

# Should Defined Benefit Pension Schemes be Career Average or Final Salary?

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## ABSTRACT

There is widespread dissatisfaction amongst employers with defined benefit pension schemes, and many are switching to defined contribution schemes. Career average is a form of defined benefit scheme that has a number of important advantages over final salary schemes. The comparison of career average and final salary schemes is a neglected area, and this paper offers one of the first in-depth analyses of this topic. It considers the advantages and disadvantages of a cost neutral switch to a career average revalued earnings (CARE) scheme.

Keywords: Career Average Revalued Earnings (CARE) Pension Schemes, Final Salary Pension Schemes, Defined Benefit Pension Schemes

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## **Should Defined Benefit Pension Schemes be Career Average or Final Salary?**

### **Introduction**

There is widespread dissatisfaction amongst employers with defined benefit pension schemes, and many are switching to defined contribution schemes. In 1997 34% of workers were in a defined benefit scheme, but by 2005 this had fallen to just 19% (PPF and TPR, 2006). However, a form of defined benefit scheme exists with a number of important advantages over final salary schemes. This offers an attractive alternative to switching away from defined benefit. Interest in switching to a career average scheme has recently increased, as they offer a viable alternative to final salary schemes, while maintaining the defined benefit structure. This paper sets out the advantages and disadvantages of a cost neutral switch from a final salary to a career average revalued earnings (CARE) scheme.

If markets are complete, pension scheme design is irrelevant (McCarthy, 2005). In such a world, whatever the type of pension scheme, employers and scheme members can always rearrange their portfolio of assets and liabilities and the division of compensation between wages and pension to give them the same desired outcome. Therefore markets can be used to reconfigure any initial allocation into the desired allocation, and the design of the pension scheme is irrelevant. However, the real world does not offer complete markets because there are transaction costs, constraints, missing markets, moral hazard, etc.; and so pension scheme design, such as the choice between career average and final salary schemes, does matter. An important aspect of the design of a pension scheme is the way the various inherent risks are shared between the employer and members, and career average schemes share salary risk in a different way to final salary schemes. They also distribute pension scheme benefits between members differently from final salary schemes.

Section 1 summarizes the design of career average schemes, while section 2 investigates some possible meanings of the term “cost neutral” in the context of switching to a career average scheme. Section 3 sets out the alternative choices that are available when selecting the revaluation rate, and section 4 provides evidence on the recent adoption of career average schemes. Sections 5 and 6 summarize the advantages and disadvantages for both employers and members of career average schemes, relative to final salary schemes. Section 7 analyses the redistributive effects of a cost neutral move to a career average scheme, along with a numerical example; and the conclusions appear in section 8.

### **1. Career Average Defined Benefit Schemes**

A career average scheme is still a defined benefit scheme, but with an important difference in how the pension is calculated. In a final salary 80<sup>th</sup> scheme each accrued year earns an additional pension of the final salary, divided by 80. This can be re-expressed as the salary for that year

updated to retirement using that person's actual rate of salary increase (including promotional increases), divided by 80. For a career average revalued earnings 80<sup>th</sup> scheme each accrued year earns an additional pension of the salary for that year updated to retirement using a specified revaluation rate, divided by 80.

The usual revaluation rate used in career average schemes is the retail price index (RPI), although some alternatives will be considered in section 3. The same rate is often applied to the accrued benefits of both active and deferred members. Actuaries argue that salaries generally increase faster than RPI, and so *ceteris paribus*, a career average scheme revalued using RPI, gives lower pensions than a final salary scheme. This lower cost of a career average scheme can be offset by increasing the benefits, e.g. moving from an 80<sup>th</sup> scheme to say a 60<sup>th</sup> scheme, so that total expected cost is unaltered, i.e. the switch is cost neutral. Blome, Fachinger, Franzen, Scheuenstuhl and Yermo (2007) found that using FRS 17 (or IAS 19), a switch from final salary to career average (both with price indexation) but with no change in the accrual rate leads to a reduction of over 40% in pension liabilities<sup>1</sup>. Therefore whether or not a switch to career average is cost neutral can have major implications for the benefits.

## 2. Cost Neutrality

A number of recent proposals to switch from final salary to career average have been "cost neutral". However, cost neutrality is ambiguous as it could mean cost neutral to: (a) the scheme, (b) the employer, or (c) the scheme members. In each case the time period covered in the calculation of the change in costs is generally the long term. All other aspects of the scheme are assumed to be unchanged. In order that the proposal to switch to a career average scheme can be properly evaluated, it is important to have a clear definition of what is meant by cost neutrality.

(a) *Scheme*. Cost neutrality to the scheme is probably the most obvious definition, and covers benefit payments by the scheme. This is the cost number that the actuary is likely to compute.

(b) *Employer*. Cost neutrality to the employer covers employer contributions, and any changes in wages to offset alterations in pension benefits. It also includes the value of any non-pecuniary effects that stem from the switch, such as changes in staff turnover, early and late retirement patterns, the productivity of workers recruited and retained, and the risks of scheme funding (see section 6A). If the government is also the employer, cost neutrality can include the additional tax effects of the switch, as well as any effects on state pensions and benefits. For example, a career average scheme leads to a reduction in the pensions received by high flyers, and a matching increase

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<sup>1</sup> They assumed five categories of active member; with 1% earning €200,000, 4% earning €100,000, 15% earning €80,000, 20% earning €60,000 and 60% earning €40,000; and that members' salaries increased each year due to three factors - salary rates (1.7%), promotions (2.5%) and last year's inflation.

in the pensions of low flyers (see section 7). Due to the progressive nature of the tax system, this results in a decrease in the tax revenue received when these pensions are paid<sup>2</sup>.

(c) *Members*. Cost neutrality to the members covers their contributions to the scheme, and any changes in wage rates to offset alternations in pensions, as well as the value of non-pecuniary items, such as the removal of the pension capital loss (see section 5A) on becoming a deferred pensioner, and the ability to accrue pension on fluctuating emoluments (see section 5B).

Once cost neutrality has been defined, its computation depends crucially on a number of forecasts. These include the extent to which salary rises will exceed the chosen revaluation rate, the effect of removing the pension capital loss, the influence of the switch on wage rises which are now less costly, and the consequences of changing pensions on the wage-pension trade-off (see section 6A). Therefore the extent to which a switch is cost neutral is always a matter for legitimate debate. For the remainder of this paper cost neutrality refers to the scheme.

### 3. Choosing the Revaluation Rate

A key decision for any career average scheme is the choice of revaluation rate used to uprate accrued benefits. Viewing pensions as deferred wages<sup>3</sup>; the revaluation (or dynamization) rate can be set to meet various definitions of maintaining the value of the wages whose payment has been deferred.

