

Public Sector Pensions



The UK's Second National Debt

Neil Record

and James Mackenzie Smith

edited by Lawrence Kay



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Published by

Policy Exchange, Clutha House, 10 Storey's Gate, London SW1P 3AY

www.policyexchange.org.uk

ISBN: 978-1-906097-48-6

Printed by Heron, Dawson and Sawyer

Designed by SoapBox, www.soapboxcommunications.co.uk

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Acknowledgements

The report's advisory committee have given very helpful advice at every turn, and several members have given us a series of detailed reviews and critiques of work in progress. Many members of the advisory committee have full-time jobs elsewhere, and we are particularly grateful to those members who have laboured to improve the quality of this report in their spare time. However, while the contributions of the committee have been invaluable, none of its members is responsible for the content of this report, nor do any of the arguments expressed here represent their views or those of their employers.

We are very grateful to those members of the public who agreed to be interviewed and discuss their personal financial affairs for public consumption, and whose circumstances appear in the case studies in the report.

There are several people at Policy Exchange who have devoted considerable efforts to get this report commissioned, written and published – in particular Oliver Marc Hartwich (who has now left Policy Exchange), the report's editor Lawrence Kay, and Natalie Evans. In Policy Exchange's 2008 paper, *Quelling the Pensions Storm*, author Nicholas Hillman suggested a commission to “intensively scrutinise” public sector pension schemes in the way that the Pension Commission under Lord Turner had scrutinised the private and state pension schemes. While this paper is no substitute for a commission, it goes some way towards laying the foundations of that scrutiny.

Finally, we want to thank Pension Corporation for its generous financial support. Its commitment to encouraging a wider debate on these pressing issues has enabled this report to be commissioned and produced.

Advisory Committee

- Nicholas Hillman
- Stephen Yeo, FIA
- Peter Tompkins, FIA
- David Robbins
- Sir Nicholas Montagu
- Nicholas Parker
- Dr Amarendra Swarup
- Dr Frank Eich

Executive Summary

Most people are aware that Britain has a huge national debt which is growing during the current fiscal crisis. But what many people do not know is that we have a second national debt – one that is kept out of government figures and hidden from view. This is the public sector pension debt, which has grown as successive governments have continued to promise public sector workers defined benefit pensions, often worth two thirds of final salary, index-linked for life. In recent years the Government has kept quiet about what the total cost of these promises now is (the “total liability”) and has not recognised that the way that it is calculating this cost is unrealistic. In this report we look at the looming bill for “unfunded” public sector pension schemes, and the real value of these pensions to state employees.

If we apply proper financial methods to calculating the accumulated liability of these schemes, it is clear that our second national debt is *much* larger than the publicly acknowledged national debt

On the Government’s own figures (which are based on artificial assumptions), the accumulated liability is now estimated to be greater than the national debt. If we apply proper financial methods to calculating the accumulated liability of these schemes, it is clear that our second national debt is much larger than the publicly acknowledged national debt. It is now equivalent to 78% of GDP (£1.1 trillion) with the cost of servicing the debt each year to pay for these unfunded schemes now at £45.2 billion. The interest payments on the official national debt (52% of GDP; £750 billion¹) currently amount to only £31.2 billion.

In 2003 the total value of the unfunded pension schemes’ liability at market rates was £560 billion and the interest on the borrowing £18.9 billion. Then, this interest cost was equivalent to around 45% of the Ministry of Defence budget. By 2008 the interest cost had more than doubled, and is now worth 105% of the defence budget. The bill for public sector pensions is thus rising very fast – for several reasons.

When the government receives contributions from public sector employees and employers for pension schemes, it spends the money immediately rather than investing it for the future - hence the fact they are known as “unfunded” schemes. This allows the government to save the money it would have spent on borrowing to pay for this spending.

The saving on this foregone borrowing is equal to the real market interest rate at a given time, i.e. the price of money as determined by the capital markets. As public sector pensions are index-linked, the most appropriate rate to use is that which is attached to index-linked gilts.

1 Values at December 2008.
Source: Office for National Statistics

Yet even though the Government has “saved” money in one year by not having to borrow money to finance general spending, it still has to pay interest on the debt that it is building up in paying for the pension promises it has made to past employees. But when it does this, the government does not pay interest on the borrowing; it adds it to the total liability instead. So the £45.2 billion is thus a debt-on-debt payment.

The prevailing market interest rate would be the most natural one to use, but the government has decided to adopt a rate that exceeds it. This has the effect of making the liabilities look smaller than they are

Unfortunately, the method that the government uses to calculate both the liabilities and how much workers need to contribute to their schemes is not financially defensible. In order to work out what the value of its promises to pay out money in the future are worth today, it applies an interest rate to those promises that allows the final figure to be expressed in today's money. The prevailing market interest rate would be the most natural one to use, but the government has decided to adopt a rate that exceeds it. This has the effect of making the liabilities look smaller than they are.

