits to which a member was 'entitled' for service up to a given date. It went on to say that those benefits 'may be calculated in relation to current earnings or projected final earnings'. However, benefit entitlement in a pension scheme is related specifically to the happening of certain events, such as death, retirement, withdrawal or termination of the scheme. In each event, the appropriate entitlement should be clearly defined. It was not immediately obvious that such an approach was implicit in the Report which appeared to offer the concept of a 'general' entitlement, optionally related to either current or projected final earnings.

4.4. A more careful reading of the Report showed that it did not envisage 'accrued benefits' as being a member's entitlement under the rules, except where the wind-up benefit happened to borrow the definition of the early leaver's benefits on which scheme rules are usually specific. The Projected Unit Method and Partly Projected Unit Method envisaged the accrued benefits as a parcel of benefits payable in an ongoing scheme, allowing for the possibility of future withdrawal from the scheme. With the Partly Projected Unit Method, an assumption was also made about the extent to which future earnings increases might be allowed for. This did not fit our defined 'security benefit' entitlement under the wind-up provisions. Sticking as closely as possible to the recommended terminology, we have therefore used in this paper the name Defined Accrued Benefit Method, a name which we hope indicates the important respect in which it is different from other accrued benefit methods.

4.5. In our approach to pension fund valuation we acknowledge the fact that the employer may terminate the scheme, or terminate contributing to the Scheme, at any time or at short notice as specified in the rules. The fact that the actuary may have used a prospective valuation method, which we prefer to think of as a closed-fund level-contribution method, places no greater obligation on the employer to continue to contribute at the level rate produced by that valuation than at the rate produced by any other method. It is therefore our conclusion that, in law, the accrued liabilities from time to time are those specified in the rules relating to termination of the scheme. We find support for this conclusion in the Judgment in Re George Newnes Group Pension Fund (*J.I.A.*, **98**, 260)[13]:

"Once the scheme has been terminated, the Trust Fund becomes the source not of normal benefits under the Scheme but of dissolution benefits, and only those provisions relating to dissolution are relevant."

These words serve to remind us that the prime objective of funding should be to secure the wind-up benefits.

4.6. That does not mean, as we understand it, that any surplus in a fund should not be used to augment benefits if the Trustees have such a discretion. But it does suggest to us that any valuation method in which the 'actuarial liability' exceeds the value of dissolution benefits must be regarded as having the objective of building in a pre-planned surplus.

4.7. The Report on Terminology[2] described most of the methods of valuation currently in use but it did not consider their 'relative suitability'. Nor did it discuss their objectives. However, it is characteristic of valuation methods that they are aimed either at securing the accrued benefits, with the contribution rate taking second place, or they aim to standardize on a particular contribution level with the level of asset accumulation taking second place. In judging the relative suitability of the different methods, we look first at the assets accumulated towards meeting the accrued liabilities, which we regard as the primary objective, and then at the future contribution rates which achieve this accumulation.

Asset Accumulation

4.8. The objective of our Defined Accrued Benefit Method is to enable a fund to accumulate assets sufficient to meet the wind-up benefits specified in its Trust Deed and Rules, i.e. sufficient to meet what we regard as the scheme's actual liabilities.

4.9. In contrast, the May 1986 supplement to the Report on Terminology describes as 'actuarial liabilities' the liabilities against which assets are accumulated by other methods. We think the distinction between actual liabilities and actuarial liabilities is apposite.

4.10. Projected and Partly Projected Unit Methods aim to build up bigger funds than would be required to meet typical wind-up benefits. This is because scheme Rules usually provide only for the same benefits on wind-up as would be given to the early leaver whereas it is normally considered that the 'stayer' deserves a better benefit. This is achieved by building up a surplus which the Trustees might use to augment the benefits, rather than by amending the Rules so as to secure a better defined benefit.

4.11. Prospective Methods aim to produce a level contribution rate over the remaining working lifetime of the present members of the scheme, assuming the fund to be closed to new entrants. The resulting build up of funds is an accidental by-product of the method of calculating the contribution rate. However, we know that in normal circumstances the funds produced are even greater than under the Projected Unit Method. Unlike that method, though, not all of the surplus is intended to produce better benefits for the deserving stayer. From the Imperial Foods case and other similar cases of partial termination and bulk transfer, it is apparent that any surplus assets in excess of actuarial liabilities calculated by the Projected Unit Method perform the function of a contingencies reserve financed by the employer.

Contribution Rates

4.12. Accumulating sufficient assets to meet the accrued liabilities is the primary objective. The contribution rate required in order to achieve that is secondary. Any desire to regulate the contribution rate to an extent that would be at variance with meeting the primary objective would, in our view, have to give way.

4.13. As we have introduced the name 'Defined Accrued Benefit Method' we

take the liberty of also specifying that the standard contribution rate by this method is the rate required to enable a fund to match its actual accrued liabilities over a period of 5, 10 or more years, or indefinitely, it being assumed to be 'on target' at the valuation date. Allowance would *always* be made for new entrants. The calculations would always be made well into the future and, if this indicated that a material change in the contribution rate was to be expected later on, this would be disclosed. Such disclosure is now required by paragraph 3.1.8 of GN9[14].

4.14. The contribution rate on the Unit Methods is the rate required in the year, or period of years, following the valuation date in order to purchase the benefits which will accrue in that period. It is said in the Report on Terminology[2] that replacements may, or may not, be allowed for. We have already expressed our view that, to be realistic, replacements have to be allowed for. Whatever our dislike for the concept of the 'actuarial liability' as a funding target, at least by allowing for new entrants the contribution rate would be appropriate for the particular 'actuarial liability' and would not have an inbuilt tendency to accumulate assets above that level.

4.15. The primary objective of prospective methods of valuation is to produce a level contribution rate if the scheme were to be closed to new entrants. Given that constraint, they achieve their objective but that is not what we would regard as the primary objective of pension funding. Furthermore, we contend that by pursuing *their* objective, such methods have a built-in tendency, in practice, to result in the accumulation of unnecessary surplus, measured against accrued liabilities. There are of course other causes which give rise to surpluses (or deficits) in pension funds but we believe it is significant that the Chancellor of the Exchequer, presumably advised by the Government Actuary, has used an accrued benefit method in the statutory basis to be applied for tax purposes.

4.16. In our view, it is *always* appropriate to allow for new entrants in calculating a contribution rate, unless the scheme is in practice a closed fund. It may make no difference one way or the other if the Entry Age Method of valuation is used, but that is not true of the Aggregate Method and the Attained Age Method of valuation. Under those two closed-fund valuation methods it is known that new entrants come in with either a higher or a lower contribution rate than necessary so that the methods themselves generate surplus or deficiency if the funds are in practice open to new entrants.

4.17. We find it confusing to find references to 'ongoing schemes' or 'ongoing valuations' in the context of closed-fund valuations making no allowance for new entrants. In order to avoid this confusion, we suggest abandoning those descriptions and making a clear distinction in future between closed-fund valuation methods and open-fund valuation methods.

Numerical Comparison of Valuation Methods

4.18. So far we have discussed in general terms the various valuation methods presently in use, including our own, and have indicated their different objectives. In order to see what these differences mean in practice for the amount of assets built up in pension funds and the associated contribution rates it is necessary to present some numerical illustrations. We suggest that the assets accumulated to meet the scheme's actual accrued liability by our Defined Accrued Benefit Method – our primary objective – should be taken as the yardstick against which the assets accumulated by other methods, as their secondary objective, should be compared.

4.19. The paper submitted to the Faculty of Actuaries in February 1983[9] included a number of illustrations showing the going funding rates and the asset accumulations for a typical mature defined benefit pension scheme. A real rate of return on investments of about 1% p.a. was assumed (9% p.a. interest; 8% p.a. increase in the general level of earnings). These illustrations showed how little the contribution rate varied from one valuation method to another in an ongoing scheme, although there could be a significant difference in the amount of the fund. A switch from one valuation method to another, or a radical change in the experience such as a change from high rate of turnover to a complete cessation of all withdrawals, would produce a serious disturbance whatever the method in use.

4.20. Rather than refer the reader back to *T.F.A.* **38**, a new model is presented on this occasion. The principal changes from the previous model are:

(i) The annual increase in the general level of earnings is taken as 7%, so that the corresponding real rate of return on investments is now 1.87% p.a.

(ii) Modest rates of withdrawal have replaced the very high rates used in 1983. (The result of trebling the rates adopted is considered in Appendix D.)

(iii) The minimum target must now allow 5% p.a. revaluation of the early leaver's accrued benefit up to normal pension age, in compliance with the Social Security Act 1985.

(iv) Benefits on death-in-service have been excluded. It is intended to consider them separately.

(v) Although in practice we are mainly concerned with existing schemes, in order to make the illustration as complete as possible figures are shown for a new scheme starting in 1986.

4.21. As with the previous model, contracting out of the State scheme and guaranteed minimum pensions have been ignored, with the aim of presenting as clearly as possible the results of using different valuation methods. Also, as before, retirements and withdrawals are treated as exits from the scheme so that outgo is the capital value on exit of the pension or deferred pension awarded. The balance in the fund therefore corresponds to the accrued liability for active staff only.

4.22. Particulars of the benefit provisions in the model scheme and of the valuation assumptions are given in Appendix A. A profile of the stable membership, showing age, length of service and annual 'offs' and 'ons', is given in Appendix B.

4.23. Four sets of results are shown, on three different valuation methods:

Method A1. The Defined Accrued Benefit Method, where the accrued benefit includes the minimum of 5% p.a. revaluation of current pensionable pay up to normal pension age.

Method A2. The Defined Accrued Benefit Method, where the accrued benefit is our recommended maximum, including revaluation up to normal pension age in line with expected increases in the general level of earnings (assumed to be 7% p.a.).

Method B. The Projected Unit Method.

Method C. The Aggregate Method.

It will be appreciated that, with no variation in experience, the only difference between the Aggregate Method and the Entry Age Method is effectively in the

manner in which the latter method runs off the initial deficiency in a new scheme. Thereafter, the standard contribution rate and accumulated assets are the same by both methods.

With the Attained Age Method, the standard contribution rate is obtained by applying the Aggregate Method to the *future* service of the present members and remains constant throughout. The standard fund is the value of past service liabilities calculated by the Projected Unit Method. The standard contribution rate is more than sufficient to meet the accruing liabilities, so that each valuation reveals a surplus. If this surplus is run off over the intervaluation period of 3 years or less, the *net* contribution rate and accumulated assets are close to those on the Projected Unit Method. If the surplus is run off over the average remaining period of active membership, the results will ultimately be the same as under the Aggregate and Entry Age Methods. With a longer run-off period, the net contribution rate will be *smaller* and the accumulated assets *greater* than under those methods.

4.24. The fund balances and contribution rates in the first 41 years of a new scheme starting in 1986 on these four bases are shown in Appendix C(i). On Methods A1 and A2 the contribution rates are the annual rates required to keep the fund on target year by year to meet the actual accrued liabilities on our minimum and maximum bases. These two sets of results are thus the yardsticks against which we may judge the amounts of assets built up by the other methods. With no variations from the actuary's assumptions, the contribution rates on Methods A1 and A2 form a smooth progression without any need for averaging. The contribution rate on Method B remains the same throughout.

4.25. On Method C, actuarial valuation every three years is assumed and a step down in the contribution rate to reflect the fact that the scheme has not, as the method assumes, been closed to new entrants and that those leaving have in fact been replaced. Table 1 shows a selection from the figures in Appendix (C)(i).

Table 1

Assets accumulated and the associated contribution rates by different valuation methods (expressed as a percentage of payroll for the year)

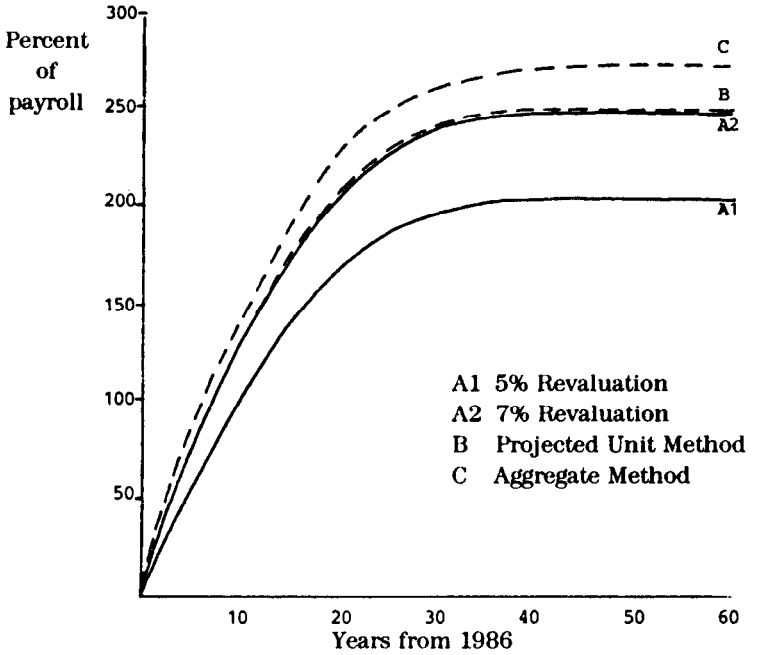
	Year 1		Year 21		Year 41	
	Contribution rate	Fund balance	Contribution rate	Fund balance	Contribution rate	Fund balance
Method A1	11.01	5.4	14.67	166.8	15.43	201.7
Method A2	14.32	7.1	14.60	204.2	14.69	242.3
Method B	14.61	7.3	14.61	208.3	14.61	246.9
Method C	15.97	8.0	14.68	224.8	14.31	266.7

Note: With Method C, after 41 years the figures have not quite reached their ultimately stable state (14.21% contribution and 267.8% fund).

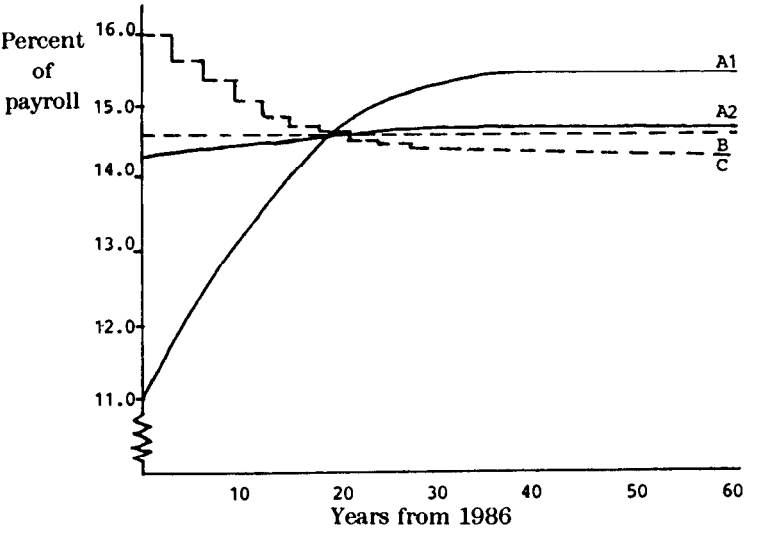
4.26. For those who prefer it, the run of the figures is also shown pictorially in Diagram 1. The balance in the fund by Method A2 is almost indistinguishable from that by Method B on our Model (but see § 4.33.). Under the Attained Age Method the standard contribution rate remains at

DIAGRAM 1

ACCUMULATED ASSETS



CONTRIBUTION RATES



15.97% throughout but after each valuation following the first there will be a reduction to eliminate the surplus. The period over which the surplus is eliminated will determine the size of the fund and of the *net* contribution rate in the stable state.

4.27. In practice, relatively few new schemes are encountered but if one were starting up in 1986 we suggest that it would be unlikely to envisage doing so with a contribution rate increasing every year or two. If 5% revaluation had been chosen for the defined wind-up benefit (i.e. Method A1), then instead of starting off with an 11% contribution, an alternative might be 12.5% for 15 years, to be followed by 15% or a rate thereabouts, depending upon circumstances at that time. (To postulate exactly 15.43% would show overconfidence concerning the actuary's ability to predict the future.)

4.28. A level rate of 12.5% for 15 years would clearly involve a degree of overfunding during the early part of that period. The overfunding could be reduced by starting lower than 12.5% and going up in two, or even three, steps but an increase in the contribution rate is unavoidable if the asset accumulation is to be controlled in line with the corresponding build-up of the liabilities.

4.29. To complete our understanding of the combined contribution rates which apply to the whole membership, we must also consider the rates on a cohort basis, i.e. the contribution rate required from age to age for each member in order to meet the cost of that member's accruing benefits. Figures showing age-related rates in year 1 and year 41 are given in Appendix C(ii). Those for year 41 are also the rates age by age for a cohort of members entering at age 25, allowing for entrants to and exits from the cohort during the following 40 years. Selected figures from Appendix C(ii) are shown in Table 2.

Table 2.

Percentage contribution rates by age by different valuation methods

	Method A1		Method A2		Method B		Method C	
Age	Year 1	Year 41	Year 1	Year 41	Year 1	Year 41	Year 1	Year 41
	%	%	%	%	%	%	%	%
25	4.40	4.40	8.99	8.99	8.08	8.08	12.43	12.43
35	6.42	7.38	11.02	10.65	11.27	11.27	14.71	14.71
50	11.50	15.51	14.96	15.43	15.46	15.46	17.37	17.37
60	17.78	27.20	19.17	20.25	19.34	19.34	18.43	18.43
All	11.01	15.43	14.32	14.69	14.61	14.61	15.97	14.21

4.30. In Method A1, the contribution rate for age 25 must be sufficient to secure a pension of one-sixtieth of pensionable salary, revalued at 5% p.a. for 40 years, i.e. the same as the deferred pension that would be awarded on withdrawal from the scheme. At age 26 in year 1, one-sixtieth revalued for 39 years must be secured, a rather higher percentage contribution because only 39 years' interest at 9% will be obtained. However, in year 2, the second year's contribution for a member then aged 26 must not only secure his extra sixtieth, but must additionally meet the extra cost arising from his pay having increased by 7% (plus possibly promotion) and not 5% as assumed in year 1.

4.31. In year 41, the contribution required from those aged 64 must not only secure an extra sixtieth. It must additionally meet the extra cost on the 29 sixtieths

accrued on average by those members up to that age, which arises from pay increasing by more than 5% in the final year of service.

4.32. In Method A2, the contribution rates are higher than in Method A1 at the young ages, because the defined accrued benefit includes revaluation at the higher rate of 7% p.a. Compared with Method A1, those contributing at later ages will benefit from the higher rates paid earlier on, so that the rates increase less steeply and end up considerably lower than in Method A1. Comparing year 1 and year 41 in Method A2, the rates at the younger ages are lower in year 41 because the benefit which those who do *not* withdraw gain from those who *do* is increased as average past service increases in the maturing scheme.

4.33. In Method B, the contribution rate must be sufficient to bring the value of accrued benefits to the appropriate number of sixtieths of estimated final pensionable salary allowing for promotion, etc, which, other things being equal, would require higher contribution rates than with Method A2. However, the accrued benefits on Method B allow for a proportion of the members withdrawing with an entitlement only to a preserved pension with 5% p.a. revaluation. The net result is a series of values of accrued benefits and therefore of contribution rates at different ages much the same as under Method A2. The reader is reminded that the closeness of these two sets of rates is fortuitous. With different withdrawal rates and a different salary scale – or no salary scale at all, e.g. for a works scheme – the result would have been different (see also Appendix D).

4.34. The concept of the Aggregate Method is different from the other three methods. The figures shown at different ages for Method C are the level contribution rates for new entrants at that age. The Aggregate Method initially gives the same contribution rate as under the Attained Age Method. Ultimately, if the actuary's assumptions are borne out by events, the contribution rate becomes the average rate for new entrants, i.e. the same as under the Entry Age Method.