- 1 *RPI*. The most popular revaluation rate is RPI, which maintains the purchasing power of the deferred wages.
- 2 *LPI*. In the UK there is a legal obligation to revalue deferred benefits by at least limited price inflation (LPI), and this can also be applied to revaluing the benefits of active members.
- 3 *NAE*. Another possibility is to maintain the rate for the job, i.e. if the work had been performed today, what would be the wage rate (Cooper, 1998). Such revaluation of deferred wages is often proxied by the increase in national average earnings (NAE). Alternatively,

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<sup>2</sup> The national insurance and income tax effects are considered further in section 7A.

<sup>3</sup> About two thirds of contributions to defined benefit pension schemes are usually paid by the employer, and the present analysis of deferred wages is directly relevant to employer contributions. Member contributions, forming about one third of total contributions, are paid out of the member's gross wages; and represent an investment in the pension scheme. The money's worth for one year's investment by members in career average pension schemes has been studied by Hári, Koijen and Nijman (2006). Money's worth is the expected present value of annuity payments per pound spent to purchase an annuity or pension. Hári, Koijen and Nijman (2006) show that young uneducated males have an incentive not to join career average pension schemes. A money's worth analysis of a final salary scheme would probably produce an even clearer case for not joining. The money's worth of member contributions is not covered in the present paper.

wages could be revalued using the average rate of wage increases for the employer concerned. Provided the member is not promoted, such revalued wages may end up close to the members's final salary.

- 4 *Final Salary.* Wages may be revalued at the member's actual wage rate, i.e. a final salary (*FS*) scheme. In some final salary schemes the salary used in the benefit calculation is not the final year, but the (revalued) average over the final 5 or 10 years. Such a modification moves a final salary scheme towards a career average scheme.
- 5 *Riskless Rate.* A fifth possibility is to view deferred wages as a risk free loan by the member to the company, and so wages are revalued using the riskless rate of interest (*r*).
- 6 *Investment Return.* Since the deferred wages have been invested by the pension scheme, wages can be revalued by the rate of return achieved by the fund on its assets (*R*). In this case the scheme becomes essentially a defined contribution scheme, with the investment risk passed to the members (Disney, 1995, Thornton, 1986).
- 7 *Zero.* Finally, the revaluation rate may be zero, i.e. no revaluation, and only the nominal value of the deferred wages is preserved.

The likely ordering of these alternative revaluation rates over the long run is  $R > FS > r > NAE > RPI > LPI > 0$ . Farr (2007) has proposed a new type of career average scheme where the revaluation rate is conditional on the funding status of the scheme, thereby sharing the revaluation risk with the members. A similar approach is taken by Dutch pension schemes.

The choice of revaluation rate depends on a range of factors, which include:-

- the expected size of the revaluation rates.
- the year to year volatility of the revaluation rates.
- the ease of making accurate long term forecasts of the revaluation rates.
- the availability of financial instruments to hedge revaluation rate risk.
- the extent to which the employer has control of the revaluation rates.

These factors are discussed below in sections 5, 6 and 7 below.

#### **4. The Adoption of Career Average Pension Schemes**

In 1963 29% of the members of UK occupational pension schemes were in career average schemes (Wesbroom and Reay, 2005). However, as inflation increased, career average schemes declined in popularity because the absence of revaluation rendered the resulting benefits inadequate (Thornton, 1986). By 1987 less than 1% of members of UK occupational schemes were in career average schemes; and this remained the case until 2000. The introduction of career average revalued earnings (CARE) schemes overcame this shortcoming, and in recent years there has been an increasing interest in career average schemes. UK companies switching their final salary schemes

to career average, or offering a career average scheme along side another type of scheme include British Airways, the British Broadcasting Corporation, Clydesdale Bank, the Co-operative Group, E.ON, First Group, Morgan Crucible, Mothercare, the Nationwide Building Society, Royal and Sun Alliance, Sainsbury's, Scottish & Newcastle, Standard Life, Tesco, UBS, Unilever and the Yorkshire Bank.

In addition, the UK government has shown a strong interest in career average schemes. The State Second Pension (S2P) is a career average scheme, as were its predecessors, the State Earnings Related Pension Scheme (SERPS) (1975-2002), and the Graduated Retirement Benefit (1961-1975)<sup>4</sup>. In addition, local councillors, general practitioners and dentists have career average schemes. In 2005 and 2006 the UK government proposed that the pension schemes for staff in the National Health Service (NHS), Civil Service and local government should switch from final salary to career average.

*A. Civil Service.* In December 2004 the government issued proposals for reform of the Civil Service final salary scheme which included a cost neutral switch to career average (Cabinet Office, 2004). The reaction of the Civil Service trade unions to the career average proposal was mixed. Mark Serwotka, general secretary of the Public and Commercial Services (PCS) union with 330,000 mainly lower paid Civil Service members, said that a move to career average pensions would create "great uncertainty, suspicion and anxiety" (*The Financial Times*, 9<sup>th</sup> December 2004). However, 15 months later his views had mellowed, and he said that the "PCS does not have a policy of support for career average pension schemes. The jury is still out on the benefits of such schemes and the union is yet to be convinced about the need to move to a career averaging scheme. Talks are continuing between the Civil Service trade unions and the government with a deal of the detail yet to be worked through. Only then can a view be taken on the merits of career averaging over a final salary pension scheme" (*The Socialist Worker*, 11<sup>th</sup> March 2006).

Prospect, the trade union representing 60,000 scientists, engineers and other specialist Civil Service workers said that career average was an opportunity rather than a threat, and would be superior to the present arrangements (*The Financial Times*, 10<sup>th</sup> December 2004). The First Division Association (FDA), which represents top civil servants, opposed the introduction of a career average scheme and voted for strike action over this and the proposed increase in the retirement age (*The Financial Times*, 15<sup>th</sup> March 2005). In its consultation, 94% of FDA members were opposed to moving to a career average scheme (FDA, 2005).

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<sup>4</sup> The use of career average is common practice in the state earnings related pension schemes offered by many developed countries.

The collective response of the Civil Service unions (CCSU, 2005) did not reject the concept of a career average scheme, but criticised the way it had been presented in the consultation. The career average aspect of the proposal was not understood by many staff, and insufficient evidence was provided that it would be fairer for those working part time or taking career breaks. There was also scepticism about the employer's motives, since other employers have introduced career average schemes to cut costs. The outcome was that from 1<sup>st</sup> August 2007 entrants to the Civil Service were offered a new career average pension scheme in place of the existing final salary scheme.

