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**A RE-APPRAISAL OF THE REVALUED  
CAREER AVERAGE BENEFIT DESIGN FOR  
OCCUPATIONAL PENSION SCHEMES**

by

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**A Re-appraisal of the Revalued Career Average Benefit Design  
for Occupational Pension Schemes**

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**Abstract**

The criticisms of the final salary benefit design most commonly employed in occupational pension schemes in the UK are considered. In particular, equity between members, escalating benefit and administration costs and portability are discussed. Taking the view that money purchase pension schemes do not provide sufficient security for many employees, an alternative defined benefit structure is proposed, that is, the revalued career average pension scheme. It is argued that this benefit structure can address many of the problems associated with final salary schemes and provides pension scheme members with the security they value.

**Keywords:** Occupational pension scheme, defined benefit, final salary, revalued career average, money purchase, pension year.

## 1 Introduction

Occupational pension schemes provide significant benefits both to their members and to society. Poverty in old age is most severe amongst elderly pensioners and single female pensioners, who are the most likely to be without access to occupational pension schemes (Johnson and Stears, 1995). However, occupational pension schemes are vulnerable to criticism and the numbers of people they cover is not increasing (GAD, 1991).

Most occupational pension schemes in the UK have final salary benefit designs (GAD, 1991), but there appears to be a trend away from final salary to money purchase pension schemes (CBI, 1994). There are several reasons for this:

- the increased administration associated with defined benefit pension schemes because of pensions legislation enacted over the past twenty years;
- the open ended nature of the cost of financing final salary benefits;
- the perceived dissatisfaction with final salary pension schemes amongst employees, because of poor portability and cross subsidy, for example.

The alternative to final salary pension provision that seems most popular is money purchase provision. Money purchase occupational pension schemes are likely to be cheaper to administrate than final salary pension schemes. They are also believed to be more equitable than final salary pension schemes because cross subsidies inherent in the design of some final salary benefits are removed in money purchase pension schemes (Disney, 1995). Leaving aside the problem of whether money purchase pension schemes are indeed free of cross subsidy, the benefits they provide depend on variables such as market knowledge (where choice is available between different managed funds, for example), the chosen provider (because of different ways of deducting expenses, for example) and investment performance. Because of the large number of providers and the uncertainty attached to the investment performance of various providers, a further variable on which money purchase pensions depend is luck. However, pension provision should not be a lottery.

The aim then, is to find a benefit design which controls the costs of pension provision, which is demonstrably equitable between different members and which removes some of the uncertainty of money purchase provision. A further consideration is that the scheme should be relatively straightforward in order to limit administrative pressures and so that it is easily understood by employees.

There have been many suggestions about possible pension schemes (for example, Khorasane 1995, Disney, 1995). Most are money purchase (that is, still include element of chance) and often their design is complicated. However, it is not necessary to devise new and complicated benefit designs: there is a simple one already available.

Removing uncertainty requires either a money purchase scheme where investment performance and annuity rates are guaranteed, or a defined benefit scheme. The scheme proposed here can be established in either way. However, it will be most familiar in the latter

form<sup>1</sup> and since part of the argument in this paper is in defence of defined benefit pension schemes that is the form that is expounded here.

## 2 Equity

We shall begin by considering what can be considered 'equitable'. The link between service and pension is well established: in a money purchase scheme a level of contribution is paid for each year of service; in final salary pension schemes the pension paid depends on the number of years of service. In some sense, then, the pension is linked to the amount of work done. However, both pension schemes value each year inconsistently (both from year to year as well as between different members). The value given by money purchase pension schemes, for example, depends on the amount of each contribution, the dates at which contributions are paid, the date of retirement, the underlying assets and their investment performance in the intervening years; final salary pension schemes weight the valuation to salary close to retirement, which may under or over value a year of employment, depending on an individual's earnings history. The difficulty with both benefit designs is that the link between pension and salary paid in a year of service is broken. The money purchase scheme offers equity at the point when each contribution is paid; final salary pension schemes offer equity at retirement.

Equity between members of a pension scheme can be achieved if the real value of each year's pension accrual is maintained. The proposal is that any two members of a pension scheme should receive the same pension for a year of work, if they performed equivalent jobs in that year, regardless of their future career history.