4.35. It will be perfectly clear from Appendix C(ii) that if a scheme were to be closed to new entrants and yet were to continue as a closed fund with no other deviation from the actuary's assumptions until the last of the aging present members retired, a gradual increase in the percentage contribution for the declining number of members remaining would be unavoidable on Methods A1, A2 and B. That has never been in dispute. The issue has always been how realistic is the assumption that a fund will be closed to new entrants and yet run on for many years with a declining, ageing membership.

4.36. If the employer's business was continuing, a new fund would most likely be opened for new entrants so that, taking the two funds together, the contributions as a percentage of total payroll would not necessarily increase. Although unlikely, it is conceivable that *no* new fund would be set up for new employees, in which case the cost as a percentage of *total* payroll would decline. If there *were* no new employees and the employer's business was in decline, the closed fund would be unlikely to continue as normal for long; it would most likely be terminated, or taken over by a new employer, or members would leave to seek more secure employment and thus hasten the termination of the scheme and the employer's business.

Effects of Increasing or Declining Membership

4.37. Appendix C(iii) shows the effect on the accumulated assets and on the

contribution rates under each of the four methods if a scheme which had become stable found itself with a large decrease, or increase, in the number of new entrants and consequently a steadily falling membership, or a steadily rising membership. It is assumed that the average age of new entrants and the withdrawal rates at each age would be unaltered. For convenience it is assumed under Method C that the scheme has been in existence for more than 40 years and has reached a stable state.

4.38. As the average age at entry is unchanged, the contribution rate on Method C is unchanged whether the membership halves or doubles over the next 25 or 30 years. There is some variation in the contribution rate on Methods A2 and B, but not very much. With membership declining, it increases from 14.69% to a peak of 15.87% on Method A2 and then falls back a little. With membership increasing, it falls to about 14%. On Method B, the changes are very similar to those on Method A2.

4.39. On Method A1, the contribution rate is, as we might expect from the age-related rates shown in Appendix C(ii), more volatile with a changing membership profile. The ageing in the following 30 years which results from new entrants being halved pushes the contribution rate up from 15.43% to over 18% before it begins to fall back a little. The reverse happens when new entrants are increased by 50%; the contribution rate falls to below 14% to reflect the youthful membership of the growing scheme.

4.40. The assets accumulated by the Aggregate Method remain significantly higher than on the other methods. Selected figures from Appendix C(iii) are shown in Table 3. If the Aggregate Method included pre-funding for death-in-service benefits, the extra assets would be even greater.

Table 3

Comparison of fund balances, as a percentage of payroll, by different valuation methods, with declining and increasing membership

Years from start	Balance in fund (percent of payroll)				Extra assets on Aggregate Method compared with other methods		
	Method A1	Method A2	Method B	Method C	over Method A1	over Method A2	over Method B
	%	%	%	%	%	%	%
(i) *Membership declining*							
40	201.7	242.3	246.9	267.8	66.1	25.5	20.9
50	250.0	296.5	302.0	326.4	76.4	29.9	24.4
60	280.8	326.2	331.6	354.3	73.5	28.1	22.7
70	272.0	314.7	319.6	341.4	69.4	26.7	21.8
(ii) *Membership increasing*							
40	201.7	242.3	246.9	267.8	66.1	25.5	20.9
50	165.3	208.9	212.9	233.4	68.1	24.5	20.5
60	159.2	195.9	199.9	221.1	61.9	25.2	21.2
70	163.2	201.2	205.4	227.3	64.1	26.1	21.9

Treatment of Benefits on Death in Service

4.41. Actuaries familiar with traditional methods of pension fund valuation may have wondered why the stable fund by Method C, (267.8%) was only one-twelfth higher than by Method B (246.9%). Their experience would have led them to expect a much larger excess than that. The answer is in our decision to exclude and look separately at the treatment of benefits on death in service in pension fund valuations.

4.42. A common provision in the private sector would be for a lump sum of four years' salary plus a widow's pension of one-quarter of a married man's pensionable salary. Under Methods A1, A2 and B there would be no advance funding for those benefits as there is usually no accrued liability on wind-up. The cost would be met from year to year on a pay-as-you-go basis.

4.43. E. M. Lee's text-book on pension schemes[1] makes special reference to the possibility of insuring a lump sum death-in-service benefit:

"The cost of the year's cover as quoted might well be less than the first year amount of the contribution as calculated above. What advice should the actuary tender to the trustees?

"As in many other issues related to the pace of funding, there is much to be said for the trustees' deciding the matter as a point of policy providing that the issues are understood."

4.44. We would agree with Mr Lee, although we would see the decision as one for the employer rather than the Trustees. Also, we would put the widow's pension on death in service in the same category. We have the impression, however, that when a prospective valuation method is used, it is common for the closed-fund level-contribution concept to be carried to its logical conclusion and for death-in-service benefits to be funded in advance – as in theory they should be, if the closed-fund concept was valid.

4.45. What surprises us is that, when the closed-fund concept of valuation is explained to Trustees and employers, the latter decide to put the additional money into their pension funds. The permanent additional capital commitment would amount to 28.1% of payroll on our model. By financing those benefits on a year-by-year basis instead, the same amount could have been released for the employer's business.

4.46. Mr Colbran also referred to this subject in his 1982 paper:

"It would be consistent with the other methods described in this Section to also express the expected cost of death-in-service benefits as a stable percentage of salaries and this seems to be the traditional approach of the consulting actuary. If, however, it is accepted that these other methods involve some degree of unnecessary advance funding, there is a case for retaining the current cost approach to lump sum death-in-service benefits. Admittedly this produces an arbitrary compromise result between the methods but as a pragmatic approach it appears to have attractions. When widows' pensions are related to service, a funded approach has more justification . . . . ."

4.47. If the wind-up rules provided for an accrued widow's pension to be payable on the former member's death after wind-up but *before* reaching normal pension age, then that accrued benefit should be funded in advance on all four methods. Otherwise, we take the view that there is no more need to fund in advance for a widow's death-in-sevice pension related to service than there is to fund in advance for a lump sum benefit.

4.48. Our recommended maximum target for wind-up benefits and funding level – that on Method A2 – would lead to a fund amounting to 242.3% of payroll. The conventional prospective method of valuation, Method C, including advance funding for death-in-service benefits, would on our model, produce a fund of 295.9% of payroll. The excess, 53.6% of payroll, would represent a significant diversion of resources from an employer's business to his pension fund. Compared with the minimum on Method A1, the excess would amount to 94.2% of payroll.

Reactions to a Surplus

4.49. Appendix C(iii) showed the effect on contribution rates of changes in the membership profile. Appendix C(iv) shows the effect on contribution rates of the sudden appearance of a substantial surplus, from whatever cause, in each case amounting to half as much again as the liability or actuarial liability in a stable situation. It may be said that a surplus of this size is far from typical, but it is certainly not unheard of at the present time.

4.50. Method C, the Aggregate Method, would not acknowledge that there was a surplus at all. The enhanced fund would meet a much larger portion than before of the total liabilities, including liabilities in respect of future service, in the ongoing closed fund. Method C would react to the windfall by reducing the contribution rate from 14.21% of payroll to 3.14% of payroll for 3 years, then 5.36% for a further 3 years, increasing gradually thereafter but still with some of the surplus remaining in the fund after 40 years because it is part of the method for each new valuation to spread the remaining surplus in declining amounts over a further 40 year period until the retirement of the last of the members included in that valuation.

4.51. Methods A1 and A2 would acknowledge the windfall and afford the opportunity of a complete contribution holiday for 7 years under Method A1 and 9 years under Method A2. Alternatively, the surplus might be spread over a longer period. For example, if it were to be spread over 14 years (the average future period of service of the present members) the contribution rate would be reduced from 15.43% to 7.26% for 14 years under Method A1, and from 14.69% to 4.87% for 14 years under Method A2. In practice, the level of the employees' contribution and the new statutory provisions relating to excessive surpluses would impinge on an employer's freedom of action.

4.52. Another possibility would be to improve the scheme benefits. If this were to take the form of using about two-fifths of the surplus under Method A1 to improve the wind-up benefits to the level of Method A2, this would result in a *reduction* in the long-term contribution rate from 15.43% to 14.69% as well as affording a contribution holiday for 4 years. Any other improvement in benefits would ultimately mean an increase in the long-term contribution rate under all methods.

4.53. A sudden substantial surplus could arise in a number of ways. It could come from variations in the experience, such as a flood of members being made redundant and receiving only withdrawal benefits, or from an upsurge in dividends on the fund's investments in equities. Another possibility is that a potential purchaser of a company whose scheme was funded by Method C, including death-in-service benefits (assets 295.9% of payroll on our model – see Appendix D) might be aware that there was no legal obligation for that scheme to

fund beyond the minimum level of Method A1 (assets 201.7% of payroll). This purchaser might regard the difference between these two figures – 94.2% of payroll – as a potential surplus.

4.54. This spectre haunts us all. It adds urgency to *our* attempts to draw attention to the fact that for most schemes there is no legal obligation to fund beyond the level of Method A1. It also explains the earnestness with which we advocate *recording it in the Trust Deed* when it is already the declared intention to provide more generous benefits on wind-up and additional funds are in fact being built up in the hope of achieving that objective. This is of concern not only to members who hope to benefit from the scheme but also to employers who have paid the extra contributions in the past in order to achieve the higher funding target. The spectre cannot be exorcised merely by members of the actuarial profession, however well-intentioned, saying that it is not 'respectable' to fund by Method A1 or suggesting that the method should be banned. If it is legal, it cannot be banned.

An American Study of Valuation Methods[15]

4.55. In 1985 a Committee of the American Academy of Actuaries completed a study aimed at providing the Financial Accounting Standards Board in U.S.A. with a basis for evaluating the degree to which 'pension expense for defined benefit plans may be expected to vary' from valuation method to valuation method. The objective was to compare the contribution rates. Funding levels were secondary to this objective but we may nevertheless discover the resulting funding levels, in which we are more interested, among the figures published in the Committee's extensive report on each scheme.

4.56. The Committee selected ten actual schemes for their study. Seven of those were final salary schemes and it is these which are of relevance to our paper. The financial position of each of these schemes was projected for twenty years into the future using several valuation methods, but the same actuarial assumptions for all schemes for both assets and liabilities and all methods. The pension expense, i.e. the company's contribution, was taken as the ERISA defined minimum contribution each year for each method. We do not think a detailed knowledge of ERISA is necessary in order to appreciate the broad implications of the figures in the Committee's report.

4.57. An outline of the membership profiles of the seven actual schemes chosen is a follows:

Scheme A	A normal membership, growing at 2% p.a. and therefore expected to increase by one-half in 20 years. A moderate level of funding to start with.
Scheme A2	The same scheme as A, but starting with only half the fund.
Scheme C	A mature membership, stable and with low turnover. A low level of funding to start with.
Scheme D	Somewhat similar to C, but membership older and with longer pensionable service. A moderate level of funding to start with.
Scheme E	A young membership, growing at 2% p.a., but with a high rate of turnover and therefore average pensionable service remaining low. A fairly high level of funding to start with.
Scheme F	An older mature scheme with high turnover and membership declining at 2% p.a. i.e. a fall of one-third over 20 years. A low level of funding to start with.

Scheme H A new company with a bulge of experienced employees at fairly high ages. Turnover high but membership expected to increase at 2% p.a.. A high level of funding to start with.

Scheme J A stable mature company with a cluster of older members with long service. A low level of funding to start with.

4.58. The reader's first question will be to ask what we mean by the 'level of funding'. From a variety of figures published in the Committee's extensive numerical results for each scheme we have selected for this purpose the ratio of assets to the 'total liability for all employees' benefits' determined under 'plan termination concept'. This concept is not defined in the report but the liability is generally a little higher than the actuarial value of vested benefits and its tendency towards 100% on the Current Unit Credit Valuation Method suggests that it is, or is close to, the value of the actuarial liability under that method.

4.59. Selected figures from the Committee's report are given in Table 4. These show the level of funding and the contribution rate at the end of the 20 year projection period by the Entry Age Method, the Aggregate Contribution Method, the Current Unit Method and the Projected Unit Method.

Table 4

American Academy of Actuaries
Selected figures from analysis of pension fund cost methods

	A	A2	C	D	E	F	H	J
Growing or falling membership	gr.	gr.	–	–	gr.	fa.	gr.	–
Percentage funded at outset	111	55	72	101	118	75	160	70
Percentage funded after 20 years:								
Method:								
Entry Age	143	137	129	126	160	103	159	106
Aggregate Contribution	142	138	113	121	166	119	149	90
Current Unit	102	97	103	111	95	90	104	92
Projected Unit	120	114	118	116	121	92	145	99
Percentage contribution after 20 years:								
Method:								
Entry Age	5.22	5.58	7.80	6.39	2.14	5.60	7.92	11.21
Aggregate Contribution	4.88	5.09	7.47	5.87	1.93	4.35	7.74	10.27
Current Unit	4.98	5.26	6.51	5.23	2.32	5.34	8.26	10.25
Projected Unit	4.80	5.16	7.62	6.07	1.93	5.44	7.72	11.07

Note: Percentage funded represents the ratio of assets to the value of termination benefits.

4.60. The Committee's 'General Overview' is directed towards answering the question put to them on comparability of contribution rates. Their conclusion was that the rates under the first two methods were generally comparable but that the results by the Unit Methods differed from each other and from the results under the first two methods. That conclusion is not surprising since the target level of funding is ultimately the same under the first two methods and different under each of the other methods.

4.61. For Schemes A, E and H the contribution rates by the Projected Unit

Method were found to be significantly lower than the rates obtained by the Entry Age Method. These are the three schemes with a growing membership and a high initial level of funding. We would therefore expect these two features to generate a significantly lower contribution rate for the Projected Unit Method than the Entry Age Method. On the other hand, with C, F and J starting with low levels of funding, we find as we would expect some measure of correlation between the two methods, as both sets of contribution rates seek to build up the funding level towards target.

4.62. The General Overview does not comment particularly on the Aggregate Contribution Method but it is not surprising to find, generally speaking, a very high contribution rate to begin with when the initial funding level is low.

4.63. There is a wealth of statistical information in the Committee's report which would repay study. The fact that we have looked somewhat narrowly at their results does not diminish its importance and usefulness. Nevertheless, since we start from the premise that funding levels are more important than stability or comparability of contribution rates, we hope we may be forgiven if it is to that aspect of their results that we have addressed our attention. It may satisfy accounting needs to discover how 'pension expense' varies from scheme to scheme in a variety of circumstances but we are convinced that liabilities must come first and that the contribution rates required from time to time so that those liabilities may continue to be covered come second.

4.64. We think that both actuaries and accountants should be concerned as to the validity of different valuation methods when they produce such disparate funding levels as those varying from 102% to 143% for Scheme A and from 95% to 166% for Scheme E. The fact that contribution rates under the different methods may be reasonably close should not be allowed to divert attention from the significance of the much bigger differences in funding levels. We look at accounting standards in the next section of the paper.

5. ACCOUNTING FOR PENSION COSTS IN COMPANY ACCOUNTS

5.1. The accountancy bodies on both sides of the Atlantic have been developing their views on the measure of a company's pension costs which should be shown in the company's accounts. The most obvious measure is, of course, the actual contribution made each year to the pension fund but that has been thought unsatisfactory for two reasons:

(i) changes in the contribution rate resulting from changes in the valuation method used, the scheme *apparently* remaining unchanged;

(ii) irregularity of the contribution rate from year to year arising from changes in the experience, in valuation assumptions, etc.

5.2. Our views on the main issue are unchanged from those expressed in the Faculty paper in February 1983. We favour the company's actual contributions to the pension fund being accepted as the pensions charge in the company's accounts. The accounts could be accompanied by a 'stability certificate' from the actuary to the effect that, if the provisions of the scheme were unchanged (including the wind-up benefit which determines the funding target), the

contribution rate would, in his opinion, not vary outside defined margins for a specified period. Where, however, the current contribution rate was expected to change, the certificate would instead indicate what the likely pattern of change was.

5.3. Throughout this paper we have been at pains to show that the funding target reflects the actual or presumed wind-up benefits. Thus when a change of funding target occurs it represents a *benefit change* and not an unexplained change of valuation method for an unchanged scheme. We hope that our explanations of this matter will have put the accountants' minds at rest on the first of their concerns mentioned in § 5.1. above.

5.4. The Financial Accounting Standards Board in U.S.A. issued FASB 87 in December 1985[12] setting out in great detail the method which they will in future require to be applied as standard. The corresponding proposals of the Accounting Standards Committee in this country were issued, for comment, in May 1986 in Exposure Draft 39[4]. The approaches of the two bodies are similar to the extent that both see a need to use the company's balance sheet to even out any volatility in the contributions which a company elects to pay to its pension fund rather than rely on disclosure of the variations.

5.5. The fundamental difference between the two approaches is that ED 39 places 'no limit on the methods and assumptions used by the actuary' so long as the cost of pensions is 'charged against profits on a systematic basis over the service lives of the employees in the scheme' whereas FASB 87 requires each of the actuary's 'significant' assumptions to be 'the best estimate solely with respect to that individual assumption' and stipulates the use of the Projected Unit Credit Method and no other. As FASB 87 looks through to foreign subsidiaries of American companies, it is of concern to actuaries in the U.K.

FASB 87

5.6. FASB 87 requires the use of a single valuation method. Companies are to be allowed a transitional period, which for practical purposes we may take to be 15 years, to come into line. Where the assets accumulated in a company's pension fund do not at present correspond with the actuarial liability calculated by the Projected Unit Credit Method, FASB 87 prescribes the contribution path to be followed during the transitional period. The company may choose not to follow that path in its actual contributions to the pension fund, in which case the differences would be accumulated in the company's balance sheet as either an asset or an unfunded pension liability.

5.7. This may be illustrated by reference to the figures in Appendix C(i). FASB 87 would wish a pension fund in a stable state to hold assets amounting to 246.9% of payroll (Method B) supported by an annual pension charge of 14.61%. Interest would amount to a further 4.57%. However, if the scheme was actually funded by Method A1, its assets would amount to only 201.7% and interest income to 3.74%. The asset shortfall would have to be amortised by an additional charge to profits of 3.01% a year for 15 years, plus interest on the asset shortfall amounting in the first year to .83% of payroll. The total pension charge in the first year would thus be 14.61% + 3.01% + .83%, i.e. 18.45%.

5.8. There are two possibilities:

(i) The company decides to pay the contributions on FASB 87's charted path, the pension fund gradually increases, the interest shortfall

declines and, after 15 years, when the amortisation payments have ceased, the scheme is funded on Method B, with assets amounting to 246.9% and a contribution rate of 14.61%.

(ii) The company decides to continue to fund its scheme on Method A1, continues to pay a contribution of 15.43%, the extra 3.02% (approx.) in the charge is applied to build up a liability of 45.2% of payroll in the company's balance sheet, and after 15 years, when the amortisation payments have ceased, FASB 87's prescribed charge of 14.61% + .83% = 15.44% is (rounding errors apart) equal to the company's actual pension contribution under Method A1.

5.9. The unfunded pensions liability in a company's balance sheet of almost half a year's payroll has no bearing on the security for members' pensions. It represents a purely notional provision which would disappear the moment it was needed, namely when the company's business had failed. We therefore find ourselves out of sympathy with the system proposed in FASB 87. The objective of the Financial Accounting Standards Board is to standardize accounting practice, whatever the rules of the scheme might say, and to this end it intends to force all schemes to make a charge to profit and loss which will take them along one path or another towards the Projected Unit Method level of reserving. However, this serves no useful purpose so far as pension scheme members are concerned unless the resulting reserves are built up in the pension fund, rather than in the company's balance sheet. Even then, it would take legislation to earmark the extra assets for the members' benefit.

ED 39

5.10. ED 39 does *not* require a single valuation method to be used in all circumstances. We therefore consider how each of the methods described above meets the requirements of the proposed accounting standard.