*B. NHS.* In January 2005 the government consulted on a cost neutral switch of the NHS pension scheme for England and Wales, which has 1.26 million active members, to career average (NHS Employers, 2005). A move to career average was strongly opposed by the Royal College of Nursing (RCN, 2005), in part because the new NHS pay system, Agenda for Change, supported greater career progression for nurses, making a final salary scheme more attractive than a career average scheme (see section 7). The British Medical Association (BMA) saw the possible switch to a career average scheme for all doctors as one of the greatest threats in the proposals. James Johnson, chairman of the BMA, said that “over 95% of consultants and 93% of junior doctors in the BMA survey want to stick with their current final salary scheme” (BMA, 2006). Modelling by the BMA showed that full-time consultants with an NHS career from graduation to retirement age could have their pensions reduced by 25%. Amicus, which has 100,000 NHS members, came out against the career average scheme, mainly because they estimated that there would be many more losers than winners amongst their members (Amicus, 2005). Amicus also made the point that some of the benefits of a career average scheme can be obtained with a final salary scheme.

General Practitioners and dentists in the NHS have always had a career average scheme. This is because they are self employed, which allows them to manipulate their final salary; and because their earnings tend to peak in mid career (NHS Employers, 2005). In the BMA consultation, 75% of general practitioners and dentists wished to continue with their career average scheme (BMA, 2006). A summary of the consultation responses on retaining a career average scheme for general practitioners and dentists appears in tables 1 and 2 (NHS Employers, 2006a). These tables show a clear preference for the retention of the career average scheme. As a result of the consultation (which also included employers), the NHS decided to stick with a career average scheme for general practitioners and dentists, and to keep a final salary scheme for all other staff.

*C. Local Government.* In June 2006 the UK government proposed four options for the local government pension scheme for England and Wales, of which two were final salary, one was a switch to career average, and the fourth was a combination of career average and final salary (DCLG, 2006). The overwhelming response from members of Unison was for a final salary scheme. Unison (2006a) believed that, to compensate members for the risk that the revaluation rate may be

less than actual salary rises, a more generous accrual rate was required, along with changing the revaluation rate from RPI to NAE. Unison (2006b) reported that 84% of the employers also preferred a final salary scheme. So the final decision was in favour of one of the final salary schemes, and this comes into operation in April 2008.

	Individuals	NHS Organizations (Trusts, PCT)	Local Staff Groups	Others
For Career Average	6.0%	10.5%	5.0%	8.5%
For Final Salary	63.5%	46.5%	76.0%	50.0%
Do Not Know	30.5%	43.0%	19.0%	41.5%
Total Responses	5433	172	115	24

Table 1: Responses by General Practitioners and Dentists to the Choice Between Final Salary and Career Average Schemes

	Individuals	NHS Organizations (Trusts, PCT)	Local Staff Groups	Others
Agree	84%	98%	89%	100%
Disagree	16%	2%	11%	0%
Total Responses	678	47	18	4

Table 2: Responses Agreeing with the Retention of a Career Average Scheme for General Practitioners and Dentists

In these three government consultations, a number of common reasons were given by respondents for opposing a switch to a career average scheme:-

- Career average is an unfamiliar concept, and is more difficult to explain and understand than final salary.
- An unwillingness to move away from final salary, which is seen as the gold standard pension scheme design that is widely trusted.
- Doubts about the ability of pension administrators to cope with the new career average design.
- Fears that a career average scheme will cause problems with the public sector transfer club.
- A fear that, while the proposal is meant to be cost neutral, it is actually a cost reduction measure.
- Women, who have taken less demanding jobs when young to allow them to raise a family, did so expecting their final salary (and hence pension) to be unaffected. A shift to career average would thwart such plans.
- Staff who experience above average salary growth lose out from a switch to a career average scheme.

Career average schemes have recently increased in popularity in the Netherlands. The two largest Dutch pension schemes: ABP, whose members are 2.4 million civil servants and teachers; and PGGM, which has 1.9 million healthcare and social worker members; have recently switched to career average. By 2004 three quarters of the active members of Dutch pension schemes were in career average schemes (Wesbroom and Reay, 2005). Swinkels (2006) reports that the following Dutch companies offer career average schemes:- ABN Amro, Aegon, Ahold, AKZO Nobel, Hagemeyer, Heineken, KPN, Phillips, Reed Elsevier, TNT and Wolters Kluwer. In 2003 about 7% of the schemes run by large US companies were career average (Watson Wyatt, 2005).

## **5. Advantages of a Switch to a Career Average Scheme**

This section sets out the benefits of switching to a career average scheme. The advantages of a career average scheme, relative to a final salary scheme, are split into those which accrue chiefly to the employer, and those received by scheme members. This classification is somewhat arbitrary, as a benefit to the employer may be a disbenefit to the members. For the purposes of this comparison, final salary schemes are assumed to base the pension on salary for the last twelve months of employment, and to use a single contribution rate for all members; as do career average schemes.

### *A. Employer*

1. A career average scheme reduces the risks and costs to the employer of a large pay rise for all members. A large pay rise represents a double blow for an employer with a final salary scheme because it results in a large one-off increase in the past service liability, together with a smaller continuing increase in current salaries (and associated pension obligations). With a career average scheme a big pay rise does not lead to an uprating of past service liabilities, unless the employer's wage rates are used for revaluation.

For example, suppose an employer has a £10 million pension liability for the past service of active members, and an annual wage bill of £1 million. This employer now grants a wage rise of 10%, which is 7% above inflation. With a final salary scheme the cost in the first year to the employer is  $£11 \text{ m.} \times 0.10 = £1.1 \text{ million}$ , ignoring the extra pension cost of the higher wages in the current year<sup>5</sup>. Under a career average scheme with RPI revaluation, the extra cost to the employer is the increase in salary cost for the current year of £0.1 m. (and associated pension obligations), plus the revaluation of the past service liability using RPI of £0.3 m., giving a total additional cost of only £0.4 m. In general, for every extra 1% granted as a pay rise, the extra cost for a final salary scheme is  $(0.01 \times \text{Liabilities})$  higher than for a career average scheme. In this example, the marginal cost for

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<sup>5</sup> It is assumed that the large wage rise does not cause the actuary to revise his or her expectations of future rates of wage increase used when valuing the past service liabilities.

a final salary scheme of an extra 1% pay rise is £110,000, not the £10,000 for a career average scheme. Even if changes in the revaluation rate are just as volatile as changes in the firm's average wage, the effect of wage rises on the past service liability of a final salary scheme means that the resulting surplus or deficit for a career average scheme reported in the accounts will probably be more stable than for the corresponding final salary scheme. This may result in the contribution rate for a career average scheme also being more stable.

2. Because a wage rise does not cause an uprating of the past service liability, members with a career average scheme have less incentive to engage in industrial action for higher wages; and career average schemes provide less incentive for members to seek large pay rises close to retirement. Career average schemes also reduce the cost to the employer of awarding favoured individuals large pay rises close to retirement.