Instead of using each year of service as the underlying measure of an employee's rate of pension accrual we consider the value of the year of service, which we term the *pension year*. Pension year provides a way of measuring the 'exposure' of the pension scheme to the 'risk' of paying pension. Exposed to risk is a common idea in insurance and cross subsidies occur when the exposed to risk of individuals varies, although they all make equivalent contributions to the scheme. Pension year can be measured as the year's salary, but the difficulty with a money measure is that it loses its value due to inflation (of various sorts). Thus, to maintain comparison between the value of a year of service when an employee is working and its value when the employee retires, we must multiply each year's salary by a factor which maintains its real value, for example, the rate at which average earnings increase. At retirement the total value of the employees service to the company can be added, and a fraction paid as pension.

This is, of course, a revalued career average pension scheme, where the pension paid is calculated as the accrual rate multiplied by the average revalued salary earned throughout employment (as a member of the scheme), the actual salary earned each year having been

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<sup>1</sup> In fact any defined benefit structure can be mirrored by a money purchase benefit structure, provided the rate of contribution and calculation of investment return to be credited to individuals' accounts is specified (rather than depending solely on the actual performance of the underlying assets). The significant difference is that the employee is presented with an account balance, whereas in a defined benefit arrangement the employee has a view of expected income in retirement.

updated in line with some prescribed index. An appropriate index would be the rate of increase in average earnings for the occupations included in the pension scheme (see Section 6). The retirement pension is thus the sum of a fraction of the salary earned in each year of employment, where the salary has kept its value in real terms. For example, if an employee earns £  $S_N$  in one year, as a member of a revalued career average scheme with an accrual rate of  $1/K^{\text{th}}$ , their pension at retirement, in respect of that year of service, will be

$$\frac{1}{K} S_F$$

where £  $S_F$  is the annual rate of pay for the equivalent job when the member reaches retirement.

Revalued career average pension schemes are not new. The State Earnings Related Pension Scheme in the UK is a complicated example of such a scheme.

### 3 Cost

Employers want to provide pensions for their employees at a reasonable (whatever that means) and stable cost.

For an employer, a significant advantage of money purchase pension schemes is that, once a contribution is paid, the employer's liability is extinguished (disregarding the cost of maintaining the scheme). With a final salary pension scheme the cost depends on salary at retirement which, for some individuals, can be much larger than the salary earned in earlier years and in any case is difficult to predict. Hence final salary pension schemes are described as having an 'open ended' liability. In addition, because defined benefit pension schemes give their members significant expectations, there are certain costs imposed by regulators to ensure that the pension schemes can meet these expectations that do not apply to money purchase pension schemes. Since most new occupational pension schemes being established are money purchase (NAPF, 1996), it is probably fair to say that many employers view the costs of final salary pension schemes as a disincentive to establishing defined benefit occupational pension schemes. In addition, since the contribution paid to most new money purchase pension schemes is less than that paid to final salary pension schemes (NAPF, 1996), there is evidence that employers are seeking ways to reduce the cost of pension provision.

On the other hand, employees find defined benefit pension schemes attractive (Gough, 1997). A benefit design is needed that appeals to employees at the same time as providing a means for employers to avoid escalating pension costs.

Employees whose salary increases due to promotion or other advancement, will receive a lower pension from a revalued career average pension scheme than from the equivalent final salary scheme. However, the cost to the employee of making up the difference is not great, if spread over the working lifetime (Cooper, 1998), and could be viewed as a cost of promotion. That is, since the promotion offers the possibility of a better job and a higher income, the employee might be prepared to accept certain extra costs. Employees appear to value security

when making provision for retirement<sup>1</sup>, so it is reasonable to assume that a defined benefit scheme, even if the pension is not directly related to final salary, would be preferable to a money purchase scheme.

The cost to the employer is reduced because of the lower pension paid. It is also more predictable since, whilst individuals' salaries can change dramatically due to promotion and job changes, the rate for particular jobs is far less variable. Indices are available which illustrate the long term trends of pay in certain industries and for some occupations (for example, ONS, 1997). In particular, a pay rise granted for reasons other than salary inflation will have no effect on the past service liabilities of the scheme, only resulting in an increased future service liability.