5.11. ED 39(74)

"The accounting objective is that the cost of pensions should be charged against profits on a systematic basis over the service lives of the employees in the scheme."

Appendix C(ii) shows age-related contribution rates on all four methods. On Methods A1, A2 and B the cost of pension increases systematically over an employee's service life, to reflect the increasing defined benefit accrual under Methods A1 and A2 and the increasing actuarial liability under Method B. By definition, the contribution rate is level throughout service under Method C. Thus it can be seen that all four methods satisfy the requirement that it should be systematic.

5.12. ED 39(76)

"For defined benefit schemes the method of calculating the regular pension cost should be such as to provide a substantially level percentage of the current and expected future pensionable payroll in the light of the current actuarial assumptions."

Appendix C(i) shows that Method A2 meets this requirement. Method B also meets it, so long as new entrants are allowed for and it is not effectively a closed-fund valuation method for a curtailed period. Method A1 meets the requirement in a mature scheme but not in a new scheme, because the prime objective is to match the actual accrued liability which demands that the

contribution rate should increase. Method C also fails the test in a new scheme because the contribution rate is inflated for a time so as to build up what we show to be an unnecessary surplus.

5.13. Suppose a new scheme were to be introduced, funded by Method A1, and each of the new members was given a starting credit of a few years reckonable service. If the starting credit were regarded as part of the scheme, the result might be that the contribution rate would be 15.43% throughout because the cost of meeting the starting credit filled in the 'wedge' in the early years of the new scheme. If this were considered satisfactory, it would seem very odd to rule out the use of Method A1 where there was no starting credit, just because the contribution rate increased for a time.

5.14. The case for admitting Method A1 seems incontestable in that it reflects the pension scheme's true liabilities and, if that does not fit the accounting standard, we respectfully suggest that it is the validity of that standard which should be questioned.

5.15. ED 39(30)

"No one particular actuarial valuation method can be held to produce the 'correct' pension cost charge in all circumstances."

From what has just been said, it will be apparent that we would not agree with this statement. We would credit the Defined Accrued Benefit Method with being the correct method as its objective is to enable the fund to meet its actual accrued liabilities as defined in the Trust Deed and Rules. Unlike most other methods, it does not seek to recognize non-existent liabilities above that level. The pension fund has no such additional liability and we see no justification for seeking to recognize an equally non-existent liability in the company's balance sheet.

5.16. ED 39(83(i))

"Other disclosures would include the contribution rate needed to maintain or to achieve the target level of funding, ..."

The contribution rate (or going funding rate) arrived at by Methods A1, A2 and B is the rate needed to maintain the target level of funding, assuming the fund to be on target at the valuation date. Where there is a deficiency or a surplus, the amount will be disclosed and an adjustment made to the contribution rate so as to bring the fund on to target over a stated period. This seems to be exactly what ED 39 requires, subject to determining what the stated period should be.

5.17. Method C does not have a target level of funding so it is difficult to see how the disclosure requirement in ED 39(83(i)) could be satisfied.

5.18. ED 39 (83(i))

Disclosure should include:

"an outline of the results of the most recent formal actuarial valuation or later review of the funding of the scheme on an ongoing basis. This should include disclosure in percentage terms of the relationship between the scheme assets, as valued for actuarial purposes, and the actuarial value of accrued benefits, in each case taking account of future salary increases and an explanation of future intentions regarding any material deficiency or surplus so identified."

We are mystified by the second sentence of this disclosure requirement. The references to 'accrued benefits' and to allowing for future salary increases appear to us to relate to a valuation by Defined Accrued Benefit Method A2. On the other hand, the reference to allowing for future salary increases in the valuation

of assets appears to refer to a valuation of future contributions in Method C. Apart from confusion between the two methods, we wonder why the disclosure requirements should try to dictate the method to be used when any one of a number of methods would be acceptable so far as the pensions charge is concerned. Perhaps we have misunderstood the intention of ED 39 and all that is required is some clarification of the proposed accounting standard.

5.19. ED 39(5)

"Pension schemes may also be classified by the way in which they are financed, i.e. funded schemes or schemes where the benefits are paid directly by the employer. The same accounting principles apply to both types of scheme."

Our paper is intended to consider only funded pension schemes but if 'the same accounting principles' are to apply to unfunded schemes we ought to consider what this might mean, even if the possibility of encountering such a scheme outside the public service is somewhat remote.

5.20. So far as we can see, ED 39 would not admit such a system. It would not meet the accounting objective of charging the cost on a systematic basis over the service lives of the employees because the entire cost would be met *after* the employee had retired. But what pensions charge would ED 39 impose on the company instead? Presumably it would require the company to account for its pension costs by any method which *was* acceptable. This would inevitably mean building up a liability in the balance sheet where, as we believe, no liability truly exists.

5.21. We wonder why it would not be thought sufficient in this case, as we have suggested should be done in other cases, merely to disclose the facts. As readers rather than preparers of accounts we would accept that a true and fair view of a company's present and prospective pension obligations had been given if a note forming part of the audited accounts stated that:

(i) Pensions promised by the company will be paid only for so long as the company remains in business.

(ii) At present these pensions cost 10% (say) of payroll. According to the latest actuarial review this cost is likely to increase gradually to 19% of payroll over the next 20 years. The effect of this increasing liability on the company's future profitability must be borne in mind.

The above is written with a truly pay-as-you-go group pension scheme in mind, in which it can be made perfectly clear that the company's obligations cease in the event of its business ceasing. A situation more likely to be encountered in practice is where individuals have been promised pensions in terms which appear to commit the company but in which its exact obligations are unclear. We can appreciate that in such cases, where the employees might be creditors on a liquidation, the accountant would wish to provide for advance funding in the company's balance sheet. However, there remains the difficulty of determining exactly what the company's accrued liability is.

Treatment of Surplus or Deficiency

5.22. Leaving on one side restrictions likely to be imposed by the Finance Act 1986 on surpluses deemed to be excessive, we may consider how ED 39 would affect a scheme funded by Method A1 which found that it had a 50% surplus. Appendix C(iv) shows that, on our model, such a surplus would amount to about one year's payroll.

5.23. In ordinary circumstances, ED 39 would require the benefit of the surplus to the company to be spread over 14 years in the pensions charge to profit and loss (the expected average remaining service life of the present members of the scheme). Ignoring interest, this represents a level annual reduction of around 7¼% of payroll, although the actuary would quote a figure nearer to 8¼% of payroll.

5.24. Be this as it may, even if the company takes a complete contribution holiday (which could save almost 15½% of payroll for 7 years) the accountant would not reflect more than 7¼% (or 8¼%) reduction in the accounts and the difference would accumulate to a provision of around half a year's payroll at the end of 7 years, falling again to zero over the subsequent 7 years. (We examine the difficulty of allowing for interest in regulating the pensions charge in company accounts in Appendix E.)

5.25. In *'extraordinary'* circumstances, the surplus 'should be recognized immediately and treated as an extraordinary item' (ED 39(37)). This would presumably mean the company setting up a *prepayment* amounting to a year's payroll straight away, which would then release the saving caused by the 7 year contribution holiday over that 7 year period, thus maintaining the charge to profits at the level of the regular pension cost. (The complication of interest has again been ignored.)

5.26. If the surplus were to be deemed partly ordinary, and partly extraordinary, the company's accounts would apparently have both a *prepayment* and a *provision* at the same time. One might even envisage a situation where there was no apparent surplus or deficiency, because an ordinary deficiency was offset by an extraordinary surplus, yet variations in the regular pension cost would be produced!

5.27. We do not see that a presentation of figures on the system intended for an ordinary surplus would be sufficient to put the reader of the company's accounts fully in the picture. The regular pension cost which would return after 14 years would have to be disclosed and some explanation given of the composition and variation of the pension provision or prepayment in the company's accounts.

5.28. Nor do we see that regulation of the reporting of a company's profits in the manner suggested in ED 39 presents a truer or fairer view of a company's prospects than full and frank disclosure of any departure from the regular pension cost resulting from deficiencies or surpluses in the pension fund. Indeed, we think that the complications introduced by provisions and prepayments in the company's balance sheet may serve more to obscure than to clarify the situation.

5.29. In working out how ED 39 would apply, we had difficulty in making up our minds whether the figure in the balance sheet should be a provision or a prepayment. Intuitively we felt that, if there was a *surplus* in the pension fund and the employer was to receive this back in the form of a contribution holiday, then this ought to be an *asset*. Paradoxically, where there was a *surplus* being returned to the company, it would be required to show a *provision*, i.e. an additional *liability* in its balance sheet – not as a true liability, but as a device for delaying taking credit for the surplus. On the other hand, if a pension fund were in deficit and, in a manner of speaking, the company was making good the *shortfall in its past contributions* as quickly as possible, ED 39 would oblige the company to show a *prepayment* in its balance sheet, i.e. an *asset*.

5.30. We found this confusing, and so too may others. But apart from problems of comprehending the figures disclosed in the accounts, we wonder whether regulating the profits in this way is necessary or can really be justified. It might be pointed out that, if a pension fund is in surplus, the present shareholders may be presumed to have contributed to the surplus by forgoing profits in the past. Why, then, should they not be allowed to benefit from the surplus as quickly as it is released from the pension fund, instead of being made to wait and share it with new shareholders?

5.31. The opposite situation can also arise. Consider the situation where there is a substantial *deficiency*. Assume that the company, out of concern to protect the security of the members' benefits, injects a lump sum into the pension fund. ED 39 would delay recognition of the lump sum injection, with the result that the balance sheet would show a misleadingly healthy situation. The 'distributable profits' available to pay dividends according to the accounts might not therefore properly reflect the company's true ability to pay. In the extreme, a cash-flow crisis might result, leading to bankruptcy, in spite of the rosy picture painted in the balance sheet.

5.32. It appears to us that the rights of shareholders are being unnecessarily subordinated to accounting convention in the complicated system of deferred recognition of an ordinary surplus proposed in ED 39. We wonder what real objections there could be to our proposed 'stability certificate' or, where appropriate, allowing the pension charge to vary from its regular amount, subject to proper disclosure and explanation of the reasons. We have already stated our preference for this approach because it reflects the company's real liabilities. The alternative treatment proposed for an 'extraordinary' surplus, namely of recognising straight away the full amount of any surplus which is to be returned to the company, would be preferable to that proposed for an ordinary surplus which means introducing a liability to the balance sheet. However, both methods could produce market reactions affecting unreasonably the company's share price.

Conclusion

5.33. In section 4 of the paper we identified 3 main valuation methods:

(i) The Defined Accrued Benefit Method, in which the funding objective was to be able to meet the wind-up benefits, which we described as the scheme's true liabilities.

(ii) The Projected Unit Method, in which the funding objective was often (though not always) higher than with the Defined Accrued Benefit Method, so that there could be a pre-planned surplus. With suitable Trustee discretion, this could be for the members' benefit on an actual wind-up.

(iii) The Aggregate Method, in which the assets accumulated were higher than with the Projected Unit Method, the excess not being intended for the members' benefit.

A change in valuation method would therefore presumably have the explicit intention of producing, or reducing, a surplus of the kind mentioned in (ii) or (iii).

5.34. ED 39 (83(d)) requires disclosure of the actuarial valuation method used. We wonder whether those reading the name of the method used will appreciate that there are liable to be hidden surpluses of the nature which we describe in § 5.33 above. ED 39 (83(h)) only requires disclosure of 'the amount of any

deficiency on a discontinuance actuarial valuation'. We ask again the question[16]:

> "Might there be some truth in the suggestion that a general practice of funding to a higher level than would be required in the event of discontinuance is not only futile, but counterproductive as it obscures a need to improve the accrued rights of stayers in pension scheme Rules?"

We think the new disclosure requirements for company accounts will do nothing to reduce the obscurity.

6. CONCLUSION

6.1. A company may cease contributing to its pension scheme at any time. When this happens, the Trustees must be content with the assets already in the fund and must dispose of those assets as provided in the Trust Deed and Rules.

6.2. We therefore conclude that a company has no legal liability extending in time beyond the present – the valuation date – or in amount beyond what it has already contributed to the fund.

6.3. At present, most Trust Deeds provide no better benefit on winding up than for the individual early leaver, yet most actuaries use valuation methods which implicitly assume a greater liability than that and consequently build up bigger funds than are strictly necessary.

6.4. We see no harm in this provided that the company, which has to meet the cost, has consciously decided to put in extra funds with the intention of enabling Trustees, exercising their discretion under the scheme Rules, to augment the wind-up benefits provided in those Rules.

6.5. We have declared our strong preference for Rules which do not leave this matter to the Trustees' discretion but instead reflect the intention in the definition of the wind-up benefit.

6.6. However, where it is left to discretion, the intention would usually be to assume similar augmentation of benefits in calculating the amount of a transfer value payable to another scheme when a group of members came to be transferred to a new employer. We have some hesitation about this if the terms of the transfer agreement are such as to vest in the transferring members a *right* to augmented benefits on a subsequent winding-up of the *other* scheme, which would remain only a *possibility* for the remaining members on a subsequent winding-up of *their* scheme. Whether or not it would be proper for Trustees to discriminate in this way is a legal question, not an actuarial one.

6.7. With some valuation methods, the resulting accumulation of assets is bigger even than would be required to meet any likely intentions on augmentation of benefits. In such a case, there would effectively be a margin for contingencies, such as the contingency that the fund might be closed to new entrants and that the company would wish, in that event, to avoid any increase in the percentage contribution rate to be applied to the payroll of the remaining members as the funds ran down. Alternatively the margin may be regarded simply as a general contingencies margin, for example against the possibility of future benefit improvements.

6.8. We would have no objection should a company wish to incorporate a

margin intended to cover the contingency that the fund's experience might prove to be unfavourable compared with the actuary's valuation assumptions, provided that the nature of the contingency and the amount of the margin were disclosed.

6.9. We would think it wrong if, without the company realizing it, margins were to be incorporated in pension funds by their actuaries as a conventional practice. If it were thought that the company's freedom of decision in this respect *should* be constrained, then any margin should be explicit and imposed by law, in the same way as applies to commercial concerns issuing insurance contracts to the general public. We do not see that any such need exists.

6.10. The new statutory valuation basis (for identifying excessive surpluses) limits the scope for contingency margins of any kind in pension funds.

6.11. We are not in a position to gauge the extent to which Trustees and companies understand the explanations given to them by their actuaries of the different valuation methods and of the choice available to them. We suspect that many companies do not fully appreciate the situation as we have described it in this paper. We have encountered companies whose pension funds have been valued by the Aggregate Method and who were unaware that, by any other valuation method, a very substantial surplus would have been disclosed.

6.12. What is needed is for all companies, with the Trustees and actuaries in attendance, to reconsider the wind-up provisions in their schemes' Trust Deed and Rules. Where those documents do not reflect the company's intentions the provisions should be changed.

6.13. Once those provisions have been made definitive, that should settle what members are entitled to expect from the scheme and what would be expected of the Trustees in the event of the scheme's termination. It should also determine the nature of the accrued liability and therefore the funding target for the actuary to aim at.

6.14. Where a company decided to continue to operate with a level of funding higher than the actual accrued liabilities, as most apparently do at present, this should be disclosed, as a warning of the vulnerability which goes with the flexibility implicit in this approach.

6.15. Throughout this paper, and particularly in this concluding section, we have sought to draw attention to matters which are for the *company* to decide. It is important that the company should realize which matters are properly matters of actuarial professional judgement and which are not. Undoubtedly in the natural course of their work actuaries also advise clients on the benefit design of pension schemes: we believe that wind-up provisions and funding targets fall into this category. However, given the complications of funding defined benefit pension schemes, it is all too easy for the client to fail to appreciate the distinction and for the actuary, in practice, to be drawn into taking decisions which we contend are not his to take. The approach to funding advocated in this paper would remove the present blurring of those separate responsibilities and would also remove much of the present complication, so difficult for non-actuaries to understand.

7. ACKNOWLEDGMENT

7.1. We are grateful to our colleague, Miss June Marshall, for her support in producing the many figures we required for the numerical comparisons shown in the Appendices.

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APPENDIX A

Model Scheme

1. *Summary of Benefits*

Retirement age	:	65 (males only)
Final pensionable salary	:	Average salary over last 12 months before retirement
Retirement pension	:	1/60th of final pensionable salary for each year of service, payable monthly in advance and guaranteed for five years
Widow's pension	:	On death after retirement: 50% of member's pension
Withdrawal benefit	:	Deferred pension of 1/60th of final pensionable salary for each year of serivice, revalued at 5% p.a. to retirement age. No benefit payable on death after withdrawal but before retirement age
Death-in-service benefits	:	Nil
Pension increases	:	5% p.a.
Member's contributions	:	Nil

2. *Valuation Assumptions*

Rate of interest	:	9% p.a.
Increase in general level of earnings	:	7% p.a.
Mortality: in service	:	A 1967-70 less 3 years
in retirement	:	PA(90) less 1 year
Wife's age	:	3 years younger than husband at retirement
Proportion married	:	90% at retirement

Other factors :

Age x	Salary scale at x	Withdrawal rate at x	Proportion of new entrants x to x+9
25	10,000	.086	.67
35	12,070	.035	.26
45	13,267	.016	.07
55	13,911	.003	–
65	14,260	–	–

APPENDIX B

Stable Membership Profile

Age	No. of members	Pensionable service (years)	Deaths	Withdrawals	New entrants
25	93	.0		8	93
26	178	.5		15	93
27	247	1.0		19	84
28	303	1.5		22	75
29	346	2.0		24	65
30	378	2.6		25	56
31	400	3.2		25	47
32	412	3.8		24	37
33	425	4.3	1	23	37
34	438	4.9		22	37
35	444	5.5		16	28
36	456	6.1	1	15	28
37	468	6.7		15	28
38	481	7.2	1	14	28
39	494	7.8		14	28
40	508	8.3	1	14	28
41	512	9.0		12	19
42	519	9.6	1	12	19
43	525	10.2		11	19
44	533	10.8	1	11	19
45	540	11.4	1	9	19
46	539	12.2	1	8	9
47	539	13.0	1	8	9
48	539	13.7	2	7	9
49	539	14.5	2	6	9
50	540	15.2	2	5	9
51	533	16.2	2	5	
52	526	17.2	2	4	
53	520	18.2	3	3	
54	514	19.2	3	3	
55	508	20.2	3	2	
56	503	21.2	3	1	
57	499	22.2	4	1	
58	494	23.2	4	1	
59	489	24.2	5	1	
60	483	25.2	5	1	
61	477	26.2	5		
62	472	27.2	6		
63	466	28.2	7		
64	459	29.2	7	(Retirements 452)	
TOTALS	18,339		74	406	932

APPENDIX C(i)

Contribution Rates and Fund Balances by Different Valuation Methods

First 41 Years of a New Scheme, with No Starting Credits

(All figures expressed as percentages of payroll in year beginning t)

Years from start t	A1 Security Benefit 5% p.a. revaluation		A2 Security Benefit (a) 7% p.a. revaluation		B Projected Unit Method (b)		C Aggregate Method (b) (c)		Expenditure
	Contribution Rate	Mean Fund	Contribution Rate	Mean Fund	Contribution Rate	Mean Fund	Contribution Rate	Mean Fund	
0	11.01	5.4	14.32	7.1	14.61	7.3	15.97	8.0	.07
5	12.23	57.6	14.36	73.6	14.61	75.2	15.61	82.2	3.64
10	13.25	102.4	14.45	128.8	14.61	131.6	15.12	142.9	6.98
15	14.06	139.1	14.53	172.2	14.61	175.9	14.79	190.3	10.19
20	14.67	166.8	14.60	204.2	14.61	208.3	14.68	224.8	13.20
25	15.07	185.7	14.65	225.2	14.61	229.6	14.51	247.4	15.72
30	15.30	196.6	14.68	237.0	14.61	241.7	14.40	260.5	17.67
35	15.41	201.2	14.69	241.8	14.61	246.3	14.36	265.7	19.00
40 and over	15.43	201.7	14.69	242.3	14.61	246.9	14.31	266.7	19.17
							(14.21)	(267.8)	

NOTES: (a) Represents revaluation of accrued benefit in line with the general level of earnings.
(b) Value of accrued benefits allows for withdrawals and pay increases on promotion.
(c) Valuations at three-year intervals. Not yet stable after 40 years.