3. If RPI is used as the revaluation rate, a career average scheme replaces final salary risk with RPI risk. This makes it much easier for the employer to hedge this risk if desired, e.g. by holding index linked bonds. There are no suitable instruments for hedging final salary risk (Sutcliffe, 2005). If the riskless rate is used as the revaluation rate, fixed interest securities can hedge this risk. If the investment return is used to uprate past service, the investment portfolio of the pension fund will exactly hedge this risk.

4. If the same revaluation rate is used for deferred and active members in a career average scheme, staff turnover risk (i.e. the risk that an unknown proportion of the workers will cease to be active members of the scheme) is removed when valuing the liabilities of the scheme. This is because the cost to the scheme is the same whether the member stays or leaves. Removal of this risk allows the current deficit or surplus to be measured with greater accuracy, and one source of error disappears when forecasting future liabilities.

5. A final salary scheme using the projected unit method to value the liabilities requires forecasts of future salary increases, while a career average scheme using the projected unit method requires forecasts of the revaluation rate. It may be easier to forecast the chosen revaluation rate, making the valuation of the liabilities more reliable. For example, actuaries already make use of the market forecasts of the long term inflation rate implicit in the price of index linked gilts, and this can be used to forecast an RPI revaluation rate, while the riskless rate can be forecast using the yield curve for government bonds.

6. A career average scheme reduces the incentive in a final salary scheme for members to stay on to improve their pension (Cabinet Office, 2004). In a final salary scheme this incentive is provided by the potential for a substantial pay rise, which then revalues all previously accrued benefits.

7. The DCLG (2006) wanted the new local government scheme to be equality proof, and concluded that career average schemes are superior in this respect. They are fairer as between long and short service workers, and between high and low flyers (see section 7). The Cabinet Office (2004) also wanted a career average scheme for the Civil Service in order to provide an equality proof scheme.

8. Because they are more equitable as between members, career average schemes are preferable as the basis for multi-employer schemes (Thornton, 1986, Cooper, 2003). In a final salary multi-employer scheme differential employer behaviour creates cross-subsidies. For example, the pensions cost of large wage increases by one employer is spread across all employers. For a career average multi-employer scheme, large wage increases do not revalue past service, and so do not result in a cross-subsidy.

9. When scheme membership is voluntary, a final salary scheme is subject to adverse selection - potential high flyers join, while those who expect a flat age-earnings profile do not. Since career average schemes do not favour high flyers, this adverse selection is removed. Cocco and Lopes (2004) conducted an empirical investigation into the presence of such adverse selection. UK workers have a choice between three types of pension scheme (a) SERPS/S2P, which is career average, (b) personal pensions, which are defined contribution, and (c) final salary occupational schemes. They studied the pension scheme choices made by 46,000 workers in 1999-2001, after controlling for the lower transfer value of occupational pensions and the lack of tax relief on SERPS contributions. They found that workers with a job offering high earnings growth tended to choose a final salary scheme, while workers facing low earnings growth tended to choose the career average scheme. This evidence suggests that final salary pension schemes are subject to adverse selection, which can be avoided by a switch to career average.

10. The use of career average offers the flexibility to change the revaluation rate and the definition of pensionable pay from time to time, without creating the administrative problem of tranches of past service that are necessary with a final salary scheme (Thornton, 1986, Wesbroom and Reay, 2005). This flexibility in the revaluation rate offers the possibility that (for future service) a career average scheme can become a final salary scheme, or change to something similar to a defined contribution scheme.

11. Final salary schemes generate a pension capital loss when a member becomes a deferred pensioner (Ippolito, 1991) as the revaluation rate for past service drops from the member's actual pay rise to the RPI (or LPI). The presence of this pension capital loss depends on taking an "implicit contract" view of pensions, rather than a legal or spot interpretation (Ippolito, 1985). Under the implicit contract view, a pension is valued now using the forecast salary as at the normal retirement age (NRA), while the legal view uses the current salary. The empirical evidence clearly supports

the implicit contract view, e.g. Ippolito (1985). Some members of a final salary scheme will require compensation for accepting this penalty for prematurely quitting. Since a switch to a career average scheme with the same revaluation rate for active and deferred members removes this penalty, it could lead to a corresponding reduction in wages (Ippolito, 1997).

12. There is little difference in the administration costs of final salary and career average schemes, Cooper (1997). Only the total revalued salary to date, weighted by the appropriate accrual rate, need be recorded by a career average scheme.

### *B. Members*

1. By reducing the effect of pay rises on pension costs, a career average scheme makes it easier for trade unions to negotiate larger pay rises; although workers have less incentive to seek such rises.

2. Career average schemes make it easier for members to predict their pension. This is because their pension forecast depends on the salary-weighted average of the revaluation rates across their remaining years of service, and this may be easier to forecast than their own final salary, which is based on their aggregate wage increase across the years to retirement<sup>6</sup>. Based on a Monte Carlo simulation using data from the Labour Force Survey, McCarthy (2005) concluded that career average schemes are preferable to final salary schemes, which he attributes to the size of the career average pension being less risky.

3. A career average scheme is more attractive than a final salary scheme to workers who are risk averse because revaluation rate risk is usually less than final salary risk.

4. Career average schemes using RPI as the revaluation rate give a pension that is guaranteed in real terms, rather than being uprated by the final salary (and so subject to final salary risk).

5. A cost neutral switch to using career average makes joining a pension scheme more attractive to lower paid staff, particularly staff without good career prospects, and/or those with short service (see section 7). This should increase the uptake of pensions by disadvantaged groups.

6. Final salary schemes often exclude from pensionable earnings any fluctuating emoluments such as overtime, special payments, variable time employment etc because they are difficult to deal with in the benefit calculation. In addition, treating overtime etc as pensionable pay for final salary schemes opens up the possibility of members pushing up pay in their final year by working

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<sup>6</sup> Assume that the variance of the revaluation rates is the same as that of the salary increases, and that changes in the revaluation rate and salaries are both independent over time. Then pensions based on the career average will be less risky than those based on the final salary.

excessive overtime etc. Career average schemes can easily include fluctuating payments in the benefit calculation (Cabinet Office, 2004, Cooper, 1997, Thornton, 1986); while members deliberately increasing their final year's pay has much less effect in a career average scheme. Therefore career average schemes tend to include all earnings. Cooper (2003) pointed out that career average schemes are popular in the retail sector, which has many variable time workers.

7. The treatment of overtime etc as pensionable pay by career average schemes increases the pensions of workers who receive such payments, unless there is some offsetting change.

8. Career average schemes are beneficial for members whose peak earnings are in mid career, e.g. some manual workers (Thornton, 1986). Career average also allows members to step down to lower paid, less demanding, possibly part time jobs as they approach retirement (Cabinet Office, 2004) without suffering a substantial pension reduction.

9. Since the revaluation rate does not depend on the member remaining in employment, the same rate can be applied to deferred benefits, so ensuring equal treatment of active and deferred members. Such equal treatment removes the pension capital loss suffered by staff when they become deferred pensioners (Ippolito, 1991).