At the moment the government asks employees for a contribution, on average, of 6% of pay and employers for an additional 14% in order to help meet the pension promises it has made, i.e. 20% of total employee pay. But over 40 years a typical public sector worker needs to have 48% of his salary paid into his scheme in every year of his career in order to pay for the pension payouts at the end of it. The Treasury covers this annual 28% gap. Even taking into account people who take career breaks and do not stay for long in the public sector, the whole public pension system requires annual contributions of 35% of pay each year to fully cover the cost of new pension promises.

In recent years wage increases in the public sector have pushed up the value of the Treasury subsidy. Earnings for men in the public sector have been rising at a real (i.e. after inflation) rate of 3.7%. This means that someone who stays in the public sector for a whole career can now leave with an annual pension payment that is higher than the average wage they may have received when working. Because of the defined benefit system, this also means that people who stay for a whole career in the public sector or rise rapidly through the system benefit more than those who only stay a short while or are promoted less quickly. Furthermore, the government cannot achieve an investment return that is greater than that 3.7% increase, so the value of the pension promise rises for the beneficiary every year, but becomes ever harder for the government to meet.

These calculations mean that public sector workers are receiving a nearly unknown subsidy that is rapidly inflating the liability that future taxpayers will have to meet. In 2007-08, according to a proper market calculation, the total cost of making pension promises was £34.1 billion. But because the government is not applying a proper interest rate to the contributions it asks for, it is only receiving £19 billion, of which £13.2 billion it is paying itself in the form of employers' contributions. So the full subsidy to public sector employees is £28.3

billion, of which £13.2 billion is employers' contributions, £10 billion is acknowledged as "under-charging" by the Treasury, and the remaining £5.1 billion is not acknowledged at all. That is the equivalent of about £5,700 for each of the five million employees in unfunded public pension schemes.

Thankfully, one government body, the Bank of England, has started to properly deal with the nearly identical problems in its own pension scheme. In 2005 it switched to a proper market rate for assessing the liabilities of its fund and found that it needed to be contributing 44.3% of its pensionable payroll to cover its costs. The Bank decided, furthermore, to make its scheme 100% rather than 84% funded by 2014. In 2008 the cost of taking such action was £82.3 million, £15 million more than its total payroll bill.

It is clear from the Bank of England's experience that if the Government were to make similar changes they would look very costly. However they would simply be an attempt to make clear the reality of the situation rather than a plan to spend money that otherwise would have been saved.

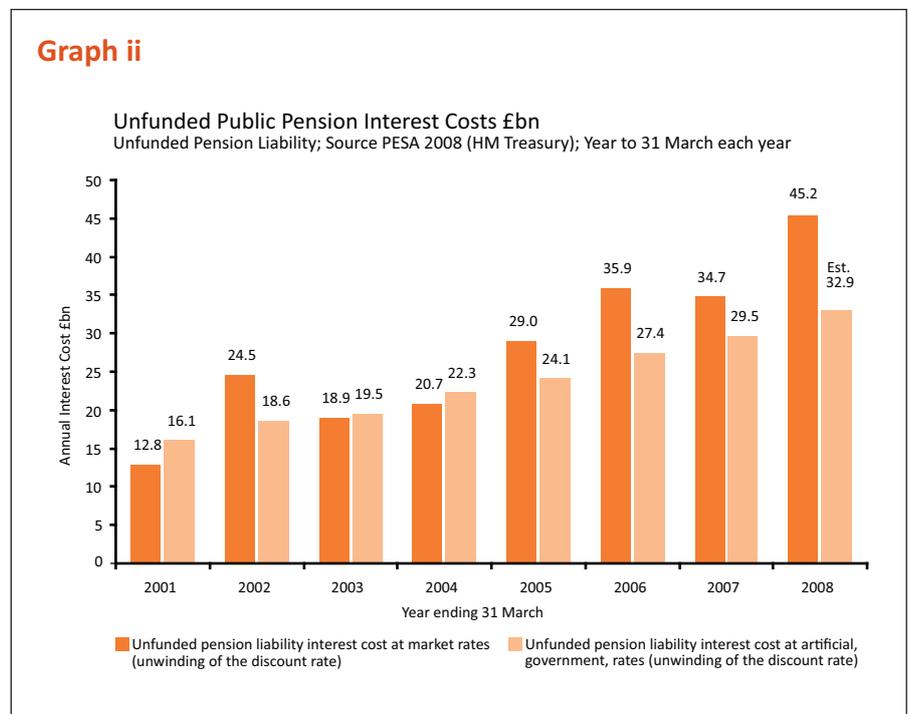
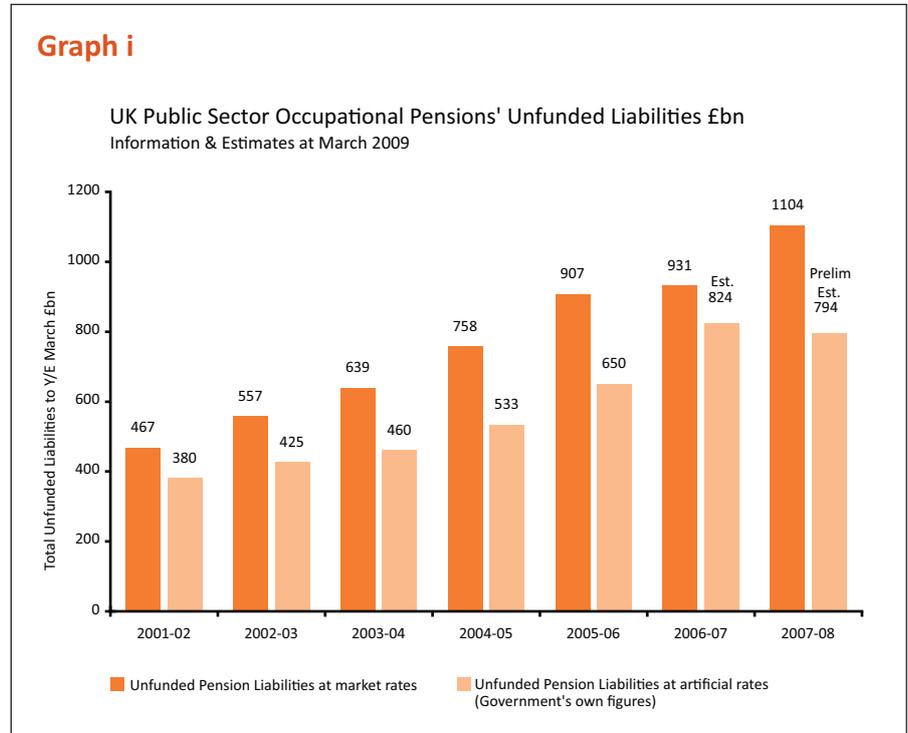
We believe that the Government must make much clearer the total cost of public sector pensions, and have developed five recommendations for how it should do so. The fiscal implications of them will be substantial even though the cash-flow of the public sector will not have changed. On the basis of our estimates for 2007-08, the visible additional public spending will be 2.4% of GDP, or £34.1 billion (in 2007-08 money). This may make uncomfortable reading in the current financial crisis, but it is only by being transparent and honest that an informed and sensible debate about the future of public sector pensions can be conducted.