APPENDIX C(ii)

Contribution Rates by Age by Different Valuation Methods

(All figures expressed as percentages of payroll)

	A1 (5% revaluation)		A2 (7% revaluation)		B Projected Unit Method		C Aggregate Method	
Age	Year 1	Year 41	Year 1	Year 41	Year 1	Year 41	Year 1	Ultimately
25	4.40	4.40	8.99	8.99	8.08	8.08	12.43	12.43
30	5.32	5.82	9.97	9.59	9.78	9.78	13.68	13.68
35	6.42	7.38	11.02	10.65	11.27	11.27	14.71	14.71
40	7.77	9.54	12.16	12.07	12.65	12.65	15.63	15.63
45	9.41	11.88	13.44	13.36	13.95	13.95	16.51	16.51
50	11.50	15.51	14.96	15.43	15.46	15.46	17.37	17.37
55	14.17	20.19	16.79	17.44	17.12	17.12	18.16	18.16
60	17.78	27.20	19.17	20.25	19.34	19.34	18.43	18.43
All	11.01	15.43	14.32	14.69	14.61	14.61	15.97	14.21

NOTE: In Method C, the contribution rates for different ages are the level rates required for entrants at that age. The average age at entry in year 1 is much higher than the average age for entrants in subsequent years. The Aggregate Contribution Rate is therefore higher in year 1 than it will be ultimately, when the aggregate rate is the same as the contribution rate under the Entry Age Method.

APPENDIX C(iii)

Contribution Rates and Fund Balances by Different Valuation Methods

A once stable fund (i) now declining, only half of exits replaced by new entrants
(ii) now increasing, 50% more new entrants than exits

(All figures expressed as percentages of payroll in year beginning t)

Years from start	A1 Security Benefit 5% p.a. revaluation		A2 Security Benefit 7% p.a. revaluation		B Projected Unit Method		C Aggregate Method (a)		Expenditure	Change in payroll from year 40 (b)
t	Contribution Rate	Mean Fund	Contribution Rate	Mean Fund	Contribution Rate	Mean Fund	Contribution Rate	Mean Fund		
40	15.43	201.7	14.69	242.3	14.61	246.9	14.21	267.8	19.17	1000
(i) *Membership declining*										
45	16.49	225.6	15.17	270.3	15.05	275.5	14.21	312.3	21.86	882
50	17.45	250.0	15.56	296.5	15.36	302.0	14.21	326.4	23.98	779
55	18.32	277.0	15.84	323.8	15.54	329.4	14.21	353.1	27.23	679
60	18.43	280.8	15.87	326.2	15.54	331.6	14.21	354.3	31.67	583
65	18.12	272.6	15.73	315.9	15.44	321.0	14.21	343.0	34.30	496
70	17.95	272.0	15.59	314.7	15.30	319.6	14.21	341.4	36.95	420
(ii) *Membership increasing*										
45	14.80	187.9	14.43	226.1	14.36	230.4	14.21	251.5	17.95	1083
50	14.13	165.3	14.13	208.9	14.11	212.9	14.21	233.4	15.72	1219
55	13.76	162.6	13.98	198.7	14.01	202.5	14.21	223.1	14.98	1371
60	13.70	159.2	13.99	195.9	14.03	199.9	14.21	221.1	13.22	1541
65	13.74	159.1	14.03	196.6	14.07	200.7	14.21	222.4	12.23	1726
70	13.93	163.2	14.12	201.2	14.14	205.4	14.21	227.3	12.89	1926

NOTES: (a) For purposes of this table, the Aggregate Method is assumed to have become stable by year 40.
(b) Change in payroll is shown in terms of constant earnings, i.e. 7% p.a. increase is eliminated.

APPENDIX C(iv)

Contribution Rates and Fund Balances following a 50% Surplus in the Fund after 40 Years

(All figures expressed as percentages of payroll)

Years from start	METHOD A1 (5% revaluation)				METHOD A2 (7% revaluation)				METHOD C Aggregate Method	
	(a)		(b)		(a)		(c)			
t	Contribution Rate	Mean Fund	Contribution Rate	Mean Fund	Contribution Rate	Mean Fund	Contribution Rate	Mean Fund	Contribution Rate (d)	Mean Fund
40	7.26	299.3	–	296.1	4.87	359.6	–	357.8	3.14	396.2
43	7.26	278.6	–	253.9	4.87	336.0	–	319.1	5.34	370.7
46	7.26	258.9	–	209.4	4.87	311.1	–	278.2	7.10	350.3
49	7.26	237.0	15.43	201.7	4.87	284.7	14.69	242.3	8.51	334.0
52	7.26	213.8	15.43	201.7	4.87	256.8	14.69	242.3	9.64	320.8
55	15.43	201.7	15.43	201.7	14.69	242.3	14.69	242.3	10.55	310.3
58	15.43	201.7	15.43	201.7	14.69	242.3	14.69	242.3	11.27	301.8
61	15.43	201.7	15.43	201.7	14.69	242.3	14.69	242.3	11.88	295.1
64	15.43	201.7	15.43	201.7	14.69	242.3	14.69	242.3	12.32	289.7
67	15.43	201.7	15.43	201.7	14.69	242.3	14.69	242.3	12.70	285.3
70	15.43	201.7	15.43	201.7	14.69	242.3	14.69	242.3	13.00	281.9
73	15.43	201.7	15.43	201.7	14.69	242.3	14.69	242.3	13.24	279.1
76	15.43	201.7	15.43	201.7	14.69	242.3	14.69	242.3	13.43	276.8
79	15.43	201.7	15.43	201.7	14.69	242.3	14.69	242.3	13.59	275.1
									(14.21)	(267.8)

NOTES: (a) Surplus eliminated over 14 years.
(b) Contribution holiday for 7 years.
(c) Contribution holiday for 9 years.
(d) Valuation, and revision of contribution rate, every 3 years.
(e) Scheme membership constant.

APPENDIX D

Result of an Increase in Withdrawal Rates

1. In the paper submitted to the Faculty of Actuaries in February 1983 results were shown on the basis of a model scheme with a very high rate of turnover and also where there were no withdrawals at all. The high rate of turnover overall was 14.5%. The model scheme this time, again with an all-male membership, assumes more modest though realistic withdrawal rates, giving an overall rate of turnover of 2.2%

2. The main reason for such a low overall rate lies in the adoption, for convenience, of a minimum age of 25 for membership. The typical scheme encountered in practice would have a much larger proportion of members under age 30 than in our model and the high rates of turnover experienced at these ages would produce an overall rate significantly higher than our 2.2%.

3. In the circumstances, we thought it appropriate to test how dependent our results were on the level of withdrawals assumed. The model was therefore changed by trebling the number of withdrawals at each age in Appendix B, and adding the same number of new entrants, leaving the number of members at each age the same as before but reducing the average length of pensionable service.

4. The resulting percentages of payroll in the stable state may be compared with those in Appendix C(i) as follows:

		Model scheme		Withdrawals trebled	
		Contribution rate	Mean fund	Contribution rate	Mean fund
		%	%	%	%
(i)	Method A1 (5% revaluation)	15.43	201.7	14.21	152.0
(ii)	Method A2 (7% revaluation)	14.69	242.3	13.67	180.8
(iii)	Method B (Projected Unit)	14.61	246.9	13.70	179.5
(iv)	Method C (Aggregate)	14.21	267.8	13.25	203.8
(v)	(iv) – (ii)		25.5		23.0
(vi)	Addition to C for death-in-service benefits		28.1		22.7
(vii)	100 x (v)/(ii)		10.5		12.7
(viii)	100 x ((v) + (vi))/(ii)		22.1		25.3

5. The ultimate mean fund on Method C, the Aggregate Method, is 10.5% higher in our model than on Method A2, with the maximum defined benefit. When withdrawals are trebled, the excess is increased to 12.7%.

6. When death-in-service benefits are assumed to be funded in advance in Method C, the excess over Method A2 is increased to 22.1% in the model scheme and to 25.3% when withdrawals are trebled.

7. These figures would appear to indicate that, within reasonable limits, the level of withdrawals does not disturb the relativities unduly.

8. We note that, when withdrawals are trebled, Method A2 ultimately has a *lower* contribution rate and *higher* mean fund than Method B.

APPENDIX E

Allowance for Interest in Regulating the Pensions Charge in Company Accounts

1. In this Appendix we consider the situation where a scheme is funded on Method B, and has assets amounting to 316.7% of payroll. It therefore has a surplus of 69.8% which it intends to run off over 5 years by taking a contribution holiday.

2. ED 39 would defer recognition and spread the surplus over 14 years. Allowing for compound interest, this would mean a reduction of 5.66% of payroll for 14 years instead of 14.61% for 5 years. Both series of reductions are equivalent in capital value to the surplus of 69.8%.

3. This would imply that the pensions charge should be 8.95% of payroll for 14 years (14.61% – 5.66%). However, the balance sheet provision could not be a simple summation of 8.95% a year for 5 years, followed by a run down of 5.66% a year for 9 years. This would mean a build up to 44.75% after 5 years, followed by a run down to *minus* 6.19% after 14 years (9 times 5.66% = 50.94%). These figures are shown in columns (1) to (3) of Table E1.

4. *Allowing for compound interest*, the 5 transfers to the provision would amount to 46.90% after 5 years, followed by a run down to zero after the full 14 years. The amounts of the provision year by year on this basis are shown in column (4) of Table E1.

5. One must presume that it is the intention of ED 39 that the pensions charges should be based on column (4) instead of column (2), leading to the figures shown in column (6). These vary from 9.00% of payroll to 9.79% of payroll.

6. It would seem odd to us to 'regulate' a company's pension charges to amounts which varied in this manner. One possibility would appear to be to allow for interest on the balance in the provision *within* the company's accounts, so as to maintain the pensions charge at 8.95% as in column (2).

7. Another possibility would be to ignore the amount of the surplus altogether and base the calculation on the actual reduction in the contributions to the scheme, namely 5 times 14.61%, a total of 73.05%. Dividing by 14 gives a reduction of 5.22%, which converts the 5 year holiday followed by 9 years at 14.61% to a pensions charge of 14.61% – 5.22% = 9.39% a year for 14 years. This would build up a provision in the balance sheet of 46.95% after 5 years, falling again to zero over the following 9 years, at 5.22% a year. The arithmetic is straightforward but of more importance would be the principle of having a mandatory accounting standard on such a simplistic approach.

Table E1

Year	Contribution to pension fund	Pension charge allowing for interest	Provision in company's balance sheet		Differences in column (4)	Pension charge based on column (5)
			Ignoring interest	Allowing for interest		
	(1)	(2)	(3)	(4)	(5)	(6)
1	–	8.95	8.95	9.04	9.04	9.04
2	–	8.95	17.90	18.24	9.20	9.20
3	–	8.95	26.85	27.62	9.38	9.38
4	–	8.95	35.80	37.17	9.55	9.55
5	–	8.95	44.75	46.90	9.73	9.73
6	14.61	8.95	39.09	42.07	–4.83	9.78
7	14.61	8.95	33.43	37.14	–4.93	9.68
8	14.61	8.95	27.77	32.13	–5.01	9.60
9	14.61	8.95	22.11	27.02	–5.11	9.50
10	14.61	8.95	16.45	21.81	–5.21	9.40
11	14.61	8.95	10.79	16.51	–5.30	9.31
12	14.61	8.95	5.13	11.11	–5.40	9.21
13	14.61	8.95	(– .53)	5.61	–5.50	9.11
14	14.61	8.95	(–6.19)	–	–5.61	9.00
15	14.61	14.61	(–6.19)	–	–	14.61

ABSTRACT OF THE DISCUSSION

Mr C.M. Stewart (introducing the paper): At the heart of the paper is our contention that *in law* a pension scheme's liabilities are determined by the wind-up provisions in the Trust Deed and Rules. Our approach to valuation, which is described at some length in the paper, reflects that legal reality. Other valuation methods, in our view, do not. They have different objectives. They may result in the same contribution rates and asset accumulation, as for example do Method A2 and Method B in the paper but the Trust Deed may not provide the same security for the members' benefits.

This paper was discussed at a meeting of the Faculty, in November 1986. At that meeting, while there was some support for our approach to valuation, the majority thought that it would not provide adequate cover for the ongoing benefits. We were disappointed that those expressing this view did not address the legal question at all and did not explain in what circumstances they thought that the ongoing benefits would not be covered. It is surely common ground that, so long as the scheme continues, the ongoing benefits, that is those payable on retirement, death or withdrawal, will be paid in full whatever the valuation method used. So, in what circumstances might those benefits not be paid in full? One possibility might be closure of the scheme to new entrants and we comment on this circumstance in § § 4.35 and 4.36. Another possibility would be if the scheme were to be made paid-up while the employer's business continued as usual, with normal rates of turnover and normal pay increases, but with no further contributions to the scheme. This would fit the concept of the Projected Unit Method.

A number of those speaking at the Faculty mentioned having discussions with their clients about valuation methods. It would be interesting to know whether those discussions involved choosing between termination, closure or making the scheme paid-up as the criterion for determining the funding strategy, or did the explanation go no further than the same non-specific assertion as was made by some speakers, simply that the ongoing benefits must be covered? In an ongoing business closure of the pension scheme to new entrants or making it paid-up would be an exceptional event resulting from a deliberate decision by the employer. It should be for the employer to decide if one of these exceptional events is to determine the funding objective. It does not seem to us to be a matter on which the actuary should make an assumption. If one of our clients wished to adopt such a strategy we would feel it appropriate to draw to his attention how much better it would be all round if a somewhat similar level of funding resulted from an improvement in the defined wind-up benefit, thus giving greater security for the members and greater security from predators who might wish to choose a different and lower funding objective.

Another view expressed in the Faculty discussion was that if the funding target was a defined wind-up benefit, especially if it was the statutory minimum, a solvency margin would be necessary in case of adverse stock market conditions if wind-up ever did occur. We agree that this is an important question. It is not mentioned in the paper only because we thought it already long enough without our dealing also with the valuation of assets. However, I shall mention what we have been doing about this. We value assets by the discounting method with 4% p.a. dividend growth to go with our 9% p.a. interest rate. Experience shows that on this basis a scheme which invests largely in equities has a built-in solvency margin, although the size of the margin fluctuates with market conditions. We have not completed our studies on this, but preliminary indications are that a scheme which was solvent on a 9% valuation basis would usually be able to meet its accrued liabilities on wind-up with something to spare so long as it invests largely in equities and the yield on gilts, which affects insurance premiums, remains above our valuation rate of interest. Very occasionally the margin might disappear, but even in the conditions of the latter part of 1974, the shortfall would not have been large because of the high yield on gilts and the effect of that on insurance premiums. Should we expect pension funds to be able to wind-up without some loss in conditions like those in 1974? We should be interested to hear of any other work being done on this aspect.

It was suggested at the Faculty that we were out of date in showing results on the Aggregate Method because that was no longer the method most widely used by consulting actuaries. They

had recently switched to the Attained Age Method, with any surplus or deficiency spread over the remaining working lifetime of the existing members. If that is the only change being made, then all we need do is re-label Method C as the Attained Age Method, because none of the figures are changed. The contribution rate for a new scheme would still start at 15.97% and fall slowly to 14.21% while the balance in the fund grew to 268% of payroll. However the actuarial liability, which is borrowed from the Projected Unit Method, would be only 247% of payroll. There would thus be a surplus of 21% of payroll, a permanent surplus, which, divided by the present value of a 1% contribution gives a reduction of 1.76% from the standard contribution rate of 15.97% and therefore a net contribution rate of 14.21%, exactly as with the Aggregate and Entry Age Methods.

If the Attained Age Method is likely to be used more widely in future its characteristics ought really to be explained more fully than they are in the Joint Committee's booklet. It must be difficult for non-actuaries to understand that, in a stable state, the method produces a permanent surplus and that when the actuary goes through the motions of eliminating the surplus he is actually only making room for the new surplus arising in the year from the excessive contribution rate.

Note that the Attained Age Method would not satisfy § 83(i) of Exposure Draft 39 because it would not disclose the contribution rate needed to achieve the target level of funding. It is calculated to overshoot. The same is true of the Projected Unit Method if the contribution rate is calculated without allowing for new entrants, which should be of interest to the Superannuation Funds Office when giving their approval to arrangements for running off excessive surpluses.

It is possible that there may even be some actuaries who do not understand all the characteristics of the Attained Age Method. Recently I saw it stated that 'once the standard funding level has been reached the normal contribution must be reduced to maintain that level', but that means switching from the Attained Age Method to the Projected Unit Method. Moreover, the standard funding level is never reached unless the fund is in deficiency and it is approached from below and passed on the way towards a permanent surplus.

May I finally ask the Joint Committee to consider adding our method to the published list of methods currently in use? This is important because the Accounting Standards Committee, the Auditing Practices Committee and others are finalising their guidelines on the basis of the present list which does not include a method which is based on the legal liability.

Mr A.G. McLean (opening the discussion): I have worked as a US consulting actuary for about eight years. One thing that horrified me initially was the openness with which we told our clients what we were doing. In the UK I had been used to talking about modern mortality, suitable interest rates and appropriate salary scales. I found in the US that it was usual to publish in detail the assumptions and methods used. In the past I think that the US client knew just as little as the UK client about the actual operation of his pension plan. The primary difference was that the US client had more paper and when he replaced his actuary the new one knew exactly how the previous valuation was done. Nevertheless, I think that *Watergate* changed that because not only did people not trust Government, but companies also stopped trusting their professional advisers and demanded to understand how decisions were made and wished to participate in them.

This in turn has resulted in most companies establishing two major policies with regard to their employee benefit programmes: a benefit policy, and a funding policy. The benefit policy will contain the company's philosophy as to the type of pension plan it will have, for example defined benefit or defined contribution; the co-ordination of state benefits with company provided benefits. It will also contain such items as the wind-up provisions; what happens over the sale of a division; etc. The funding policy will contain the company's philosophy on funding the plan. This will typically cover such items as the incidence of funding or pace of funding; the funding methods to be used and how actuarial assumptions are to be determined. The company will determine these policies itself, albeit with the help of the actuary, since it is the company which holds the contingent liability.

The authors have done us all a service by forcing us to think about how defined benefit pension plans should be funded in the UK. They have also done us a service by publicizing the American

Academy of Actuaries' analysis of different pension cost methods. It should be studied by all pension actuaries.

I agree with certain of the authors' views, in particular, in having clients understand the difference between cost and contribution. What a company contributes to a pension scheme may be a function of its tax status, its policy towards benefit improvements, or the personal philosophy of the person in charge, but what it should also know is when it is over-funding or under-funding, the true cost of the scheme. As actuaries we will be doing our clients a favour if we help them establish funding policies which will govern the pace or incidence at which they fund their plans. Actuaries do their profession a discredit when they adopt funding methods and actuarial assumptions which contain contingency margins of which the company or the client is unaware. For example, since the Finance Act 1970, there have been seven Acts of Parliament which govern early-leaver benefits and yet there are many actuaries who are using assumptions and methods which would indicate that these various changes will have no cost impact on the pension scheme. I realize that actuarial methods should be durable and I know stability is highly prized in a contribution rate, but a company should know when the actuary is spending the company's money unnecessarily.

I am also an advocate of getting the rules right and unambiguous. We should be helping our clients establish benefit policies which are in their long-term financial interest and which are durable enough to meet the retirement expectations of all generations of employees.