10. Because all past benefits in a final salary scheme are revalued by subsequent salary increases, the employer has an incentive to dismiss members, particularly long standing members, of a final salary scheme just before a large rise in salaries. Using data on US workers for 1966-81, Cornwell, Dorsey and Mehrzad (1991) found evidence supporting such opportunistic behaviour by employers. A career average scheme that uses the same rate for revaluing the benefits of deferred and active members does not create this incentive for the employer.

## **6. Disadvantages of a Switch to a Career Average Scheme**

The disadvantages of career average schemes, relative to final salary schemes, are now presented separately for the employer and the members. In points 3 to 6 below the changes in productivity, staff turnover, training and salaries are only relevant to the measurement of cost neutrality if it is defined with respect to the employer or members. In this paper, cost neutrality is taken to relate to just the scheme, making such costs and benefits irrelevant to quantifying cost neutrality. However, these effects still need to be taken into account in assessing the costs and benefits of a switch to career average.

### *A. Employer*

1. The employer has control over each member's final salary, and over the average rate of wage increase for their workforce. However, the employer does not control RPI, the riskless rate, NAE

or the rate of return on the fund's assets. Therefore, if any of these variables is chosen as the revaluation rate for a career average scheme, the employer has lost control of this aspect of pensions costs. However, since wages are usually set in the context of a competitive labour market; the employer may not have meaningful long run control of final salaries and average wage rates.

2. It is common practice to use the same revaluation rate for active members and deferred pensioners of a career average scheme. If RPI is used as the common revaluation rate the cost of deferred pensioners is unchanged, but other choices of revaluation rate increase or decrease this cost in the absence of any change in the accrual rate. For example the choice of NAE increases the cost of deferred pensions. If the switch to career average is cost neutral (irrespective of the common revaluation rate chosen), this implies a redistribution of pensions from active to deferred members because  $FS > RPI$ .

3. Lazear (1979, 1981) has argued that it may be in the interests of both the employer and the workers for there to be a penalty for workers who shirk or quit prematurely; with an incentive for workers to stay and work hard. Such an outcome increases staff productivity, which can then be shared between the workers and the company as higher wages and profits. Dorsey, Cornwell and MacPherson (1998) found that offering a defined benefit, rather than a defined contribution scheme, is linked with higher labour productivity. Ippolito (1991) suggests that workers can be incentivised to stay and avoid being sacked for shirking by the introduction of a final salary scheme which generates a pension capital loss for quitters and those sacked for shirking. Therefore the introduction of a career average scheme may lead to a reduction in productivity because members are not subject to the threat of a pension capital loss if sacked for shirking, and this leads to a reduction in wages. To avoid such a reduction in productivity, the employer could introduce a wage tilt, i.e. initial low wages and high final wages (Lazear, 1979, 1981), although this may result in some additional tax payments.

4. If the same rate is used for revaluing the benefits of active and deferred members, those who leave the firm cease to suffer a pension capital loss (i.e. there is no reduction in the revaluation rate on quitting). This may result in an increase in labour turnover and in the costs of recruiting and training replacement staff. Using US data, Allen, Clark and McDermed (1993) found that being a member of a final salary scheme clearly reduces staff turnover. This is due to both the sorting effect of attracting workers who want to stay, and the presence of the pension capital loss suffered by leavers which discourages quitting. An increase in staff turnover reduces the willingness of the employer to invest in staff training because the firm may get less benefit from the training, and less well trained staff will be less productive. Dorsey, Cornwell and MacPherson (1998) found that offering a defined benefit pension scheme is associated with greater staff training.

5. A shift to a career average scheme may alter the type of staff who want to work for the firm, i.e. there is a sorting effect (Ippolito, 1997). Pensions attract staff with personal attributes that result in them placing a high value on the type of scheme on offer, and these attributes may be those desired by the employer, leading to higher productivity. A final salary scheme favours high flyers, who are more willing to take a risk with the size of their pension, and are low discounters who do not intend to quit. Low discounters attach a high value to long term consequences, and so engage in less shirking, have a stronger desire for promotion, and appreciate the long term consequences of their actions (Ippolito, 1997). Such staff are less willing to work for a firm with a career average scheme, which tends to attract staff who are more risk averse low flyers with a higher personal discount rate who intend to quit earlier. These staff may have lower productivity and wages.

6. A cost neutral switch to a career average scheme increases the total compensation (pension plus salary) of low flyers, and lowers the total compensation of high flyers (see section 7). This raises the question of the extent to which members (and employers) take account of the deferred wages provided by the pension scheme when negotiating employment contracts.

If markets are complete and participants are fully rational, the wage-pension trade-off will be a one-for-one negative relationship. Salaries will change to offset any change in pension, and a switch to a career average scheme will not produce any income redistribution. But in the incomplete real world, the size of this trade-off is an empirical question.

Labour economists have studied compensating wage differentials, i.e. the extent to which wages adjust to allow for the other costs and benefits of employment, such as danger, unpleasantness, long holidays, free samples, security, fringe benefits, etc. Researchers have tried to quantify the wage-pension trade-off<sup>7</sup> when the member's own pension contributions are ignored; but they have faced formidable data and econometric problems (Allen and Clark, 1987). The available evidence is very mixed, but suggests that the relationship between wages and pensions is usually negative, with no strong evidence that it is as large as one-for-one. This may partly be because pensions bring the benefits of reduced turnover and greater staff productivity. There is also the possibility that members, and perhaps employers, suffer from pensions illusion, i.e. not require an offsetting increase in wages when their pension benefits are reducing, or not reduce wages when pension benefits are increased.

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<sup>7</sup> The following studies have estimated the size of the trade-off between pension benefit and wages: Clark and McDermid (1986), Ehrenberg (1980), Ehrenberg and Smith (1981), Gunderson, Hyatt and Pesando (1992), Montgomery and Shaw (1997), Montgomery, Shaw and Benedict (1992), Moore (1987), Schiller and Weiss (1980), Smith (1981) and Smith and Ehrenberg (1983). In addition, Bulow and Landsman (1985), Dorsey, Cornwell and MacPherson (1998), Even and MacPherson (1990) and Gustman and Steinmeier (1995) have estimated the effect on wages of being covered by a pension scheme.

Building the compensating effects of switching to a career average scheme into the wage structure means that salaries at the top end will tend to rise, while those at the bottom end will tend to fall. However, a final salary scheme rewards those who experience a substantial increase in salary during their career, irrespective of where they start and finish on the salary scale. Therefore compensation for a switch to a career average scheme cannot simply take the form of increasing the salaries of the highly paid, and lowering the salaries of the lowly paid; it needs to reflect career progression. In a risky world, the extent to which a particular member gains or loses from a switch to career average is not known at the time they enter into a labour contract. Therefore such contracts can either reflect expected gains or losses from a switch to career average, or incorporate some retrospective element. In addition, there may be delays and rigidities in adjusting wages for existing workers.