#### **4 Portability**

For a defined benefit pension scheme to maintain equity between those who remain members ('stayers') and those who withdraw before retirement ('leavers'), the rate of revaluation applied to deferred benefits must be identical to that applied to the past service benefits of the stayers. If it were less, then withdrawal could give rise to surplus in the scheme, which would either revert to the employer or be used to enhance the benefits of those who remain active in the scheme. In either case there would be a cross subsidy from the leaver to the stayer. In addition, for a revalued career average pension scheme, where revaluation is in line with average growth in salaries, any other rate of revaluation would not preserve the value of the pension year.

When employees leave an occupational pension scheme they have certain choices<sup>2</sup>. They can leave their deferred benefit in their previous pension scheme, they can transfer the cash equivalent of their deferred benefit to their new occupational pension scheme or they can transfer the cash equivalent to a personal pension plan.

It is important to ensure that those employees who choose to take a transfer value to a new pension scheme are treated equitably with those who choose to leave their deferred benefit. If the new employer is in the same industry it is likely that the rate of revaluation appropriate to the new scheme is the same (or similar) to the old, in which case a direct transfer of the accrued benefit should be possible. If the transfer is to a pension scheme with a different rate of revaluation then maintaining transparent equity becomes a problem. It would not be practical for the receiving scheme to operate different rates of revaluation for the various deferred benefits transferred in. There are at least two possibilities:

- i) an equivalent deferred pension can be calculated which would be revalued at the same rate of revaluation as other accrued pensions in the receiving scheme: if the rate of revaluation in the receiving scheme is higher than that applied in the transferring scheme the equivalent deferred pension will be lower than that available from the transferring scheme, and vice versa;

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<sup>1</sup> For example, only a minority of personal pension plans purchased from insurance companies have had equity based unit linked policies (ABI, 1996).

<sup>2</sup> That is, assuming the employee is entitled to a deferred benefit.

- ii) alternatively, a preserved pension could be calculated equal to the deferred pension accrued in the transferring scheme, together with the revaluation between withdrawal and retirement allowed for in the transfer basis.

In theory, if the assumptions are borne out by experience, the pension paid in either case should be the same<sup>1</sup>.

In practise it is unlikely that assumptions are borne out. However, if the assumptions are realistic and based on the actuary's best estimate of future experience, it should not be costly to incorporate the preserved pension in (ii) above as an underlying guarantee.

There are advantages to taking transfer values. For example, in retirement, those employees who take transfer values to their new occupational pension scheme will receive all their pension payments from one source only; the employer in the transferring scheme does not have the extra administration of paying small amounts of pension to ex-employees. Thus it is reasonable to facilitate transfers to occupational pension schemes.

Employees might wish to transfer their pension to an insurance arrangement. This could be the case, for example, if they feel there is some advantage to them in choosing an insurer over an available occupational scheme. Because of the perceived advantage, there should be no need for additional regulation regarding the benefit to be offered by the insurer. If they move to an employer without an occupational pension scheme, or if they do not have employment, then they should be able to leave a deferred pension with their previous employer. (This assumes that employees have neutral feelings towards the pension scheme to which their employer subscribes, which might not always be the case.)

In fact, if employers throughout an industry chose to have revalued career average pension schemes, with revaluation in line with average salary increases over the industry, the effect would be similar to an industry wide scheme, such as operates in the public sector. That is, members can move freely between employers without worrying about losing pension entitlement, leading to a more flexible and adaptable employee group. At the same time, employers have the freedom to choose their own pension provider and administrator.

## **5 Administration**

The administrative costs of a final salary scheme are incurred not so much in recording information to allow benefits to be calculated, most of which is required for salary purposes in any case, but in complying with the various regulations imposed by legislation. This is particularly the case with pension schemes contracted out of the State Earnings Related Pension Scheme (SERPS). Major requirements include:

- a triennial valuation, which must comply with the 1978 Pensions Act; the need to demonstrate that the pension scheme satisfies the minimum funding regulations (the 1995 Pension Act) and maximum surplus regulations (1986 Finance Act); a requirement to account for pension costs in accordance with consistent accounting conventions (SSAP 24);

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<sup>1</sup> This argument assumes that the transferring and receiving pension schemes have the same conditions of payment for the pension received on retirement.