It was where the authors advocated the Defined Accrued Benefit Method that I had the most difficulty. While I agree with the need to establish funding policies and benefit policies, I do not believe that there is only one funding method which meets every company's needs, nor that the only funding objective is to target the accrued benefit. As the American Academy analysis demonstrates, the various methods have different characteristics and it is incumbent on all practicing pension actuaries to understand these characteristics so they can choose the method most appropriate to their clients' needs.

I was disappointed that the authors stayed within the world of deterministic methods. The advances in computer technology since 1970, when the method advocated by the authors was first used, have been enormous. I was also disappointed that the issue of the selection of actuarial assumptions was not raised. As an example accountants in the US are forcing actuaries into a world of explicit assumptions, where each assumption must be self-standing. This is different from the world in which most of us live where as long as the assumptions in the aggregate are appropriate everything is alright.

Mr A.J. Wise: Funding a pension scheme can perhaps be likened to flying an aeroplane. A money-purchase scheme is like a flight from Heathrow across the Channel to land in a nondescript field somewhere in France. A defined benefit scheme is like a flight that lands at Orly airport. Funding the pension scheme is like powering the aircraft and the actuary is navigator. The level of funding is like the altitude above sea level. This analogy helps explain my criticism of this paper, where a particular system for navigating the plane from London to Paris is described. At the basic level the flight is like a Cruise missile at minimum altitude, dropping close to sea level at the cliffs of Dover and rising again at the French coast. Subject to the amount of smoothing in the trajectory, course corrections are needed from time to time to meet the primary objective of maintaining the lowest reasonable altitude. While crossing the Channel there is no anticipation of the extra altitude required later in the journey. That is the Defined Accrued Benefit Method in its basic form, namely discontinuance funding. The application of an escalator on the wind-up benefits, the recent legislation on benefits for early leavers and the operation of smoothing by use of a control period make discontinuance funding more respectable, but they do not alter the characteristics of the method.

There are, however, other funding methods and other ways of flying a plane. Most of us would favour a higher altitude than is strictly necessary at any one time. Greater altitude generally means a smoother and safer flight. In due course the altitude is lost just as it was gained and the plane lands at its target destination. There is no uniquely correct altitude at which to fly a plane and most actuaries are agreed that there is no uniquely correct funding method. There are other

considerations for pension funding apart from benefit security which are not dissimilar from the analogies of smoothness and safety of flight. To claim, as the authors do, that their lone funding method is the only sensible one is as absurd as suggesting that the best way to fly is like a Cruise missile. Their description of excessive funding induced by other funding methods is as erroneous as calling 30,000 feet an excessive altitude. No reasonable altitude can be called excessive unless it causes the plane to overfly its destination or until new considerations such as Government limits come into play.

The aviation analogy can also help with the debate about funding versus charging pension expense to the company revenue account. The authors would not seek to make any such distinction, but most of us would accept that a distinction may properly be drawn. I think that the systematic method of charging pension expense over the working lifetimes of employees would be analagous to setting a smooth trajectory from London to Paris that anticipates all the foreseeable navigational hazards on the way. The plane's precise altitude at any time would not be the pre-emptive factor. In pension fund parlance such navigation would best be achieved by a contribution target method of valuing pension cost, in which the funding level is a by-product, not the controlling factor. That seems the natural way to deal with charging pension expense in the company account and with measuring long-term pension costs, such as the cost of benefit improvements.

Funding in the sense used by the authors, is concerned with how much of the pension expense should be paid into a separate trust fund. Traditionally the answer has been around 100%, but there is no reason why the answer should not be significantly less, providing the appropriate criteria are observed. I agree that benefit security is the key criterion. If there is a distinction between charging pension expense and funding, as it is meaningful to do, then in order to determine the amount of funding an asset targeting method seems entirely suitable, but I would not rule out methods such as the Projected Unit Credit Method, which the authors criticize. There is no unique best method. Asset target methods are not ideally suited to measuring long-term pension costs. Just as a Cruise missile skimming the Straits of Dover fails to anticipate the foreseeable navigational hazards before it reaches France, asset target methods are intrinsically shortsighted.

There is something rather odd about funding by reference to contribution target methods and charging long-term pension expense under FASB 87 using the Projected Unit Credit Method. It would make more sense to fund by asset target and assess pension cost by contribution target methods and accept that it is perfectly logical that the difference between the two will figure in the company's accounts as an ongoing concern.

Regarding the case involving the Imperial Foods pension scheme, I worked closely with Mr Martin over the four years during which the case reached a conclusion in the High Court and have first hand knowledge of all the circumstances and evidence. The authors use the case as an illustration to argue the unsatisfactory nature of the partial dissolution clause which gives discretion to the actuary, but they missed the point, which, in my view, is of most importance for our profession. An actuary who can fully explain his thinking to a court and who can argue in support of his decisions under cross-examination will command the respect of the court as a person fit to take weighty decisions. That is important because there are some who would seek to devalue the role of the actuary. Indeed, the narrow mechanistic system of the authors would have the actuary nearer to a programmer of Cruise missiles than a fully qualified pilot or navigator.

Winding-up clauses may well place responsibilities upon the actuary which he would feel less burdened without. There may be good reasons for changing the wording of Trust Deeds if it is possible to do so. Many of us would agree with the comments of the authors in that respect, but no actuary who is experienced in these matters need shirk from duties to which such existing legal clauses may give rise and that means that funding standards and security of members' benefits should not be reduced to lower levels just to make our own lives easier.

Mr D.R. Linnell: The main concept of fixing a satisfactory winding-up benefit formula and then funding to that target is very attractive in theory. However, it is useful to consider the effect of

putting such ideas into practice. In funding a scheme I recommend that the company should put aside an amount each year equal to the projected cost of that year's benefits. Members, after all, are promised benefits related to their final salaries and the amount put aside should reflect those promises. I use the Projected Unit Method with an allowance for withdrawals and new entrants except, of course, for closed schemes. Similarly, for past service my funding target allows for projected salary increases and for withdrawals. I am prepared to be flexible in the way in which a particular scheme is funded.

The statutory basis laid down for controlling funding and for determining the maximum amount of surplus which can be refunded to an employer, fits reasonably neatly into this framework. It is usually possible to agree with a company and with the trustees that, for an ongoing scheme, there is a certain level of funding which should be applied to provide the members' benefits, and that any excess is the property of the company. On a winding up, where such an excess exists, I would find it sensible to suggest that assets, equal to the past service liabilities on the projected basis, should be used to secure benefits for the members and that the excess should then be returned to the employer. I would be merely carrying forward the division of the fund which we had already agreed.

I would not normally apply the funding basis to each individual member when determining winding-up benefits. Although the total may be suitable, in practice I would need to use a formula based upon a fixed rate of increase in pension entitlement before and after retirement, possibly coupled with the flat rate uplift in basic entitlements. Herein lies my first problem with the authors' proposals. In § 1.16, they suggest the maximum entitlement which should be adopted is an accrued benefit based upon past service and current pensionable pay revalued in line with expected increases in the general level of earnings up to normal pension age. This is admirable as a funding target, but I do not see how it could be written into the rules of the scheme so as to make the benefit secure as suggested in § § 1.15 and 3.13. The problem is the use of expected increases in the general level of earnings; and there is the further one of allowing for any withdrawal assumptions.

Similar problems arise in § § 1.17 and 1.18 in respect of references to future levels of earnings and of inflation. I would welcome further comment from the authors on the methods they have used to write such entitlements into the Trust Deed and Rules – perhaps a specimen clause in an Appendix to their next paper. Furthermore, the alteration rule normally protects accrued benefits rather than winding-up benefits. It will be necessary to provide a safeguard against a company which changed the trustees and then changed the winding-up rule to amend the target level of benefits.

On a winding up the rules will provide the order of priorities in which different entitlements should be secured and will also provide that a shortfall will result in a reduction in the target benefit, but I regard the shortfall from the winding-up benefits, as laid down by the rules, as far more serious than a shortfall from the agreed funding targets. In the former case I would recommend immediate or fairly short-term action to correct the position, whereas I am happy to aim to reach a funding target over, say, 15 years.

Having set the funding target securely in the rules, what is the trustee's position if the assets are insufficient to meet it at any time? I gather from the introductory remarks that the authors consider that there is a margin in the asset basis: however, such a margin seems to conflict with the objective of having a clear statement of just what the target is and reflecting that target in the assumptions. Having set the target, even if the trustees are protected by the rules, a member, who finds on winding-up that he does not get the target benefit, might take action against the actuary who provided the advice.

The authors also take issue with some of the proposals contained in ED39. As a member of the Working Party set up by the former Students' Society and the Young Accountants' Group I have some sympathy with their comments. I would have liked to have seen in that document clearly worked-out examples covering both interest and payments related to salary roll, taken over a period of ten years or so and several valuations in changing conditions. The authors have made a very useful contribution to that debate. However we have to start somewhere if accounts are to give a true and fair view in this very difficult area.

Mr A.S. Fishman: As a profession we sometimes over-react to outside criticism. There are occasions when it is justifiable and appropriate for the *status quo* to be maintained. We must not be precipitate in discarding what we stand for and what we have before us is a case in point. Pension schemes, so far as I am aware, can either continue in operation or not continue in operation. We must, therefore, choose to fund a given pension scheme in accordance with one of these two alternatives. If, on a wind-up or a partial discontinuance, questions arise as to what to do with a surplus or as to how a fund is to be apportioned, this should be resolved, not by prescribing actuarial bases, but by ensuring that the parties involved in a given transaction understand the actual implications and by them accurately and fully documenting what is agreed. Within this lies the true role of the professional actuary, able to give advice having regard to the particular circumstances involved.

Mr N.D. Freethy: I used to produce contribution rates which were modest, yet which still left a margin of prudence. This method saw us through the dark days of the mid-seventies when funds scraped the floor of that margin, but, with very few exceptions, never fell through it. Now an unpredictable coincidence of events, at a time when pension funds are becoming much more mature, can be said, perhaps with greater certainty than ten years ago, to produce genuine surpluses. Now we can return to our clients with even better news and lower contribution rates. Suddenly the word prudence seems to have acquired rather questionable overtones. Setting money aside on a consistent basis for a rainy day, which I had always regarded as the real art of the actuary, is no longer the prime purpose of pension funding. This, according to § 1.2 is now occupied by the objective of securing accrued benefits. Prudence, we are told, means holding a hostage to the fortunes of predators.

Surplus has been created by excess past contributions and prudence and, perhaps more significantly, by a combination of 11 years of boom markets, massive redundancies, falling inflation and maturing pension funds. It is one thing to take advantage of all these to reduce contribution rates, but quite another to lower the funding target, go off on non-contribution holidays and gratefully claw back even more money to pad out the thin balance sheets. There is nothing wrong in any of those objectives, but as many of us find it objectionable enough to be forced to do things in a certain way by Government bent on increasing tax revenues, so it is even more frustrating to be encouraged from within by a paper enshrined in the annals of the profession.

Mr McLeish was recently quoted by *The Daily Telegraph* as saying that 'actuarial methods in the UK have been too conservative, helping to create surpluses'. To a quotation of mine in *Pensions' Management* that I 'conjured up visions of actuaries withholding from their clients knowledge of vast pools of unwanted cash tucked away in pension funds', he replied 'I could not have expressed it better myself'. He then singled out the traditional aggregate actuarial valuation method as his prime target for criticism. Now he is a shrewd enough campaigner to turn aside potential criticism about his commercial objectives when he disclaims in § 1.20, encouraging employers to adopt one of the lower funding targets, but how convinced would a client be by an adviser who states; again in *Pensions' Management*, that the liabilities of a pension fund could be met on a pay-as-you-go basis and only the wind-up liabilities necessitate funding? Remember that in 1974, many pension funds were in deficiency. In retrospect should we have treated that word any more seriously then than the word 'surplus' now. Since 1980 pension schemes have matured with a rush, for the reasons I have referred to. Valuation methods taken for granted will need reassessment. The authors, if nothing else, have lifted the carpet and swept out the dust gathered there.

I agree completely that control of the pace of funding should ultimately rest with the Finance Director, the Trustee imput being restricted to demanding ultimately, with professional advice, enough money to pay out the benefits for which they are responsible. This is one dust cloud raised by the authors' broom. Another concerns the degree of precision with which the rules determine what happens on termination. The authors correctly state that the provision, if any, in these circumstances is as important as the more obvious benefits provided by the Scheme. Termination benefits do not have to be precisely defined, but the employer should have some imput as to

whether they are or not. Precise termination provisions might result in more resources than strictly necessary being set aside for members who, after termination of the scheme, may no longer be the Company's responsibility. Less precision may actually give the employer greater freedom if you subscribe to the view that a well-funded pension scheme could be used effectively as a tax exempt contingency reserve for the protection of the business, its employees who are members of a pension scheme, or both parties, as required.

The actuary's job, which the opener graphically expressed, is to guide the employer along the funding way, encouraging him to build up the fund when the going is good, whilst informing him of the extent to which surplus assets on a wind-up might be hostages to the fortunes of predators. This so-called 'Aggregate Method' of funding, so severely criticized by the authors, has in its time done a good job for pension schemes with past service benefits to pay off. The usually quite high initial contribution rate brought out by this method fell with each year's batch of new entrants, usually at younger ages, but it meanwhile launched the fund and began paying off pre-scheme service liabilities sooner rather than later. Now we are mature and with our increased computer power we can, with some difficulty admittedly, bring in assumptions concerning future new entrants and when we do our retrospective tests we can tell our client that his scheme is 100% funded, 150% funded, 200% funded or whatever. It seems that you have to choose between the difficulty with the Aggregate Method of accommodating new entrant assumptions and the authors' methods of being forced to target on to some arbitrarily chosen degree of accrued benefits on wind-up however they might be defined. Valuations can be carried out using both methods to enable the client to decide which he likes best, but I would favour the Aggregate approach with supplementary information to the employer as to the likely effect of new entrants and as to the degree to which the Scheme is over-funded on wind up.

Mr R.E. Snelson: Variations resulting from experience changes, or actuarial assumptions, tend to overshadow changes arising from minor alterations in funding methods. Nevertheless, contrary to § 2.2, it is possible to make some generalized comment on the relativity of contribution rates.

I have always been disappointed that papers on funding rely on numerical examples and pay scant regard to the underlying mathematical situation, in spite of the fact that some attention must be paid to the mathematics in order to produce arithmetical results. It is helpful to regard the funding of a defined benefit scheme as consisting of three phases. In phase A the arrangement is in an immature position, either as regards the benefit distribution by age, or the state of funding, or both. Phase B represents the stable situation with a fixed contribution rate and a stationary population as regards lives, benefits and state of funding. Phase C is the run down situation where the supply of new entrants has ceased with the result that benefits and membership are running down. I would not claim that any of these phases is anything other than conceptual. Phase A can continue for an indefinite period, particularly if benefits are improved. It is doubtful whether any arrangement is in a truly stationary condition for an appreciable length of time and on winding up the usual practice is for contributions to cease rather than for the fund to run off as a closed group. However, by considering the three phases the underlying situation can be seen more accurately.

Sometimes the objective of a funding system is stated to be stability of cost and it is as well to be aware of what is meant by this phrase. Under the Current Unit Method, or the Projected Unit Method for that matter, one of the criticisms often voiced is that in phase C the cost will rise. In fact, unless the benefits are immature the contribution rate expressed as a percentage of payroll in phase A will exceed that in phase B under all of the recognized funding methods. In phase C the cost expressed as a percentage of payroll may well rise and in inflationary conditions, the absolute cost may rise also. However, the real cost may actually fall. The distinction between the cost as a percentage of payroll, the cost in absolute terms and the cost in real terms is often blurred.

In Table 1 of § 4.25 contribution rates and fund balances in the stable state are quoted, also that the real rate of interest is 1.87%. If 1.87% of the fund balance is added to the stable state contribution rate, the same result is obtained in every case. This is as it should be, that is 19.2% of payroll. Thus, if in phase A there were to be no balance in the fund, but complete maturity of

benefits, then 19.2% is the rate of contribution required to purchase the benefits every year. In a phase C situation, because the payroll is likely to reduce faster than the cost of benefits, the cost as a percentage of payroll will rise, but the cost in real terms will gradually fall. A contribution rate of 19.2% could in these somewhat artificial conditions continue indefinitely while the fund is in a phase A or phase B position without ever accumulating anything in the fund. It is only needed to protect the members in the event of winding-up.

Methods such as the Current Unit Method or the Projected Unit Method are simply ways of building up a fund over a period of time. If the period for building up the fund is extended to infinity, the cost becomes 19.2% of payroll in each case. Furthermore, any contribution rate paid in excess of 19.2% and continued indefinitely into the future will first of all achieve a target level of funding in accordance with the Current Unit Method which may take, for the sake of argument, ten years, and then in due course will achieve the target level of funding associated with the Projected Unit Method after possibly 15 years. Continuation of a high contribution rate will ultimately lead to such a large fund that all the benefits can be funded out of interest income and no further contributions will then be necessary for ever, unless the equilibrium of the situation is disturbed.

For these reasons, it is my contention that unless there is a very young age distribution there is ultimately a downward pressure on contribution rates for funds in a phase A position, and this is supported by practical experience. I have seen the Current Unit Method used for well over 15 years. Sometimes funds had a bumpy ride, particularly in the mid-1970's, but this was caused by the assumptions not being fulfilled rather than by the use of an inferior funding method. With the advent of preservation and contracting-out the methods needed to be modified and with the current debate on early leavers it is now more acceptable socially to include a measure of salary inflation in the leaving-service benefits. It is therefore more appropriate to use the Projected Unit Method. It has been found possible in the vast majority of cases to switch from one system to another without increasing the contribution rate or changing the underlying assumptions.

An employer is unlikely to be indifferent to the level of cost and the actuary will want to check variations in the contribution rate. It must be quite clear that the reason for building up a fund is to protect the members in the event of winding up, particularly where employer's contributions cease. An employer has a right to stop a pension scheme at any time and the authors are perfectly correct in stating that the average Trust Deed is vague on the question of benefits available in the event of winding up. However, the paper really poses the question as to whether a Trust Deed should attempt to define the winding up benefits more closely and whether the funding approach should be tied to the Trust Deed. A phrase which is popular in describing the statutory supervision of life offices is 'freedom with disclosure'. It could be argued, that, in the case of pension schemes, we have hitherto enjoyed unfettered freedom without any disclosure. Our freedom is now being constrained in various directions and disclosure is required by legislation.

Mr A.F. Wilson: In Section 1 the authors refer to the Report on Terminology of Pension Funding Methods. I endorse the comments made in § § 1.5 and 1.6, regarding the use of the expression 'actuarial liability'. The Working Party, on which I served, made great efforts to avoid the use of such provocative expressions.

I welcome the statement that the Aggregate Method is not really a separate method, but merely a special form of new entrant funding. Under the new entrant method a choice may be made as to how any imbalance between assets and the standard fund is met. The only essential difference is that under the aggregate approach any imbalance is automatically met evenly over the service lifetime of the members. The Attained Age Method, on the other hand, has a standard fund which is very different and does lead to surpluses. The two advantages of the Aggregate Method are the discipline which the correcting of imbalance over service lifetimes provides and the fact that it is not necessary to calculate the individual new entrant contribution rates. The fund which is built up for any individual is the reserve required if the contributions to meet his benefits are set at a level rate of pay over his working lifetime. I do not like the implication in § 4.15 that this represents an accumulation of unnecessary surplus. Surpluses will only arise if the experience of the scheme is favourable. In consequence, the references made in

§ 4.16 to the Aggregate Method, but not the Attained Age Method, are wrong. It is easy to show that the effect of ignoring new entrants is to remove surpluses or deficiencies more quickly, not to create them. The point is that the standard fund is the same as that for a new entrant.