7. Using the same revaluation rate for leavers and stayers does not allow the employer to penalise those members who quit before the NRA because the pension capital loss imposed on early leavers has disappeared. Therefore early retirement is not discouraged. However, a cost neutral switch to career average will probably increase the incentive for low flyers and some high flyers to accrue additional years, rather than retire early. This is because the accrual rate has increased, while the difference between the expected revaluation rate and salary increases over the final few years will be small. Some high flyers may expect their pay rises to outstrip the revaluation rate over their final years. In which case they have a stronger incentive than low flyers not to retire early. Whether the incentive for high flyers to retire early has increased or decreased depends on the relative magnitude of the increase in the accrual rate and the decrease in the revaluation rate<sup>8</sup>.

### *B. Members*

1. Final salary schemes promise members with a specified number of accrued years a pension that is a specified proportion of their final salary, i.e. the replacement ratio is fixed. This means that members can plan for any change in their standard of living as they move from employment to retirement. With a career average scheme, the relationship between their final salary and pension is uncertain (chiefly because their final salary is uncertain).

2. Without an increase in benefits (e.g. the accrual rate) to make the switch from final salary to career average cost neutral, the introduction of a career average scheme will very probably decrease total benefits. The losers will be the high flyers.

## **7. Redistribution Effects of a Switch to Career Average Pensions**

A final salary scheme amplifies lifetime income inequality between members. Not only do high

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<sup>8</sup> The effects of a switch from final salary to career average are likely to be small compared with the effects of any actuarial reduction for early retirement, or actuarial enhancement for late retirement.

flyers receive a large salary, but they also receive a pension which is a higher proportion of their pension contributions than do low flyers. In addition, high flyers usually receive greater tax relief than low flyers on their pension contributions, and probably draw their higher pensions for longer due to their greater life expectancy. These effects further increase the inequality of lifetime incomes (salary plus pension).

A cost neutral switch from a final salary to a career average scheme has a powerful effect on the size of pension received by different groups of members (Cooper, 1997, 1998, 1999). Members with a flat age-earnings profile (low flyers) are gainers, while members who display considerable salary progression (high flyers) are losers. Being a high or low flyer tends to be correlated with other characteristics of the member, and this suggests that the losers from final salary schemes tend to be uneducated non-white women who experience career breaks, work part time or variable hours, who leave early. For example, a study of the NHS found that men receive about 10% more initial pension from their contributions than women as a result of higher career progression (NHS Employers, 2005). Any changes in pension benefits caused by a switch from final salary to career average may be compensated for by a change in wages, but there is a strong possibility that any such adjustment is less than one-for-one.

Pensions are deferred pay, and the concept of equal pay for equal work leads to the principle of an equal pension for equal work. Career average schemes (where some common revaluation rate is used, rather than final salary) give pension equality between active members of the same age, who both perform the same work in the same year, and make the same pension contributions. Thus career average schemes meet the objective of delivering equal pension for equal work. However, a final salary scheme revalues accrued pension benefits by the rate of increase required to reach the member's final salary. This greatly favours members who experience rapid salary increases, particularly if these increases are near the end of their service. These winners from a final salary scheme tend to be educated white men who do not have career breaks, work full time with fixed hours and do not leave early.

As well as equity between high and low flying active members, there is also the issue of equity between deferred pensioners and active members. If two members of the same age perform the same work in the same year for the same pay, the concept of equal pay for equal work implies that they should also receive the same pension for this work; regardless of whether one of them subsequently leaves the company. In a typical final salary scheme leavers have their benefits revalued by RPI, while stayers have their benefits revalued by their final salary. This usually means that leavers receive markedly less pension than stayers for identical deferred pay. If a career average scheme uses the same revaluation rate for actives and deferreds, this inequity is removed. However, some early leavers may choose to take a transfer value, rather than become a deferred pensioner.

Typical transfer values are substantially less than the economic value of the accrued pension rights; and the issue of equity for leavers who choose to take a transfer value, rather than a deferred pension, remains.

The redistribution by final salary schemes from low to high flyers is not due to unequal incomes, but to unequal rates of change in incomes. If initial incomes are highly unequal, but every member receives the same pay rises throughout their career, there is no redistribution of pension benefits. This means that members who experience a large promotion when young, and then remain on the same grade until retirement, may gain from a switch to career average. It also means that members who enter on a low salary, and are subsequently promoted to a middle level salary late in their career, may lose from a switch to career average.

Den Hertog (1999) called the redistribution of pensions by final salary schemes from low to high flyers “reversed solidarity”, and investigated why workers have negotiated such arrangements. He attributes this reversed solidarity to the standardized non-negotiable pension deal offered to individual workers, the substantial costs that workers must incur to understand the pension (or to employ an advisor), the membership of the scheme by senior managers, and the lack of importance that workers tend to give to distant events, such as retirement. Trade unions should be exempt from these problems when negotiating a pension scheme. However, democratic organizations, such as trade unions, represent the preferences of the median member, who will tend to be older, more senior and closer to retirement than young members. Trade union leaders tend to be even older than the median voter. However, this does not constitute a convincing explanation for the acceptance of reversed solidarity by trade unions, and further research is needed.

A possible explanation for reverse solidarity is that trade unions tend not to represent the interests of deferred pensioners, who have probably ceased employment with the sponsor. By removing the pensions capital loss, a cost neutral switch to career average represents a redistribution of pensions away from active members and towards deferred pensioners, which damages the interests of the trade union’s current membership.

#### *A. Compensatory Salary Changes, Pension Contributions, NIC and Income Tax*

The redistributive effects of a switch to career average may be offset by compensatory changes in gross salary. Such a change in gross salary results in changes in pension contributions, national insurance contributions (NIC), and income tax paid by the member. Members’ pension contributions (which are tax deductible) are assumed to be a fixed proportion of gross salary, members’ NIC (which are not tax deductible) are a regressive proportion of gross salary, and income tax is a progressive proportion of his or her gross salary after deducting their pension contributions. Consider the extreme case of a change in pension accrual that is fully offset by a

change in gross salary. For low flyers the rise in the value of their pension accrual is exactly matched by a fall in their gross salary, so that they experience no change in their gross compensation. However, the salary reduction causes a fall in their pension contributions, NIC and income tax<sup>9</sup>. This leads to a rise in their net compensation, ignoring any subsequent tax effects flowing from the increase in pension accrual. The opposite outcome applies to high flyers. Therefore, low flyers gain and high flyers lose from a fully compensated switch to career average due to pension contribution, NIC and income tax effects.