- annual trustees report and individual statement (Occupational pension scheme (Disclosure of Information) Regulations 1986 and the 1995 Pensions Act);
- a requirement to offer members of occupational pension schemes access to Additional Voluntary Contribution (AVC) schemes (1987 Finance Act).

The purpose of the legislation is to enable employers to fund and account for benefits in an acceptable manner; to ensure pension schemes are able to meet their liabilities; and to give employees confidence in their employer's, and the pension scheme Trustees', ability to maintain the scheme. Many of these obligations have been imposed because of the defined benefit nature of the scheme and so would also be required (and desirable) in a revalued career average pension scheme.

Some larger employers with directly invested final salary pension schemes are also prepared to incur additional, immediate, costs with the expectation of making savings over the longer term, such as

- asset liability studies;
- regular 'beauty parades' of investment managers.

These options would also be available to revalued career average pension schemes and the possibility of making savings using statistical models of pension schemes is much discussed in actuarial literature (for example, Haberman, 1990, and Clark, 1992).

In a money purchase scheme, because of the nature of the underlying investments (that is they are either unitised or part of an insurer's with profit fund) and because they engender no expectations in the members, there are fewer obligations on the part of the employer. However, there is some administration required in recording the progress of each individual member's fund.

## **6 Revaluation**

The major difference between the benefit structures of final salary and revalued career average pension schemes is the need to select a rate of revaluation. In fact, since in the UK final salary pension schemes must revalue deferred pensions in line with limited price increases<sup>1</sup>, it is the rate, rather than the fact, of revaluation that is different.

There are various possible alternative rates that can be used for revaluation. For example, increases could be made in line with prices or in line with a measure of growth in the economy. However, historic data shows that rates of pay have changed at different rates to prices: in fact, in the UK average salaries have tended to increase faster than prices. Thus, the former would lose the connection to, and value of, the pension year. It would also result in a standard of living for pensioners of less than they could have expected from their pay had it not been deferred. On the other hand, the experience of most of this century in the UK suggests that the revaluation in line with growth in the economy should at least maintain the 'real' value of the pension year (that is, the value of the pension year in constant earnings terms). However, the link between increases in average rates of pay and economic growth is not direct. It gives less control to employers and, in particular, could pose problems for

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<sup>1</sup> Deferred pensions in the UK must be revalued between withdrawal and retirement at the rate of increase in the Retail Prices Index over the period, or 5% per annum compounded over the period, whichever is the less.

industries out of line with the average economy (in particular those which are declining). The proposed scheme is intended to increase employers' control over costs, so this would be an unhelpful choice.

Thus, in order to be consistent with the definition of pension year, it is proposed that the rate of revaluation should be an appropriate rate of salary inflation.

The major problem will be in selecting the 'appropriate' rate, given the membership of the scheme, but once this is done there is no additional difficulty compared with a final salary scheme. One possibility would be to use the actual rate of salary increases experienced by the employer. However, government statisticians produce rates of increase of salaries in a large variety of industries and occupations (ONS, 1997 and earlier dates) and there are several good reasons for choosing an average industry or occupational salary inflation as the rate of revaluation.

- It will assist job mobility within an industry: the revalued career average benefit design discussed removes the cross subsidy between stayers and leavers, and if the rate of revaluation applied to accrued benefits is consistent within an industry, the frictional cost of changing employment will be reduced.
- It maintains the value of the pension year just as well a single employer rate, and might be more attractive to employees since it is a more objective measure.
- It is likely to be more representative than individual employer rates, since salary rates within individual companies can be affected by poor management, or other isolated factors, which should not devalue (or inflate) the value of the pension year.
- The data is freely available and well substantiated.

There might be some objections to revaluing accrued benefits in line with industry rises in salaries. Some are considered below.