My approach to funding plans for pension schemes is simple: if a company continues in being, the level of funding of its pension arrangements is largely irrelevant; if it does not the funding level is very important. Under almost all systematic funding plans, once the company and the scheme mature, contributions will be stable, apart from experience deviations from assumptions made. Once equilibrium is reached the higher the fund the smaller the regular contribution, assuming that investment returns exceed pay increases. Indeed, the most important source of surpluses or deficiencies arises from fluctuations in investment returns. It is reasonable to suggest that the most stable contribution arises from the smallest fund, and therefore the weakest funding level.

For a continuing company this stability may be important, but all schemes eventually terminate and what happens then is crucial and here I part company with the authors. The paper has the basic concept that when a scheme terminates it is the wind-up benefits which are given. This is contrary to what I believe happens in practice. To test this I made a survey of well over 200 schemes known to me, or my partners, to have terminated over the past ten years. Of these schemes a handful were wound up after the last member had retired. About 10% were wound up and benefits secured through insurance companies; of these, half were given very generous improvements in benefits, well above the strict minimum required by the wind-up clause. The balance, nearly 90% of schemes, terminated, transferring their assets to a successor pension scheme. This was usually following a takeover of the company running the original pension scheme. In most cases the takeover was of a business which continued under new ownership. The employees concerned had their pension expectations honoured in full in the new pension scheme as a result of the transfer of the assets backing their rights under the original scheme. In addition to these cases of full determination, there were the many cases of partial determination where subsidiaries, or assets of companies have been sold and pensions rights transferred from the vendor's scheme to the purchaser's scheme. I believe most strongly that for setting funding standards, what will happen on partial determination or transfer to another pension scheme is far more important than wind-up in the unlikely circumstances which the authors envisage.

I could sympathize with the authors' approach if using weaker funding methods did not impair the benefits of employees upon their company being sold, but that is not my experience. I have recently had to deal with the sale of subsidiaries where the reserves were very close to those described by the authors as Method A1. I have put to the new employers the arguments the authors have used, namely that the benefits promised could continue to be funded at that level. I pointed out as the authors do, that the contribution rate would consequently have an element which derived from pay increases on past service benefits. The reaction of each new employer was simple. Why should we pay this extra cost? Why did the vendor not meet it? We see no reason to undertake a cost in respect of service which was not our responsibility. The employees must suffer a reduction of one sixth of their pension benefits from past service. Can we really condone funding methods which have such consequences?

Mr B.H. Davies: We can agree with the paper that there could be greater clarity in some Trust Deeds about the benefits on winding up; that it would be wrong for margins to be incorporated in a valuation without the company realizing, and that the actuary should not be drawn into taking decisions which are properly those of the trustees or the employer. The authors have extrapolated from such agreement an attempt to justify a single approach to pension funding from among a range of methods which, depending on circumstances, might be acceptable. Many question this tactic because its practical effect is to reduce the security afforded to members' benefits. The central point of the argument appears to be that a fund should only be accumulated to meet actual wind-up benefits. I do not agree with that, for two major reasons, first because the security of accrued benefits is certainly the prime purpose of funding, but it is far from being the only purpose, and second having reserves in excess of the authors' defined accrued benefit level can serve a practical purpose for both employers and employees.

On the first argument I follow the authors' example and refer to Lee, *An Introduction to Pension Schemes*. He has four reasons for funding. As well as security he gives stability, durability and liquidity. The paper does not look at these in a systematic way and in a number of places slips away from saying that security is the prime reason for funding to a clear implication that it is the only reason for funding. The authors, however, are quite clearly concerned about the question of durability. They accept that if the closed fund runs for many years contributions will escalate to much higher levels. This is a problem and they defend themselves in § 4.36 by a claim that such a situation is most unlikely. This begs the question as to whether we can ignore a particular risk, even if it is unlikely, but such a situation is far from being unlikely. Over recent years we have seen many employers almost cease to recruit new staff and hence in practice, if not in the rules, close their scheme to new entrants, while not actually being wound up or being taken over, as the authors suggest is always the case. The members of such schemes are entitled to have their prospective benefits not put at risk through the contribution rate escalating in the future to unacceptable levels and it is not sufficient for the authors to claim, as they do, in § 2.8, that schemes have weathered recent years without encountering these problems. Over recent years we have had high returns on investments at the same time as contracting employment. What happens if there is a continuing period of falling employment in firms but in conjunction with poor returns on investments? The opener indicated that their method only rarely had problems in difficult investment conditions. I am rather puzzled since this must mean that they are incorporating a margin into their method.

On the second point, employers and employees regard reserves in excess of the wind-up position as serving a practical purpose. Employees would prefer to see the rules changed to give them a better entitlement on wind up, but that, despite the reassuring comments in § 1.23, will not be the practical effect in many cases of adopting this method. The choice for members is not whether or not they have a clearer legal entitlement to excess reserves, but whether or not those reserves will be there. Given that choice most employees will opt to have the reserves, even where they are at risk from a predatory employer. As Mr Justice Millett said in the Courage's Judgment 'While the members have no legal right to participate in the surpluses they are entitled to have them dealt with by consultation and negotiation', and it is my view that employees in general would rather see those reserves there, albeit not written into the wind-up rules. As far as employers are concerned, it must be a reasonable aim to try to allocate the cost of pensions accruing properly year by year. The accountants can speak for themselves in respect of the proposed standard, but I think the authors appear weak and defensive on this particular point. It is always instructive to look at these matters with and without inflation and the clear effect of what the authors suggest is to delay the impact of the cost of pensions on the accounts of the employer merely because you introduce inflation into the equation. That appears to be wrong and unacceptable from the point of view of the employer. He needs to know what the current situation is in relation to the commitments that he is currently undertaking.

Mr P.A.F. Weaver: I agree with much of the paper regarding suitability of current funding methods in the everyday business situation. Communication is still the biggest problem that we have and this is clearly evident by the fact that traditional funding methods, that have frequently resulted in surpluses arising in wind-up situations, have not been questioned more closely by our clients. We cannot rely on this situation continuing for much longer.

In discussions about appropriate contribution rates and funding levels the problem frequently arises as to whom we, as actuaries, are advising. Is it the trustees or the employers? The authors' funding methods could be seen as the limit of the trustees concern, i.e. to ensure that there are sufficient assets in a fund both now and in the future to meet the liabilities due in a winding-up situation. The actuary's advice to the employer will concern any variation from this approach in order to meet other criteria. Here I depart from the authors, in that I believe that there are always other criteria to be considered, such that the actuary will invariably not be limited to considering only the 'prime purpose of funding', as the authors put forward in § 1.2.

In the context of the financial management of a company, it can be argued that a pension scheme should be managed as a cost centre. The pension scheme manager should attempt to

minimize the costs required to be met by the employer within the constraints of being able to secure the payment of benefits as they fall due. Although this implies the use of the authors' method, the objective of funding on the basis that the scheme will wind up is inconsistent with the objectives used for budgeting and calculating costs elsewhere in the company.

I propose that actuaries should consider the financial position on discontinuance and should communicate this to their clients but, they should agree with their clients how much weight they put on this situation arising, in effect, attaching a probability to its occurrence.

I would have liked to have seen more examples of schemes with different membership profiles and greater comment on the choice of the control period used. I do not have any schemes with the stable membership profile described in the paper, and I would have thought that the choice of the control period constitutes one of the major differences of opinion between the followers of Discontinuance Funding Methods and those of Aggregate Methods.

Mr J.G. Spain: The discontinuance of a scheme has one unique feature, that all the benefits of all members will then be crystallized, but I do not see that that makes it worthwhile as something to follow. If a company is putting in a new pensions arrangement, it is probably not thinking in terms of making it a temporary arrangement. It is thinking far longer term. I do not see that we should worry at the beginning that it is going to be temporary, thinking about wind-up, and therefore I do not see why we should change over to merely funding for a prospective wind-up.

There have been very few pension scheme wind-ups over the last 10 years, despite the fact that conditions have been incredible. There have been many takeovers, which have already been mentioned. Unfortunately I cannot prove my figures by direct reference to wind-ups, all I can look at is the numbers of contracting-out certificates given up. Using figures supplied by the OPB and a formula agreed with a former examiner in subject A6, over the last 8 years, the likelihood of giving up a contracting-out certificate has ranged between .02 to .1. This will tend to overstate the probability of wind-up, because in many cases the scheme was contracted back in without being wound up. It seems that worry about wind-up can be allowed for by adding something to the withdrawal rates.

I am concerned as to whether the method favoured by the authors can satisfactorily be communicated to clients who have other things to do and no time at all in which to consider these matters as fully as they should.

Mr L.J. Martin: The broad valuation approach, seems to be already encompassed by the range of methods which have been discussed over many years. In the early days, when funds were first established, we were aiming primarily at what might be an appropriate long-term contribution rate, normally expressed as a percentage of salaries. Funds were relatively small and frequently there were substantial uncovered initial past service costs which had to be met. We were then relatively little concerned with so called asset cover. Over the years funds have become increasingly mature and we are now in an interesting transient stage and looking not only at the ongoing contribution rate but also putting much weight on the comparison between accrued liabilities and the assets in hand. The authors underline this aspect in their primary objective in § 4.12. In this context they are understandably treating the dissolution rights as the minimum accrued liabilities. As such, the method might well be appropriate in certain circumstances, but I do not look upon it as being the one correct method always for general use. Nor indeed, is any method. It may be useful to draw the attention of a client to inadequacies in the winding-up rule or to underline the lowly value of members' legal rights on withdrawal, as compared with the amount of assets in hand. It does not, to my mind, alone provide a sufficient tool for measuring or providing for ongoing costs.

I support the authors' exhortation to get the legal framework right. In this connexion they are referring to the particular clauses of Trust Deeds which relate to the dissolution, or partial dissolution of the scheme in question. I support them and wish to go a little futher. At the present time, in many cases, there is a yawning gap between a member's rights under a pension fund, which are frequently related only to his current salary in the event of a winding up or his having to leave service, and his expectations which may be related to final salary. In an ongoing fund these

expectations are also normally those of the employer; both employee and employer have similar expectations and hopes. I would like to see this gap closed and as far as possible turn these expectations into rights – and this I think is what the authors also have in mind. Frequently, there are sufficient assets in a fund which could be earmarked to guarantee partial indexation to pensions in course of payment and to future deferred pensioners in respect of service only up to the valuation date. These guarantees could be advanced step by step in respect of past service, if sufficient assets are available. Such provision would be going a long way to giving security to both pensioners and active members and would ensure that most of the assets remain for the benefit of the members, particularly in the event of a takeover.

The development of large pension funds in recent years has probably weakened the security of members. The press and the public are now aware of the word 'surplus', but it is not so much surplus which has to be safeguarded as this substantial expectation gap which is at risk.

Paragraphs 3.1 – 3.8 include remarks made about the Hillsdown case, in which I was involved. My written submissions to the court and those of other actuaries involved were both lengthy and detailed. We not only explained the funding and valuation methods adopted for the scheme in question, but also described the full spectrum of valuation methods in common usage in this country at the present time. Paragraph 3.8 seems to imply that the judge was not provided with all the actuarial facts of this particular fund and all relevant background information, whereas he was most fully informed. Similarly, § § 3.5 and 3.6 relate to the broad methods which might possibly be used in apportioning funds in various circumstances. Again lengthy written and spoken statements expanded on these methods, commenting on the suitability, or otherwise, of each. The Judgment itself could, of course, only briefly describe the lengthy evidence which had been provided. There have been many written comments in papers and journals on the Hillsdown case, but many of these have drawn rather too general or even erroneous conclusions, because the authors concerned have not had access to all the relevant documents and understandably have not been fully conversant with all the particular details, circumstances, and background of the case. One, perhaps rather obvious, feature which this underlines is how every case is quite different from any other so that it may well be dangerous to draw what may be superficial generalized conclusions when all the details may not be readily available, or perhaps have not been fully studied. The authors may have fallen into this trap in some of their remarks.

Mr S.A. Carne: The authors' basic thesis is that winding-up rules need to be improved to make clearer the members' position in an early termination. That is reasonable. What I do not find so reasonable is the authors' belief that the entire financial management of the scheme should then be subservient to the winding-up rule. The authors argue that there should be no funding above the winding-up level. If the company wishes to provide a more generous funding level they say that the winding-up benefits should be increased to consume the additional funds. What they have failed to accept is that very few companies are prepared to commit themselves irrevocably into the long-term future and are therefore unlikely to guarantee in the Deed funding levels at anything other than the minimum that prudence requires. Consider the analogy of pension increases. In an ideal world increases would be at an adequate level and written into the rules, but the business community does not generally see it that way and increases are almost invariably granted on an *ad hoc* basis with minimal guarantees for the future. Indeed, the newly privatized industries: Telecom, Airways and so on, have abandoned their guaranteed inflation-proofed increases, because their new private sector owners demand it that way. It seems clear, therefore, that any attempt to guarantee the funding level in a pension deed is likely to lead to weaker funding levels compared with the levels which have been achieved through discretionary practice.

In Section 5 the authors consider the accounting area. Their argument is very rational, but it has nothing to do with accounting principles or practice. They argue from two premises in § 5.1, but where, amongst those premises, is there a reference to the four basic accounting concepts laid down in existing accounting standards and, more recently, in the Companies Acts? In particular, the authors' predilection for valuations based on the winding-up benefits appears to be completely at odds with the accountants' going-concern concept. How do the authors resolve that conflict? They do not tell us, and do not once refer to the going-concern concept. They also base

their argument on the premise that their preferred valuation method follows the precise wording of the pension deed, but it is an accepted accounting principle that the economic reality of a transaction should be accounted for and not necessarily its legal form. In order to make their case the authors would have to demonstrate that the Trust Deed is the best representation of the economic reality of a scheme, and yet, as they acknowledge, the reality is that companies frequently allow, or encourage, the trustees to grant discretionary benefits. When that happens the Trust Deed does not represent the economic reality of the scheme and it cannot, therefore, form the basis of the accounting costs.

At the beginning of the 1980's the accounting professions in the UK, Canada and the United States were all leaning towards the Projected Unit Method of calculating pension costs, but most of the actuarial profession in the UK was uncomfortable with that concept and preferred level percentage methods instead. After years of debate the UK Accounting Bodies persuaded themselves that level percentage methods were acceptable for costing purposes provided that the methods recognized projected final salaries in a final salaries scheme and they recognized pension increases where the scheme has an expressed or implied commitment. The authors have taken that conclusion, ignored the important provisos regarding final salaries, ignored the proviso regarding pension increases and used what is left of that conclusion as a premise for their arguments. In the light of that inadequate premise it is hardly surprising that the authors have reached a set of conclusions which do not agree with accepted accounting beliefs. What surprises me is that after participating in the pension cost debate for years the authors should have placed before us a paper that pays such scant regard to the real accounting issues.

I take issue with the authors' claim that their preferred funding method is not covered in the Institute and Faculty's terminology. This so-called Defined Accrued Benefit Method is simply a subcategory of the unit methods applied with a control period. The authors have asserted in § 4.2 that there are three features which distinguish their method from the Institute's defined methods, but this is not so. These are the inclusion of assumed new entrants, which is quite explicitly covered in § 5.18 of the official terminology; valuing the winding-up benefits rather than the ongoing benefits, which means that they always restrict themselves to whichever of the unit methods reflects the winding-up rule; and the label 'wind-up benefit' is replaced by the label 'security benefit', which I do not think ranks as a breakthrough in actuarial methodology.

Mr J.D. Punter: I would like to refer to Section 1, the objective of funding. It begins with one of the few quotations of written actuarial work that has not been prepared by the authors and then makes an astounding leap in logical consequence in § 1.2. It seems to follow, therefore, that the prime purpose of funding an occupational pension scheme must be to secure the accrued benefits whatever they might be in the event of the employer being unable or unwilling to continue to pay at some time in the future. I think this logical leap is unfounded and, in many ways, affects the conclusions of the paper as a whole.

The generally accepted principles of most businessmen is that running of business can be summarized, and has been summarized well by accountants, in Standard Accounting Practice No. 2, where there are four main principles: the going concern; accruals; consistency and prudence. It is the going-concern concept, reiterating Mr Carne's point, which I read from the statement, 'the enterprise will continue in operational existence for the foreseeable future. This means, in particular, that the profit and loss account and balance sheet assume no intention or necessity to liquidate or curtail significantly the scale of the operation'. If we follow what the employers are obviously aiming for in running their own businesses into the way pension schemes are administered and funded, I do not believe that the authors' statement in § 1.2, that the prime purpose of funding is to meet the accrued benefits, stand-up. I agree that it is a very important point, but I do not believe it is the prime point.

A second leap in logical thought which I find very disturbing is in § 4.5 and concerns the quotation from Mr Justice Buckley. I suggest that the important word in that quotation is 'normal' benefits, not dissolution. I would emphasize that I think the authors have placed a too heavy emphasis on the dissolution terms of Trust Deeds and Rules.

I believe that the existing winding-up provisions of most Trust Deeds and Rules are inadequate in two situations. One is that the actual benefits that legally have to be provided can be somewhat vague, but I believe they are seriously inadequate in terms of the guidance given to the trustees in the way they should use the available assets. Second, I think that on the transfer of assets for a subsidiary when a subsection of the workforce is transferred to a new employer this should be dealt with separately from the winding up, or partial winding-up rule. The use of the words 'partial winding up' on a transfer of a subsidiary division of an employer is misleading in most circumstances and I think actuaries should attempt to clarify the rules.

Most occupational pension schemes have been fairly successful and flexible. All actuaries should remember that their purpose is to provide benefits to the members, ones that they can live off, improving their standard of living in retirement. That means benefits in real terms, or at least in terms that are partially index linked. We have also heard that employers are reluctant to guarantee index linking. There is only one logical conclusion that can be drawn from this position if pension schemes are going to continue to provide the service that we all expect of them and that is that there is going to be scope in the Trust Deeds and Rules for the discretion of the trustees. As soon as that point is admitted, the Defined Accrued Benefit Method, admits all the complications and problems that we are all struggling with more than any other method currently in use.

Mr A. Joanes (a visitor): As a solicitor I applauded the comments about the fundamentality of the winding-up rules as summarized in § 3.21 and I think you will find these are features in nearly all final salary pension plans. The relevance of these rules arises when your profession is considering the rate of funding or the method of funding, but also when my profession has to deal with problems like the Hillsdown case.

Paragraph 3.21 summarizes four variations which are nearly always present in a final salary pension plan as the alternatives to which surplus funds should be applied. One is to give everyone the revenue maximum, the balance to the company. Two is to leave it to the trustees to decide. Three is to leave it to the trustees to decide, subject to the employer's consent, which is basically to leave it to the employer to decide. Four is to leave it to the employer to decide. Now both our professions should desirably give advice to clients as to which of these four alternatives they should adopt when they are establishing or considering amending their Trust Deeds. In my experience pension Trust Deeds are established by someone saying to the financial director that they should have a trust scheme and the pension adviser produces a draft, or the lawyers produce a draft and the winding-up provision is not discussed. However it can be of fundamental importance and I think that the only correct approach of these four is that it should be at the trustees' discretion, subject to employer's consent, because the employers should always remain in control. If the employer believes that there should be additional provisions made, then the trustees are permitted under the Trust Deed to do that. If there is any other alternative then there is a Hillsdown problem. I do not think that establishing the control of the disposition of the fund on the winding up will in any way lead to a diminution of the role of the actuary, because that is the same as the role of the lawyer: it is to give his independent advice to the client who is in most circumstances the company which should be encouraged to retain control of its pension fund.

Dr L.W.G. Tutt F.F.A.: In my experience employers in general wish to be seen to be fair and appreciating that some form of promise has been given to members to provide pensions on enforced retirement. They prefer, in the interests of all, a pace of funding which sets as its target the fulfilment of members retirement expectations. I therefore question the authors' stated prime purpose of funding and I am not at ease with the method of valuation which they commend for general use.