As well as redistributing net compensation from high to low flyers, even in the extreme case of full compensation via changes in gross salary, there is probably a change in the aggregate net compensation of members due to changes in aggregate pension contributions, NIC and income tax paid by members. Since NIC for members are regressive (although flat for employers), and income taxation is progressive, even after allowing for the effect of changes in pension contributions on tax deductions; the aggregate effect of a fully compensated switch to career average on net compensation summed across all members is unclear<sup>10</sup>. Since, in absolute terms, the degree of progression in income tax is greater than the regression in NIC, it is likely that the net effect of a switch to career average is an overall reduction in members' net compensation, and an increase in NIC and income tax payments to the government.

At the other extreme, if the switch to career average does not result in any compensating change in gross salary, there is no change in net salary, pension contributions, NIC or income tax for any member.

*B. Model of the Redistributive Effects of a Switch to Career Average.* On the basis of her stochastic simulations of various types of pension scheme, Cooper (2005) concludes that the redistribution effect of moving from a final salary scheme to a career average scheme is overstated. To explore this issue further a simple model is developed to examine the redistributive effects of a cost neutral switch from final salary to career average. Assume for simplicity that there are no benefits other than members' pensions, there is no risk, deferred pensioners have their final salary uprated by RPI, the career average salary for active and deferred pensioners is uprated by the revaluation rate (RPI) and pensions can only be brought into payment at the NRA. In which case the annual real pension for a member of a career average scheme is :-

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<sup>9</sup> Their income tax falls due to the drop in gross salary. However, the fall in their pension contributions, which are tax deductible, leads to a fall in their tax deductions. Since the members' contribution rate is usually much less than 100%, the drop in gross salary is much larger than the drop in tax deductions; and the overall effect is a reduction in their income tax.

<sup>10</sup> It is assumed that the aggregate change in pension contributions is zero, which is consistent with a cost neutral switch.

$$A_{CA} = Sx_{CA} \sum_{i=b}^e (1+w)^i (1+d)^{n-i}$$

where  $S$  is the salary for the first year of service (e.g. 25 year olds),  $x_{CA}$  is the career average accrual rate (e.g. 0.01666 or 60<sup>ths</sup>),  $w$  is the annual real rate of increase in wages,  $d$  is the revaluation rate per year,  $n$  is the number of years until the NRA,  $b$  is the first year of service and  $e$  is the last year of service, where years of service run from 1 to  $n$ .

For a member of a final salary scheme, the annual real pension is:-

$$A_{FS} = Sx_{FS}(e-b+1)(1+w)^{e-b}(1+RPI)^{n-e}$$

where  $x_{FS}$  is the final salary accrual rate. The value of the fixed term annuity for the  $j^{\text{th}}$  type of scheme (final salary or career average) of  $A_j$  per year for  $m$  years at the NRA are given by:-

$$PV_j = A_j \left( \frac{1}{r} - \frac{1}{r(1+r)^m} \right)$$

where  $r$  is the real discount rate, and  $m$  is the number of years in retirement. The value of the contributions relating to a member at the time the pension starts being paid ( $TV_j$ ) for the  $j^{\text{th}}$  type of scheme (final salary or career average) is:-

$$TV_j = SCR_j \sum_{i=b}^e (1+w)^i (1+v)^{n-i}$$

where  $CR_j$  is the contribution rate for the  $j^{\text{th}}$  type of scheme (final salary or career average) and is the same fixed proportion of salary for all members of the scheme, and  $v$  is the annual real rate of return on the invested contributions.

The required contribution rate for the final salary scheme is that value of  $CR_{FS}$  which equates the aggregate values of  $TV_{FS}$  and  $PV_{FS}$  (the value of final salary contributions at the NRA equals the present value of the final salary pension at the NRA) across all scheme members. The equivalent cost neutral career average scheme requires that the aggregate cost of the career average scheme is the same as the aggregate cost of the final salary scheme. This is achieved by setting the career average accrual rate ( $x_{CA}$ ) so that, in aggregate,  $A_{FS} = A_{CA}$ , which implies that, in aggregate,  $PV_{FS} = PV_{CA}$ , and  $TV_{FS} = TV_{CA}$ .

*C. Numerical Example of the Redistributive Effects of a Switch to Career Average.* Some representative numbers are used in the simple model presented above to give an idea of the possible magnitude of the redistributive effects of a switch from final salary to career average. Consider a company which operates a final salary pension scheme with an accrual rate of 60<sup>ths</sup> and full price indexation. The company employs two types of full time worker (L and H), both of whom can start

work at 25 or later, retire at 65, and live for 20 years after retirement<sup>11</sup>. All workers join the pension scheme. The number of type L members is four times larger than the number of type H members, and each type of member starts with an annual salary of £20,000 at the age of 25. Type L members experience no real pay rise throughout their career, while type H members receive a 3.5% real pay rise every year, retiring at 65 on a real salary of £76,507 (i.e. 3.8 times larger than for type L members). The company operates an age-for-wage policy, and so late joiners start on a salary corresponding to their age. The real interest rate is assumed to be 1% per year, and the real rate of return on the fund's assets is assumed to be 3%.

(i) *Final Salary*. If every member joins the final salary scheme at 25 and retires at 65, the resulting payments to, and contributions for, each member are set out in table 3; along with the contribution and accrual rates. For type L members a contribution of £1,000 today generates a real pension of £94.18 per year at the NRA; while for type H members it generates a real pension of £178.24; i.e. 89% more for type H members. This shows that the use of a final salary pension scheme amplifies the inequality in salaries. The lifetime salary (and pension contributions) of type H members are twice those of type L members. However, the annual pension of type H members is almost four times larger than that of type L members.

Combined Final Salary Scheme - 40 Years	L	H	Ratio
Total Contribution Rates (%)	21.3%	21.3%	1
Accrual Rate	60 <sup>ths</sup>	60 <sup>ths</sup>	1
Present Value of Lifetime Pensionable Salary	£663,261	£1,340,673	2.02
Present Value of Lifetime Pension Contributions	£141,573	£286,167	2.02
Annual Real Pension	£13,333	£51,005	3.83
Real Pension at 65 for a £1,000 Contribution Now	£94.18	£178.24	1.89

Table 3: Final Salary Scheme Combining Type L and H Members - 40 Years Accrued

If the type L and H members had been in separate final salary schemes, with each scheme delivering the same pension as under the combined scheme, the resulting contribution rates and pension contributions are shown in table 4. This reveals greater equality in the relationship between contributions and pensions, with type H members now getting slightly worse value for money than type L members. A contribution of £1,000 now buys a real pension of £125.99 per year for type L members, and £115.28 per year for type H members, i.e. 9% less for type H members.

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<sup>11</sup> The inequality that type H members will very probably draw their pensions for a longer period than type L members is ignored.