- The average salaries paid throughout an industry are not under the direct control of an individual employer. However, employers within an industry are likely to provide broadly similar rates of pay and conditions for similar occupations so that any deviation from the average should not be significant.
- A published rate might not be available for some industries. However, in the UK rates of salary increase are tabulated both for specific occupations and for more general categories of employment, so that an adequate proxy should be available.
- Rates of salary increases are likely to be cyclical, which would introduce cross subsidies between members depending on the point in the cycle when they retired. However, the New Earnings Survey produced by the ONS (for example, ONS, 1997) adjusts the data to remove the effect of seasonal variations. More significant cycles, such as the business cycle which economists have identified developed economies as experiencing, can be approximately adjusted for by using running averages of rates of salary increase. In any case, so-called business cycles tend to have greater impact on numbers in employment rather than the level of real wages.
- No single rate of salary increase is likely to be appropriate for all categories of employee. However, because of the wide variety of categories for which the ONS publish indices, in most pension schemes it should be possible to find some appropriate compromise. Where this is not possible, perhaps because the occupations covered are likely to experience significantly different rates of salary increase, pension schemes can operate separate categories of membership. In fact this is a commonly

accepted practice in pension provision, where different pension schemes are frequently provided for 'works' and 'executive' employees (GAD, 1991).

- The published indices are subject to time delays. In fact the ONS survey is usually published less than 6 months after it collects data. For members retiring in the period between each publication, rates of revaluation can be extrapolated from past years' data.
- The basis on which the published indices are calculated might change. This could pose a problem as the rates of revaluation used could become inconsistent. However, if government data series are widely used they are unlikely to be changed without consultation so that the problem of inconsistency should be avoidable.
- Categories of job might be dropped from the survey. For example, certain occupations in 'sunset' industries might become redundant. Under these conditions it would usually have been necessary to review the finances of the pension scheme during which process alternative rates of revaluation can be considered.
- Potentially the most awkward problem might be the definition of 'industry'. In a static environment industries can be easy to define. However, changes in technology and in modes of business management lead to changes in the type of work carried out within firms so that employees might change 'industry' without even changing jobs.

The financial significance of these problems (that is, their effect on the pension paid as well as on the cost of the pension scheme) is unlikely to be significant, although it is obviously important that they are addressed to the satisfaction of employer and employee.

## **7 Treatment of Surplus**

In money purchase pension schemes each member has their own fund and all the investment return earned by the fund (net of the expenses of the insurer and administrator) accrues to the individual member. Thus, the difficulty of treatment of surplus does not arise: this is perceived to be an advantage of such pension schemes. In defined benefit pension schemes the contribution paid is invested in what is effectively a pooled fund and used to provide benefits: what is excess to requirements (as calculated by an actuary) is 'surplus'. There is also the possibility of a deficit, when the fund is inadequate to purchase the expected benefits, and this possibility should not be ignored.

In theory, over the long term, neither surplus nor deficit should arise in a defined benefit pension scheme if the contribution is calculated using an actuary's best estimate of future experience. However, in reality, because of the uncertainty of the future experience of the items comprising an actuarial basis no 'best estimate' will be completely accurate and so pension scheme valuations are performed regularly to ensure the adequacy of the scheme's assets. If there is a surplus the employer often adjusts contributions downwards; if a deficit, the employer's contributions are adjusted upwards. In addition, it is possible that, because of the nature of a pension scheme's liabilities, there could be some margins within the basis. Then, over the long term, surplus can be expected to arise (if no margins are included and the 'best estimate' basis proved, in retrospect, to have been optimistic, deficit would arise, damaging the ability of the pension scheme to pay benefits and reducing members' security). There is, thus, the problem of how to allocate surplus.

The actual arguments used in allocating surplus between the employer and the member are many and varied, and cannot be addressed in any detail here. However, one argument is that the surplus belongs to the members, since the contributions represent 'deferred pay' (that is, money that would otherwise have been paid to the employee). The subject is raised here because, in a revalued career average pension scheme, the link between salary earned in a year and pension paid is formalised so that, in a sense, the pension genuinely does represent deferred pay. The question then is, whether the contribution also represents deferred pay. The argument that follows is not specific to revalued career average pension schemes.

To a certain extent a contribution to a defined benefit pension scheme, whether paid by the employer, the employee, or both, must represent deferred pay, because of the nature of the benefit it provides. However, part of the contribution is purely insurance. That is, it is intended to provide a contingency margin in case some item of experience, for example, investment performance, is such that the fund develops a deficit. It is commonly accepted that if an insurance premium is paid, and the insured event does not arise, the premium is not refundable. In a defined benefit pension scheme, where the employer meets the balance of the cost (and so has to redress the balance of the fund in the event of a deficit), the employer is, in effect, the insurer and thus could be entitled to lay claim to any benefit accruing from the 'insurance' element of the contribution.