The authors complement their philosophy in § 1.15 that sights should be set upon the winding-up position, by stating that it is for the employer to decide what the members' entitlement should be on a winding up. They then add in § 1.19 that even that winding-up benefit is merely a target which the members might not receive. I find myself out of sympathy with what such an outlook implies. The authors further suggest in § 6.3 that most actuaries use valuation

methods which build up bigger funds than are strictly necessary and that they are to be found wanting in the proper exercise of professional judgement and consequently that the scope for actuarial judgement should be curtailed. Moreover, whilst it is to be assumed that they can substantiate the references to the employer not being properly informed, I find their expressed views as a whole somewhat surprising and, at least to some extent, they have been overtaken by events.

The current position is that most schemes are contracted out and actuaries are meticulous in the completion of Certificate A which imposes a lower funding constraint. The surplus requirements place a tight upper constraint on the size of the fund to be built up and Memorandum 82 is quite demanding: The Disclosure of Information Regulations and Memorandum 84 reflect significant further requirements from the actuary in addition to GN3 and GN9. Is not compliance by actuaries with all these, both to the letter and in the spirit of them, reasonably adequate?

The authors refer to what they consider to be the present unsatisfactory situation concerning levels of funding and they say in § 1.25 that the first thing is to get the legal framework right. I am sure that their suggestion for doing so will be given the most careful consideration and deservedly so, but I question whether, under our legal system, is what is right at law itself sometimes subject to differences of opinion even within legal circles?

Mr T.G. Arthur: I agree with the authors where they state that the members' entitlement on winding up should be specified and secured in the Trust Deed and Rules. An enormous amount of pension scheme problems are caused by deficient or non-existent wind-up provisions. I also agree with their preference, in § 5.2, for the actual contributions made to be accepted as a pension charge in the company's accounts, if only on the grounds that life is simpler that way. That point is not essential and I believe that the paper would have been far better if it had accepted that there could be divergence between actual and accounting contributions, because its central thrust would have then made more sense. I do not think that is compatible with an identity between actual and accounting contributions, because then the external fund is all that there is to cover various contingencies and as many speakers have asked, why single out the winding-up benefits as being the target for funding? What would the authors do if they were faced with a scheme which is generous in every respect except that its winding-up benefits are defined as *nil*?

The authors are trying to explode as a myth some established and hallowed actuarial practices. That is an excellent aim. Paragraphs 1.1 and 1.2 are important and I cannot agree with Mr Punter that there is a huge leap of logic between them. Pay-as-you-go is not acceptable for a state pension scheme. The state itself may indeed be assured of a continued existence but higher tax levels are certainly not assured of a continuing existence and even if they were the criterion of stability of contribution would be far more equitable, as many state schemes are now beginning to discover.

The authors are right to press for clarity of winding-up benefits. The point to make in connexion with this paper is that the winding-up benefits should be influenced by the funding philosophy rather than the other way round. The purpose of good funding is undone if the funds can be swept away on winding up. The answer is not to sweep them away before reaching that point although that certainly does have some consistency, but to use them for granting proper benefits, may be along the lines suggested by Mr Martin.

Mr D.B. Duval: Some speakers have commented that if you insist on funding the discontinuance benefits you will not improve them, but just produce lower funding, which could very well be true. What employees do not know is that we are funding for more than discontinuance benefits. The new disclosure regulations may help a bit but, traditionally, employees have seen scheme accounts which show much money in the fund and they assume it is all for them. We should tell people what we are doing.

Mr Stewart stressed in his closing remarks to the Faculty, that the legal position is very important and we have got to live with it. It is not what we would like it to be and if the legal and

practical position is that on termination only withdrawal benefits are provided and the rest goes back to the employer then it has been a waste of money putting it into the scheme in the first place, when it could have been much better used in the company.

One speaker said that there had been a survey of 200 terminations and he deduced from that that things were basically alright on termination. I reached the opposite conclusion. Of these 200 terminations 90% were not terminations at all, but transfers into other schemes. Over half of the remaining 10% provided generous augmentations to presumably the minimum withdrawal benefits. That means not far short of half of the terminations probably did not, and therefore we are getting a significant proportion of actual terminations where only withdrawal benefits are being provided.

Mr G.N.C. Ward (a visitor): The subject is dear to the hearts of both my profession, as a chartered accountant, and yours and is one in which mutual understanding and co-operation are essential if truth and fairness in financial reporting, financial control and investment appraisal is to be achieved.

Accounting issues are covered in Section 5. The objective of accounts is to show a true and fair view of financial position and profit or loss. This view is based on professional standards and in the law on four fundamental accounting concepts, those of going concern, consistency, accruals and prudence. The result of these is that cash payments and accounting cost are not necessarily the same. Paragraph 5.1 of the paper seems to take the view that cash is all right, but there are a few difficulties associated with it and it seems to attempt to remove them. It is not the accountant's starting point, which is to attempt to develop the correct accounting treatment from the application of the fundamental concept.

In § 5.2, it is suggested that the actuary might say how the present situation could change in the future and then everything will be alright. That is, 'if accounts do not show a true and fair view, but they would if some changes, as follows, were made, then that is sufficient'. Accounts should show a true and fair view standing as they are, not just give any view and be accompanied by a statement of differences. That is not only something that is supported by professional standards and by the law, it is also something that is supported by empirical research carried out by the then Chairman of the Accounting Standards Committee, Mr Tom Watts, in 1978, when he made enquiries of users and preparers of accounts as to what it was that they wanted.

The authors mention both a United States and a United Kingdom approach to the subject. Are the authors incipient Americans? That they seem to favour a legislative approach common to US accounting rather than truth and fairness and the operation of standards in accordance with their spirit which is used in the UK. To reduce accounting standards to tax law would in the accountants' view be retrograde and disappointing.

Applying the UK approach, we end up with matching the costs in the company with the benefits that the company receives that are associated with those costs. There being no easy measure of the benefit of employing somebody, the costs of employing him, including the pension cost, need to be matched with the nearest surrogate to that benefit that we have, i.e. the remuneration of the relevant employee. The authors, on the other hand, seem to base their line of argument on: all that is needed in the fund is the break-up amount; the break-up amount is equivalent to accrued benefits as measured by their Defined Accrued Benefits Method; matching the company's costs to the members' benefits on a break-up basis is the correct accounting; therefore, it is correct to account for the break-up situation. There is a fundamental problem with this. Their basis fails as an accounting basis as it is inconsistent with the going-concern concept. It also fails as an accounting concept as it is inconsistent with the matching concept. They seem to be seeking to match the benefit to the employee with the cost to the company, not the benefit to the company with the cost to the company.

Considering unfunded schemes, the authors in § 5.20 say that ED39 would not admit accounting properly for the pension costs if there are unfunded pension schemes. Referring to the difference between funding and costing, the absence of short-term cash flows is no reason to fail to account properly. In § 5.21 it is suggested that it is appropriate to avoid proper accounting by disclosure. May I remind you of the results of the Watts Survey? To prepare accounts that do not

show a true and fair view and then to say as much in a note to the accounts does not give rise to a set of accounts which does show a true and fair view. In accountancy, as in life, two wrongs do not make a right.

For surpluses it is true, as suggested in § 5.27, that ED39 is trying to gross up the effects of extraordinary surpluses and ordinary deficits. We would say that this is necessary. Separate treatment of ordinary and extraordinary costs and benefits is fundamental to accounting. It is not only a question of an accounting standard, but it is recognized in law in the UK and by EEC directives. The objective of accounting is to give the reader of the accounts a good understanding of the company's economic progress. To net off items which arise from different sources and perhaps for different reasons will obscure rather than enlighten the economic picture. Looking at accounting for surpluses there is evidence of some inadequate research. There have been some articles written on this in the Journals of the accountancy profession clarifying the situation. The authors' proposals do not meet fundamental accounting concepts as required by professional standards and by the law and I am forced, reluctantly therefore, to reject them.

Mr F.W. Bowden: I think this is an admirable paper. I was with one of the authors in the early 1970's laying the ground work of these methods which we have both continued to use ever since.

I have a few criticisms, largely of things not said which has probably contributed to what I think has been more a lack of understanding rather than fundamental criticism of the authors' methods. I felt that taking an example of a new fund with no past service or existing assets was a little unrealistic. It produces, naturally, rising levels of contributions which is one of the features that these methods are criticized for. Not enough was made of the fact that a stable situation can occur with any of the accrued funding methods, and it is not automatic that this must produce rising contributions in all circumstances.

I was surprised there was no reference to the valuation of assets. Mr Stewart said that the authors use a discounted income method. I dislike that method for its subjectivity. These funding methods lend themselves much more to comparison of market values of assets with market values of accrued liabilities which then have the merit of greater objectivity and ease of understanding by the client.

I was rather concerned about Mr Ward's comments. I was moderately relieved to see ED39 as I felt that at last a modicum of breadth of vision was emerging from the accountants' papers. As this paper states it should be possible for a variety of funding methods to be used to satisfy ED39; however I am very concerned about reports in the press that agreement is being reached between accountants and actuaries that, in effect, both methods A of this paper are not appropriate for ED39.

Mr R.B. Colbran (closing the discussion): The authors seem to see a world of black and white and I was disappointed that there was no modification in the tone in Mr Stewart's opening remarks. They quote the practice of their professional colleagues in general terms and then attack them. This is not easy to handle. My position is easier to deal with since they quote specifically from my 1982 paper, so I can compare their criticisms with the original intention. In it I was primarily criticizing the position of insured schemes and the way a number of offices seemed to fund on a short-term approach. Consultants meeting these situations were fairly united in feeling that employers had been led into commitments without fully appreciating the financial implications and that something needed to be done. I have not found any evidence to support the authors' contention that people actually wanted the method banned, but that sometimes actuaries in life offices needed some kind of backing from their profession to get them out of a vicious circle involved in competition based on initial cost. Much has happened since then, but I did not single out the authors' method for particular comment and it really had only a passing reference. They admit that by 1982 their method had not been presented to the profession, and I think it is fair to say that the emphasis has changed somewhat over the years.

The authors emphasize the unreality of methods that assume closed membership. To me the closed membership assumption only gives a yardstick, where a scheme is in deficiency, for the period over which the back service liability could reasonably be spread. If you do not make a

closed membership assumption you can find yourself spreading past service liabilities beyond the careers of the present employees. What the right period is must depend on circumstances, but that seems to put some reasonable limit on it.

There has been general agreement here that members are not happy with defining funding objectives by winding-up assumptions. Mr Spain mentioned the difficulties when approaching an employer about a new scheme, of discussing winding up at an early stage. I too thought that was difficult. It is trouble enough to get employers to understand funding without starting at the other end.

Dr Tutt drew our attention to the narrowing bands within which actuaries are now constrained. I do not think he mentioned the disclosure regulations which constrain us further. There seemed to be some agreement that margins of which the client is not aware should not be kept. Mr Bowden supported the approach based on a stable situation. It was one of my difficulties with Mr McLeish's earlier paper (*TFA*, 38, **267**), that many of his illustrations seem to depend on a stationary population. I thought they were somewhat unreal.

I think Mr Martin agreed with me that the authors had failed to give credit to their professional colleagues for adapting their methods to changed conditions. Mr B.H. Davies and Mr Freethy reminded us that there were poor investment returns until not so many years ago. You do not have to look back very far to find deficiencies common in schemes and to fear that poor returns and negative yields might return. Actuaries were then looking for sensible practical methods of funding deficiencies when all their recent experience indicated the need for additional margins. I think we can claim that the Aggregate Method had a good record of withstanding these difficult times and producing schemes which had an ability to pay pension increases. We had seen schemes on weaker methods running into increasing contribution rates. Recent years have taught us, above all, that funding final salary schemes can never be an exact science. It would have been hardly believable that we would be finding the results in triennial valuations which we now are. Thus the authors should not assume that even without the 1986 Finance Act actuaries were not and would not have been reviewing their funding methods. There has been general agreement that the chances of a common approach are rather low. Mr Wise thought that there was no uniquely correct attitude nor funding method, but on the other hand people wanted freedom with greater disclosure. I hope that we can get over to an employer the difference between, say, a Projected Unit Credit Method with costs rising with age and an alternative approach which is aimed at producing a level cost. An employer ought to be able to understand that, but it may be getting too deep to get far beyond.

There was general agreement that many winding-up rules are not satisfactory, giving inadequate protection to the members. Mr Arthur wanted more definition and Mr Punter said that most rules give inadequate guidance. Mr Duval raised an interesting thought, because, in effect, he was saying this is an omission from the disclosure requirements. I am not sure whether I would agree with the authors as to how far you can go to explain this to the members and yet there is something there that needs to be disclosed. It is not in the regulations, so what Mr Duval, I think, is saying to us, is suppose there is a splendid funding situation made clear to all by these regulations, but it might disappear because of the winding-up rule. There I was bothered by Mr Joanes, who asked for trustees discretions subject to employer's consent. The authors drew clear attention to the result of that in a winding-up situation. The receiver, or the liquidator, says it is my job to protect the creditors; why should I go along with the trustees wishes?

I also doubt whether the authors' method copes with the situation when the scheme has not exactly hit the target. If it is some way from the kind of target that they are envisaging then you may want an altogether different shape to the discontinuance benefits. Mr Linnell hinted at that. There can also be a conflict if there is a scheme winding-up when there is an ongoing situation, a merger perhaps and there is no right for the employer to be consulted. It is possible that too much has to be given. I can think of a recent situation where there was hardly anybody left in the scheme, and as far as I could see, there was no option but to give vast benefits to people who had left service long ago.

One possibility is to give the employer a say in the disposal of the surplus, except when he is in liquidation or receivership. That does not cover the predatory takeover and maybe there are

better possibilities. It would be worth airing some of these topics. Accounting, is of considerable interest, and the accounting concepts involved and of course not only just to follow the strict requirements of the accountancy profession, but to consider why we really want going concern and accruals approaches. Here the authors seem to be silent and I was surprised that Mr Stewart remained silent. Ideas of levelling out the cost over the lifetime seem to be ignored. Admittedly, there must be a certain level of winding-up target which probably results in fairly uniform costs, but that is a limited condition. Surely people want to consider whether the cost is evenly spread and it does not surprise me to hear Mr Ward reject the authors' methods from the accountants' point of view.

However, I am concerned about divergences between funding rates and costs implied by the accountants' latest proposals. I hope this is not going to develop on a wide scale. It seems that the result, with notional records having to be kept as well as actual, is horrifying, yet I think we are ahead in the UK compared with the USA in the understanding between the two professions and I believe, unlike the authors, that the UK accountants are right in their treatment of pension increases.

People who know much more about it than I do have spoken about the results of recent legal cases. Mr Martin has told me that there were about 300 pages that needed to be read to understand the implications in the Hillsdown case. I wonder if those who have been closely involved can see any way of helping the rest of us, because when you hear things like that you are put in the position of being very nervous about giving any advice.

The President (Mr M.H. Field, C.B.E.): I propose a vote of thanks to our two authors. The discussion has certainly been interesting and lively, as was the paper. On reading it I found myself continually diverted by the way so many of the points led my thoughts off in different directions.

We have had much talk about redefining, and improved defining of, discontinuance rights. It is heartening, but not surprising, that most pensions practitioners would have sympathy with what has been stated by the authors. I suggest that those who have their scheme discontinued around them deserve better treatment than those who withdraw voluntarily. An opposite concern is that of persuading employers to promise, rather than hope to provide, may well cause them to promise less than they currently give and the Inland Revenue's current attack on pension fund surpluses is more likely to cause contribution rates to fall than to cause higher benefits to be promised. What then are the chances of benefits higher than promised being paid? A modest surplus certainly gives room to manoeuvre, often to the benefit of members.

Using surpluses to provide higher guaranteed benefits seems to be embarking on a treadmill, or at least the first few steps of an upwardly rising helix. There was a strong connexion, I felt, with the concern that many of us are faced with in looking at the estate of a life assurance company and why is it there. How big should it be? At what rate should it grow? To whom does it belong?

The authors have taken a forceful line over funding methods and not being a practitioner I did not know how to take it all. Was I witnessing the debut of a new and universally superior method which would supersede all others, or was I observing the promotion, including some knocking copy, of a patent or pet method?

I was heartened to note that once termination benefits had been brought into line between those who retire and those who leave early, the difference in using one funding method or another became very much smaller. Perhaps we are dealing with technical differences which actuaries can properly observe, but which need be of no great concern to employers and trustees and their accountants, who can continue, and indeed should continue, to take note of trends and expectations of trends in contribution rates but without understanding the mechanics.

Mr D.J.D. McLeish (replying): Mr Stewart dealt with the question of the volatility of the actual wind-up position in market conditions ruling from time to time compared with the 100% target position on our ongoing valuation basis. Volatility is a fact of life whichever funding method we are using. The only point for decision, as we see it, is the degree to which a margin should be included to reduce the risk that the wind-up objective may not be achieved. We believe that any

margin should be explicitly addressed by using more conservative assumptions, rather than obliquely addressed by the use of a conservative method.

Rather than yield to the temptation of responding to as many of the points raised in the discussion as time will allow, I intend instead to restate in simple terms the basic philosophy which Mr. Stewart and I share and then deal with a few points which are raised consistently in response to what we say. We shall answer the remaining points in writing.

There are two aspects fundamental to our basic philosophy. First, we are not advocating one particular level of funding for defined benefit pension schemes. Whereas each of the traditional funding methods currently in use will produce its own unique level of funding if the assumptions used are borne out in practice, the approach which we are advocating accommodates the full spectrum of alternative funding levels. Within that spectrum we believe it is for the client and not for the actuary to choose.

This leads to the second fundamental aspect which is that this debate is not really a peculiarly actuarial one. Many of what we see as problems caused by current practices are due to what we regard as a mistaken belief that we are discussing an area of actuarial professional opinion, when we would contend that the points at issue are nothing of the kind. We take the view that for a final salary pension scheme the amount of money to be placed in trust should be quantified, monitored and controlled by reference to whatever benefit it is intended the scheme should provide should it ever wind up. We believe that that intent should be properly reflected in the scheme's legal documents. Neither of these two basic concepts is a matter of actuarial opinion *per se*, although with their close involvement in truly actuarial aspects of the scheme it is inevitable that actuaries will offer opinions on these matters as they do on many other related aspects of pension scheme design and structure.

By publishing its guide to terminology of pension scheme funding methods, the profession has done much to explain to non-actuaries the practical effect of using each of the funding methods dealt with in that guide. So far as we are aware there are no differences of actuarial opinion on that matter and provided he is given these explanations we should have thought that the non-actuary should be capable of judging whether a particular method seems to be appropriate to meet his needs.

Our approach to funding is not currently covered by the guide, although we do have ambitions that it should be. On occasions our approach appears to be misunderstood by some members of our profession who have levelled against it criticisms which to us appear to be unfounded. My paper to the Faculty (*TFA*, 38, **267**) was an attempt to explain clearly just what our approach involved and I was pleased to note that chapter 8, in the latest edition of the text book *Introduction to Pension Schemes*, E.M. Lee does confirm some of the basic arguments in my paper. In the belief that the features of the approach were now perhaps better understood, this paper was written, not as a further exposition of those features, but as a forum for discussion of the appropriateness of traditional methods as a means of achieving what we see as the purpose of funding. As is clear from our paper we do not find that any of the traditional methods meets our requirements.

Two points are frequently raised in response to the views which I have just expressed.

One is the view that we should not criticize in isolation the effect a particular funding method will have if the assumptions used are borne out in practice. We ought to recognize that actuaries who use traditional methods are equally aware of their inherent tendencies and will therefore adjust their assumptions to offset these tendencies. We have two responses to this line of argument: that if the actuary wishes to avoid the natural outcome of the funding methods which he is using then presumably he has some other outcome in mind; that it must be a very complex exercise to devise the appropriate adjustments to his natural assumptions, which are necessary to achieve his true objective, since these adjustments will vary from scheme to scheme, depending on the membership and benefit profile. We suggest that using his natural assumptions and aiming directly at his objective is technically a simpler task. Of much more importance is the greater ease with which the actuary can then communicate what he is doing to his client. In our experience there is no evidence to suggest that the assumptions used by actuaries using, say, the Aggregate Method are distinctly more optimistic than those used by other actuaries.