Separate Type L and Type H Final Salary Schemes	L	H	Ratio
Total Contribution Rates (%)	16.0%	33.0%	2.06
Accrual Rate	60 <sup>ths</sup>	60 <sup>ths</sup>	1
Present Value of Lifetime Pensionable Salary	£663,261	£1,340,673	2.02
Present Value of Lifetime Pension Contributions	£105,824	£442,460	4.18
Annual Real Pension	£13,333	£51,005	3.83
Real Pension at 65 for a £1,000 Contribution Now	£125.99	£115.28	0.91

Table 4: Separate Final Salary Schemes for Type L and Type H Members - 40 Years Accrued

This analysis of the separate final salary schemes indicates that in the combined final salary scheme 5.3% of the type L members' contribution rate represents a cross-subsidy to type H members, with each type H member receiving a reduction of 11.7% in their contribution rate. Each type H member pays contributions with a present value of £156,293 (or £3,907 per year of service) less than would be the case in the absence of type L members. Each type L member makes contributions with a present value of £35,749 (or £894 per service year) more than would be the case if there were no type H members. This cross subsidy from type L to type H members represents what Den Hertog (1999) called reversed solidarity. It increases the inequality in pensions, which further increases the inequality in the distribution of lifetime incomes (salary plus pension).

(ii) *Career Average*. A cost neutral switch from a final salary to a career average scheme (with no compensating adjustment in wages), means that the accrual rate must rise from 1.66667% (or 60<sup>ths</sup>) to 2.1333% (or 47<sup>ths</sup>). Table 5 shows that a contribution of £1,000 by type L members buys a real pension of £120.55, while the corresponding figure for type H members is £126.06, i.e. 5% higher. The switch to career average has almost eliminated the large pension cross subsidy from type L to H type members that was present in the final salary scheme.

Combined Career Average Scheme - 40 Years	L	H	Ratio
Total Contribution Rates (%)	21.3%	21.3%	1
Accrual Rate	47 <sup>ths</sup>	47 <sup>ths</sup>	1
Present Value of Lifetime Pensionable Salary	£663,261	£1,340,673	2.02
Present Value of Lifetime Pension Contributions	£141,573	£286,167	2.02
Annual Real Pension	£17,066	£36,074	2.11
Real Pension at 65 for a £1,000 Contribution Now	£120.55	£126.06	1.05

Table 5: Career Average Scheme Combining Type L and H Members - 40 Years Accrued

(iii) *Short Service*. If a type L member joins a final salary scheme at 25 and becomes a deferred pensioner after 10 years, for each £1,000 of contributions she or he receives a real pension at the NRA of £81.62. The corresponding number for a type H member is £95.10, i.e. 17% more for type H members. These amounts (shown in table 6) are markedly less than the corresponding numbers for full service members in table 3. Relative to full service, short service type L members of a final

salary scheme suffer a reduction of 13% in real pension per £1,000 of contributions, while for type H members there is a reduction of 47%. This indicates that, while both types of member suffer if they leave a final salary scheme early, type H members suffer much more.

Combined Final Salary Scheme - 10 Years	L	H	Ratio
Total Contribution Rates (%)	21.3%	21.3%	1
Accrual Rate	60 <sup>ths</sup>	60 <sup>ths</sup>	1
Present Value of Lifetime Pensionable Salary	£191,320	£223,813	1.17
Present Value of Lifetime Pension Contributions	£40,837	£47,773	1.17
Annual Real Pension	£3,333	£4,543	1.36
Real Pension at 65 for a £1,000 Contribution Now	£81.62	£95.10	1.17

Table 6: Combined Final Salary Scheme for Type L and H Members - 10 Years Accrued

Table 7 shows the consequences for short service members if their employer switches to a career average scheme. For both type L and H members the real pension per £1,000 of contributions is approximately £104.50, and the inequality between types of member has been removed. Short service members are markedly better off from being in a career average, rather than a final salary scheme because the real pension per £1,000 of contributions for type L members has risen by 28%, and for type H members it has risen by 10%. Therefore short service members, both type L and type H, are better off being in a career average scheme.

Combined Career Average Scheme - 10 Years	L	H	Ratio
Total Contribution Rates (%)	21.3%	21.3%	1
Accrual Rate	47 <sup>ths</sup>	47 <sup>ths</sup>	1
Present Value of Lifetime Pensionable Salary	£191,320	£223,813	1.17
Present Value of Lifetime Pension Contributions	£40,837	£47,773	1.17
Annual Real Pension	£4,267	£5,005	1.17
Real Pension at 65 for a £1,000 Contribution Now	£104.49	£104.77	1

Table 7: Career Average Scheme Combining Type L and H Members - 10 Years Accrued

The above numerical example shows that a cost neutral switch from final salary to career average produces a substantial redistribution of pensions from high flyers to low flyers. At the moment members who have a low and flat salary path subsidize those with a rapidly rising salary path, particularly those with a large pay rise near retirement. A switch to career average would be a big step in removing such cross subsidies from the poor to the rich. It has also been demonstrated that career average substantially reduces the penalty from leaving early. Indeed, for type L members, early leavers from the career average scheme get a better deal than full service members of the final salary scheme.

## **8. Conclusions**

Many employers are considering changing their pension provision, and one type of scheme that deserves serious consideration is career average revalued earnings (CARE). This paper offers an in-depth cost neutral comparison of the advantages and disadvantages of these two alternative pension scheme designs.

Cost neutrality can be defined with respect to the scheme, the employer or the members. In this paper cost neutrality is measured with respect to the scheme, removing some hard-to-quantify behavioural responses (e.g. staff turnover, the wage-pension trade-off, training and productivity) from this problem; although these factors still remain when assessing the costs and benefits to the employer and members.

Career average has increased in popularity in recent years, and the UK government has proposed the use of career average for some very large public sector schemes. Career average retains all the advantages of a defined benefit scheme, while offering a much fairer distribution of pensions between high and low flyers, and between early leavers and full service members. It also offers an extensive range of other benefits for both the employer and members, with only a few minor disadvantages. A switch to career average involves some risks, relative to staying with a final salary scheme. Although the switch is designed to be cost neutral to the scheme, the actual outcome may generate a deficit or surplus because the forecasts of movements in salaries and the chosen revaluation rate are incorrect. In addition, the behavioural responses to the switch may be better or worse than expected.

A wide choice of revaluation rates is available for use by career average schemes, and by an appropriate choice of the revaluation rate, final salary and defined contribution schemes can be viewed as special cases of a career average scheme. In consequence, career average schemes have the flexibility to move towards either of these other types of scheme design, if desired.

Numerical examples illustrate the substantial redistribution of pension that can accompany a cost neutral switch from final salary to career average, moving the scheme much closer to “equal pension for equal work”. In view of their substantial attractions, career average schemes deserve to be considered more seriously by those redesigning pension provision.

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