Statement of Standard Accounting Practice (SSAP) 24 sets out a method of accounting for pension costs which acts similarly to an experience related, profit sharing, insurance policy. If there has been 'poor' experience in the past (the fund has accumulated a deficit) an extra contribution is paid; if there has been 'good' experience (the fund has accumulated a surplus), a smaller contribution is paid. The normal cost (defined in SSAP 24 to be that needed to cover the benefits accruing) can be considered the deferred pay; the adjustment the cost of insurance.

The problem of surplus becomes most contentious when a pension scheme is closed, or if the company employing a group of employees within a scheme is sold. Then surplus or deficit must be crystallised and apportioned between groups of members and employers. However, in a revalued career average pension scheme there should be fewer grounds for dispute, since all members have equivalent expectations of the scheme, regardless of whether they intended to remain with the employer until retirement, or to leave service before then. Thus, although ideally the liability for pension scheme benefits should be crystallised as pension amounts rather than as lump sums, it should be possible to calculate each member's entitlement as a 'cash equivalent'. This is the requirement in defined benefit pension schemes (SSA 1985 and GN11 and GN16), but because there is cross subsidy between categories of members, it is difficult to ensure that all members are treated equitably.

The 'insurance' element of the contribution can be identified retrospectively through an analysis of surplus (an actuarial calculation that estimates the cost of experience having been different from the assumptions used in the calculation necessary for the management of the pension scheme). This would identify the discrepancies between assumption and experience which have given rise to the surplus (or deficit).

## 8 Conclusion

The provision of income in retirement should not be a lottery. It should not depend significantly on such variables as market knowledge, chosen provider, investment performance or luck, that is, those variables that determine the value of a pension provided through a money purchase scheme. In particular, an occupational pension should represent, in some sense, the value of the work done. If this idea is accepted then it is necessary to consider how to measure the 'value of work done'.

Usually, the pension formula of defined benefit occupational pension schemes is 'final salary'. That is, the retirement pension paid depends on the length of employment as a member of the pension scheme and the salary received in a period preceding retirement (the 'final salary'). Length of employment is, of course, directly related to the amount of work done and, for employees who work in one occupation at the same rate of pay throughout their working lifetimes, final salary would be proportional to the value of the work done. However, for employees who change jobs or get promotions, final salary loses the direct relationship to work done. Final salary pension schemes reward those whose salary progresses faster than the average at a rate that will be higher, proportionately, than the value of the work done. This is the root of the criticism levelled against final salary pension schemes that they reward 'high fliers' at the expense of the average employee (for example, Kaye in Benjamin et al, 1987).

This paper takes the premise that, for most classes of employee, a defined benefit pension scheme is preferable to a money purchase scheme. It then aims to show that a benefit design already exists that satisfies the objectives of the paper, but which does not seem to be a common choice for occupational pension schemes. In the past it was rejected in favour of final salary pension schemes, since these gave employees pensions linked to income prior to retirement, which for many groups of employees is a clear advantage. However, for several reasons, final salary pension schemes are now being replaced with money purchase pension schemes. The revalued career average pension scheme answers some of the criticisms made of final salary pension schemes and retains the advantage of being defined benefit. Its simple structure means that it is both easy to understand and to demonstrate that it is equitable, which should be attractive to employees. It links benefits directly to the value of work done in a year of service, and so employers should find it less expensive than a final salary scheme.

State pension provision in the UK is, in many cases, inadequate for most peoples needs. One additional source of pension for those in paid employment is an occupational pension. Given that governments are unlikely, in the present climate, to increase state pension provision, some alternative needs to be found. More than 50% of those in paid employment do not have access to occupational pension schemes (GAD, 1991) and many would find it expensive and insecure to rely on private money purchase provision (Davies and Ward, 1992). Consequently employers need to be convinced that pension provision is a desirable employee benefit. This paper argues that employers can provide defined benefit pension schemes which are equitable and meet their participants' (that is, the employer and the employees) requirements through a revalued career average structure.

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