The other point is that it is not enough to accumulate assets sufficient to cover only the wind-up liabilities of a pension scheme and what we need to do is to cover what are described as the long-term liabilities of the fund, which by implication are greater. A pension fund, we suggest, has only two types of liability. The first is to pay benefits as they arise and all the trustees need to meet this liability is sufficient in their bank account from time to time to honour cheques for benefits as they fall due. This we regard as the funds' going-concern liability. The second is to provide certain benefits should the fund ever stop going, either now or at any future point of time, however distant. To meet this liability the trustees require much greater assets in the fund, just how much depending on the generosity of the wind-up benefits. We cannot see what other liability a pension scheme may have, nor can we understand why funding for discontinuance or wind-up benefits is said to be a short-term rather than a long-term strategy. Our approach is to project the fund 40 to 50 years or more into the future to ensure that at any future date the wind-up benefits will be covered.

If at any time in a particular scheme the assets have been accumulated at a level more than sufficient to cover the intended wind-up benefits we would hope that if this was done deliberately, the employer had good reasons for so doing, that in the event of wind up he retained control of the surplus assets, and bearing in mind the current asset stripping climate, that he was fully aware of his vulnerability in holding such a hidden asset in his business.

We must stress, in response to this second argument, that we would willingly accommodate an employer who wished to provide the most generous of wind-up benefits and therefore wished to accumulate correspondingly large assets in his pension fund. What we argue against, in such circumstances, is generous asset accumulation without the corresponding legal protection for members to ensure that the assets will indeed be applied for their benefit. We believe we have developed wording which, if required, will extend that protection to increases in benefits following wind-up consistent with any pre-funded discretionary practice prior to wind-up. Having said all that, we can do no more than explain the issues to the client. The final decision must be his in the light of his proper understanding of the issues. It is not a matter of actuarial responsibility.

One final comment: 'When the Defined Accrued Benefit Method was first brought to the attention of the profession in 1983 there was no particular pressure to make changes and there would have certainly been strong objections to the imposition of a standard method of valuation. It now seems important to identify a system which will not build up unnecessary surpluses within funds and to establish it as a standard method on the basis of which other methods can be judged. The Defined Accrued Benefit Method seems the ideal instrument for this purpose and a discursive analysis by the Pension Standards Committee is a matter of some urgency'. These words are from a written response to the Faculty discussion of this paper by a past President, Mr Robert Macdonald. We endorse his suggestion.

WRITTEN CONTRIBUTIONS

Mr P.N. Thornton: I would like to draw another analogy, that of dogs with tails. If we compare a funding plan with the main part of a dog, i.e. its body, a related part, but not an essential part, is the winding-up clause, or tail. The authors, it seems to me, would like the tail to wag the dog.

The paper is based on the premise that the prime purpose of funding is to secure the accrued benefits in the event of the employer being unable to continue to pay at some time in the future. I would certainly agree that building up a fund of assets which provides an appropriate degree of security for the benefits in such circumstances is *one* of the main objects of funding, but I believe that an object of equal importance is the one which every actuarial student is also taught, namely that the employer should give proper recognition to the cost of pension rights at the time that they are accruing.

I have no difficulty with the authors' desire to see winding-up priorities clearly spelled out in the trust deeds of schemes and I too believe that it is necessary for the funding policy to be such

that the assets are normally sufficient to cover in full the winding-up priority levels. From the point of view of security for the members' benefits this defines a *minimum* funding level, but an improvement in security by funding beyond this level is not achieved. Thus the further dimension of what is sensible funding policy for the sponsoring employer is another vital issue.

Most long-term business decisions are taken on the basis that the company will be continuing and I see no reason why funding policy should not similarly be based on the assumption that the fund will continue. This leads directly to the principle that the natural funding policy for an employer, even ignoring security considerations, would be to make contributions to the pension fund sufficient to meet the expected cost of the benefits which will be provided. With the Projected Unit Method the accumulated assets are compared with the expected cost of the benefits already accrued whilst the normal contribution rate for future accruing benefits is similarly based on their expected cost. With the new entrant method the expected cost of all future benefits for a new entrant is used to arrive at a level contribution rate. These methods are thus entirely natural ones for an employer to adopt, and they both are based on the concept of 'expected cost'.

I fail to see why the authors believe that the, usually remote, contingency of the fund being wound up at some future date should play a central role in determining funding policy. To illustrate the arbitrariness of this plan, consider for example a fund which only receives contributions for one year and during that year provides the accrual of only one year's benefit for members. Thereafter the fund continues but is closed to future contributions. Is it more realistic for the employer to pay into the fund an amount representing the best estimate of the cost of the benefits which will ultimately be paid, or should he proceed to fund on the basis that the scheme will terminate at some selected future date before all the benefits have matured?

The implication of paying a smaller amount into the fund than the full expected cost is that if, as will normally be the case, the fund does continue rather than terminate, the employer will have to find further resources to meet the balance of the full cost later on, which is a distortion of his future financial position. If such resources cannot at the time be provided the intended benefits will fail to be provided.

As I have already mentioned, I do not disagree with the authors about the importance of the winding-up provisions. In a large number of well-established funds the intention when the funds were originally established was that if the fund should wind up the assets accumulated should be applied in total to providing benefits for the members, the underlying principle being that this was the best chance of ensuring that the benefits which the members might otherwise have received had the fund continued, would be paid (at least in respect of service up to the date of closure). A large number of funds have winding-up provisions which give the trustees full power to use the assets in augmenting the accrued benefits within Revenue limits. Two thirds of a small (but effectively random) sample of sizeable funds of which I have knowledge are arranged on this basis. In the only full scale winding up in which I have been involved this is precisely the basis that applied and the trustees were able to provide benefits with guaranteed future increases in line with price inflation. Even so, the benefits provided will be less than had been originally intended as ongoing benefits as it is unlikely that even increases fully in line with price inflation will keep up with the rate at which members' salaries will grow. In the remaining third of my sample only one fund included no provision whatever for possible augmentation.

In approaching the construction of appropriate winding-up provisions in newly established funds in which I have been involved, I have explained to the employer the implications of adopting alternative levels of winding-up priority benefits. My experience has been that the employers have wished to set a priority level which, as far as possible, would lead to the benefits provided replacing those which would have been provided were the fund to have continued, broadly reflecting the level of assets built up under the Projected Unit Method of valuation. It is in practice difficult to specify this with precision but the wording adopted in these cases should at least ensure that, if the assets are sufficient, future increases in line with price inflation will be secured. Where such a level of winding-up provision is not acceptable to the employer, could it not simply be because he wishes to retain maximum flexibility – rather than that he would choose to provide only minimal winding-up benefits?

The common ground between myself and the authors lies at the point where the winding-up priority level is defined so as to equate for practical purposes with the benefits which would otherwise have been provided from the ongoing fund, which would lead the authors back to funding on a basis which fully reflects the expected cost of the benefits.

It does not seem to me realistic to expect the members of pension funds to understand, or if they do understand, to willingly accept a level of winding-up priority any less than this, and it is second best if that is all that is funded for. Is it not preferable to relate the winding-up benefits to a proper level of funding provision than to tailor the funding plan to an inadequate level of winding-up provision?

Mr S. Wynn (a visitor who attended the discussion): The paper states that there is often inadequate provision in pensions documentation for winding up pension schemes (§ 3.6). This is surely an argument in favour of standard documentation. Such documentation is being introduced by the Inland Revenue. In its recent consultative document 'Improving the Pensions Choice', it proposes to provide 'model scheme documents' for 'simplified schemes'. Pension providers will be able to supply their own 'standard documents' provided these conform to an 'agreed standard'. There is likely to be consultation on what the documentation and standard will be. It has even been proposed that a 'Pension Standards Committee' should be established by the government covering all schemes. The 'agreed standard' may include general topics, such as equal treatment between the sexes – for example for the dependent children of male and female members in the event of death before retirement. The actuarial profession will no doubt have many opinions especially regarding provisions for winding up pension schemes, which it will wish to give as evidence.

The joint authors: Mr Freethy remarked on our preoccupation, even obsession, with wind-up benefits. Mr Arthur asked why we had singled out the wind-up benefits as the target for funding when there were other funding targets which were perfectly acceptable. The answer is that we singled out that method because we identified it as the method which corresponds to the legal requirements. It is consequently the method of most relevance to trustees and employers. It is a trustee's duty to look upon it as providing the minimum level of funding acceptable and while an employer *may* adopt a higher funding target (for example by pursuing a different funding objective) he cannot, we contend, be *obliged* to aim higher.

A number of speakers indicated their support for the arguments advanced in the paper. Mr Weaver was quite explicit and said that our method could be seen as the limit of the trustees' concern. Unfortunately, many of those who decried the method and advocated other methods, and thus other funding objectives, did so in terms which totally disregarded the legal basis we advanced for our approach to funding. Mr Spain thought wind-up benefits *irrelevant* as a funding target. Mr Thornton wrote that it was *not essential* and likened it to the tail wagging the dog. Mr Davies described it as taking one *tactic* from amongst many. Mr Freethy referred to the wind-up benefit as being *arbitrarily* chosen and suggested that there was no need to have a defined wind-up benefit at all. He also pointed out that imprecision would enable an employer to use the scheme as a tax-exempt contingency reserve, in words which gave us the impression that he himself subscribed to the view that that would be a reasonable thing to do. Mr Carne saw nothing new in our approach and dismissed it as simply a sub-category of the unit methods applied with a control period. Mr Wise thought all asset target methods, including ours, to be shortsighted.

Unless there is a lacuna in pension funding there must be one method, or approach, which reflects the *obligations* of trustees and employers. We feel justified in asking our critics – again – 'If the Defined Accrued Benefit Method of Valuation does not fit that bill, which other method does?'

What are the other methods in use and what are their objectives? It was not always clear what speakers thought. The Opener would choose the method appropriate to the client's needs. For Mr Davies it would depend upon the circumstances. In the Closer's view, different times and different situations call for different methods. Mr Linnell 'recommends' the Projected Unit Method but does not say whether he offers his clients a choice or makes different

recommendations in different circumstances. Mr Thornton sees two methods as being 'natural': the Projected Unit Method and the Entry Age Method, since they are both based on the concept of expected cost (although they produce different results). Mr Freethy favours the Aggregate Method, claiming that it enabled schemes to weather the financial storms of the 1970s. Mr Snelson apparently weathered the same storms while progressing from the Current Unit Method to the Projected Unit Method. The main point to be made here is that, whatever the valuation method, contribution rates go up or down to reflect the current economic/financial climate, and in the meantime those retiring, withdrawing, etc receive in full the benefits which the rules provide.

The Closer thought it clear, from the discussion, that people wanted to see the cost evened out more than will be achieved by our method in many circumstances. In what circumstances? With a new scheme, the cost *cannot* be level when a prospective valuation method is used; it must fall. It *may* be level when an accrued benefits method is used, depending upon whether the founding members are given starting credits in the scheme. With an established scheme the cost will be fairly even from year to year whatever the method so long as the scheme continues. It remains to consider what happens when the scheme falters, or is terminated. Mr Spain thought the contingency of termination could be covered appropriately by the actuary increasing the withdrawal rates used. We do not think he will find much support for this suggestion. Mr Davies asked whether members should suffer the risk of the scheme continuing as a closed fund, with the contribution rate increasing as the membership ages (which, other things being equal, would be the consequence of using an accrued benefits valuation method). We would put the question differently. Would it be proper for an actuary to adopt a prospective method of valuation so as to avoid such a risk without the employer indicating that it was a risk which ought to be covered? After all, it would only happen if the employer allowed it to happen because the scheme can be terminated at any time. Perhaps Mr Davies has already answered the question by his acknowledgement that margins should not be incorporated without the company realizing it.

Mr Martin drew attention to the yawning gap which exists at present in most schemes between a member's rights and 'expectations'. He would like to see this gap closed by turning these expectations into rights and to an extent is correct in deducing that we are similarly motivated. However, it is necessary to bear in mind that the actuary cannot insist that the employer should adopt, say, the defined benefit of Method A2 in the paper, any more than, in our view, he can oblige the employer to adopt a funding target higher than results from the chosen defined benefit. We do not deny the danger, to which attention was drawn by Mr Carne, Mr Thornton and others, that bringing this out into the open involves a possibility that funding levels might be reduced. We agree with Mr Duval that it is better to face up to this possibility than for members and schemes to continue in the present state of ignorance and uncertainty.

Where is the pressure to improve wind-up benefits to come from if the general adequacy of present resources to make such improvements is concealed within funding methods whose objectives are different from securing the wind-up benefits? Mr Freethy says that the *employer* should be informed of the extent to which assets might be surplus to wind-up benefits and might therefore be an attraction to predators but is that enough? Mr Duval states that members too should know. It is, after all, the members whose benefits will be more, or less, secure according to the extent to which the fund's assets are formally earmarked for their benefit.

Mr Arthur and Mr Thornton would like the wind-up benefits to reflect the funding philosophy rather than, as we suggest, the other way round. That, however, begs the question as to what determines the funding philosophy. We agree with them, as a matter of expediency, that if an employer, for whatever reason, has built up a fund of £X and this is surplus to the liability for wind-up benefits, the wind-up benefits should be looked at. We see two possibilities:

(i) where the provision in the rules has never been seriously considered and just happens to be the minimum statutory requirement. In that case, we would suggest that the employer *should* now consider what the wind-up benefit should be, including the extent to which the resources available would enable the provision to be improved.

(ii) where the wind-up benefit in the rules is the result of a conscious decision by the employer, with the knowledge of the members, and the employer is deliberately funding to a higher

level than he is obliged to for the time being. In that case, we would see no objection to that strategy continuing, so long as the employer and the members knew what was going on. It is *not* fundamental to our method, *pace* Mr Wilson and others, that we would advise a cut in the funding target or that on wind-up or partial wind-up any surplus would be withheld from the members. We agree with Mr Davies and Mr Thornton that it is better from the members' point of view to have the assets there than not, but how much better to have them earmarked for the members.

Mr Linnell would prefer the wind-up benefits not to be defined because the actuary, or the trustees, might be liable if the scheme were to wind-up in deficit. He prefers to use the Projected Unit Method to determine the total amount of assets to be available, and the surplus will then be available both for *his* security and to be distributed to the members on a formula *not* related to the standard fund for each member on the Projected Unit Method. It is clear that we do not ourselves favour such a method. If an employer was willing to fund beyond the wind-up provision in the rules, and many are, we would prefer this to take the form of aiming to secure $(x + t)\%$ p.a. revaluation instead of $x\%$ p.a. revaluation of the accrued benefit on wind-up.

Mr Linnell asked how revaluation in line with increases in the general level of earnings (our maximum target) could be written into the rules. There are a number of possibilities *all* of which, as is inevitable, crystallize at the time of wind-up someone's estimate of future increases in earnings. If the rules said no more than that the assumption made by the actuary in his most recent valuation should be used, even that would be perfectly satisfactory as a funding target. It would also, in our view, be more appropriate than the Projected Unit Method which Mr Linnell uses for funding but which he would abandon if it ever came to winding up and he was asked to advise on individual members' entitlements. Alternatively, the rules could be more specifically tailored to fit conditions at the time of wind-up by relating the future earnings assumption to views then current on interest rates. There are a number of ways of solving the problem to which Mr Linnell rightly draws attention.

We find that employers have no difficulty whatever in understanding our approach, i.e. funding for defined wind-up benefits. The Closer need therefore have no fears that, on our approach, he would suffer similar problems to those he has obviously experienced in the past in getting employers to understand traditional funding methods.

Mr Martin and Mr Fishman feel that we have placed a wrong construction on the words used by Mr Justice Walton in his Judgment and that in doing so we had cast doubts on the quality of the advice they gave. We certainly had no such intention. We had no knowledge that Mr Martin had submitted 300 pages describing in full all the valuation methods in common usage. It would be helpful to us, and we are sure to others, to have explained by those with inside knowledge the construction which *should* be placed on the reference to a 'temporary surplus' in § 3.7 of the paper. It was the importance of such a statement in a legal Judgment which led us to focus so much attention on it. We did not say that the Judgment supported the use of one specific method but it did appear to us to express a legal view of one characteristic of those methods of valuation which have a bigger standard fund than the Projected Unit Method.

The Hillsdown case brought to light a difference of opinion among actuaries on whether rules relating to wind-up should be made more specific than at present, so that all concerned would know where they were and similar recourse to the Courts could be avoided in future. Some speakers thought that they should, including Mr Joanes, a Solicitor, but others saw this as diminishing the role of the actuary. It is clear that we belong to the first group. Although we do not for a moment doubt the actuary's ability to accept full responsibility when the situation requires it, we think it unnecessary, and undesirable, for it to come to this.

Mr Carne and Mr Ward accused us of ignoring the accountants' going concern concept. We, on the other hand, had thought that a valuation approach which insisted that new entrants should be allowed for and assumed that the scheme would remain in existence for as long as the employer's business continued *was* in accord with the going concern concept. We hope to examine this disagreement in further meetings with the two speakers.

Mr Ward implied that what we were suggesting would admit the presentation of 'any old view' instead of one that was true and fair. In fact we had thought that what we were proposing *was*

generally in line with ED39. Our method is systematic, it shows regular pension cost and variations therefrom separately, it is consistent from one valuation to the next, it reflects accurately the accrued liabilities and, in our view, it is prudent. What then does it not do? Mr Ward declares it to be inconsistent with the 'matching concept' which requires the cost to a company to be matched with the benefit obtained by the company from employing an individual.

We must defer to Mr Ward when it comes to the principles of accountancy but we confess to having some difficulty in understanding the application of the accountants' 'accruals concept' to pension rights in a defined benefit pension scheme. This concept states that revenue and costs must be recognized as having accrued as they are earned or incurred, not as money is received or paid. Also, the revenue and costs in a particular period must be 'matched' with one another so far as their relationship can be established or justifiably assumed.

We saw it as consistent with the accruals concept that the cost for the year, to be charged against profits for the year, should be what it costs the employer to fulfil his financial obligation for the year to the company's group pension scheme. However, as we understand it, Mr Ward says that this is not so. The accountant must look at the individual in the ongoing company and, as the best measure available of the benefit to the company of employing that individual is considered to be pay year by year throughout working life, the total pension cost to the company up to that individual's retirement must be similarly reallocated in time by reference to pay (although whether as a constant percentage or an increasing percentage as in FASB 87 he did not say). We may observe that *all* employment costs are not treated similarly. For example, defined contribution pension schemes, death-in-service benefits and sports and social club expenditure escape reallocation; it is only defined benefit pension schemes which are treated in this way.

The accountants' objective is that the company's accounts should present a true and fair view and we appreciate that over the years a great deal of thought has gone into the development of the methods and principles by which they apply the four basic concepts with a view to achieving that objective. However, we are uncertain whether it is the concepts themselves, or the traditional methods of applying them, which appear to require pension costs to be disaggregated, treated individually and reallocated in the way suggested. ED39 does not seem to require it and we are not persuaded that it does in fact achieve the objective of presenting a true and fair view. However, we have arranged to discuss these fundamental concepts further with Mr Ward.

Throughout this written reply we have resisted being drawn into commenting on the various references made to flights to France, Cruise Missiles and the Flying Dutchman. We can resist no longer, although we should perhaps have contented ourselves with the observation that the imperfections of such analogies are as much a danger to those who respond as to those who draw such analogies in the first place. In our view, a more suitable analogue might be an orbiting spacecraft, in a stable orbit which must be high enough for it to remain in orbit and to allow safe re-entry whenever necessary, but no higher than necessary having regard to the cost of getting into orbit in the first place – although immediately we can see imperfections in this too.