Our recommendations are:

- For public sector employers that make pension provision for their staff to pay (jointly with employees for contributory schemes) a cash amount each year equivalent to the full market value of the pension benefits (i.e. current service cost) accrued by staff in that year.
- For annual cash pension contributions to be used to buy index-linked gilts of sufficient value to fully pay for all pension promises made in that year. The index-linked gilts should be purchased and issued at market prices.
- For a new body to be established (the Public Sector Pension Fund or similar) to receive contributions, to buy index-linked gilts, and to pay public sector pensions. The Public Sector Pension Fund should be required to break even, and charge public sector employers and employees accordingly.
- For the existing public sector pension liabilities to be ring-fenced by the Treasury and allowed to run off over their remaining life. All outstanding public sector pension obligations should be met in full.
- For the new arrangements to begin after a transition period starting from the date these (or similar) proposals become government policy. This will allow for the establishment of the Public Sector Pension Fund, and for negotiations over the future shape of pay and pension packages.

As a result of these changes pensions currently being paid would continue, but the unfunded liability would fall as it is substantially paid off over fifty years or so. The interest on new pension promises would be offset by interest on the gilts in the

Public Sector Pension Fund. Only by having these moves towards transparency and proper accounting will we be able to properly manage what is now a second national debt.



Introduction

Structure of the report

In Chapter 1 we analyse and explain what public sector pensions are worth to individual employees. We do this using a simple savings and pension calculation, using stated assumptions. We look at the sensitivity of the assumptions we make, so their effects can be seen by those wishing to make different assumptions.

In Chapter 2 we illustrate this theoretical calculation with a series of interviews with people of around retirement age. We found that few people with 40 years or so of work history had simple stories. We did not manage to find many “pure” examples, i.e. ones that look like our stylised cases; we report their histories as they have told them to us.

At the end of Chapter 2 we use the calculations we developed in Chapter 1 to illustrate the approximate annual contributions (expressed as a percentage of their salary) that each of the interviewees would have had to contribute to be certain of the pensions they in fact receive. Graph 6 illustrates this.

In Chapter 3 we look at the impact of unfunded public sector pensions on the Government’s, and ultimately the nation’s, finances.

Finally, in Chapter 4, we make a series of recommendations.

Facts and figures

The report deals in two types of figures.

- **Government’s own figures** – a government publication source, referenced in the text.
- **Estimated/calculated** – any figure which is not from a referenced government source. We explain in the text how each estimated figure is derived.

Scope of coverage

This report deals exclusively with UK public sector unfunded pension schemes. According to the Government Actuary’s Department (GAD) in 2006, 96% of the March 2005 liabilities were accounted for by the big five schemes: NHS, teachers, civil service, armed forces and police.² Although we have identified 16 unfunded schemes (listed in Appendix 1), general statements can be made about the bulk of public sector pensions based on the characteristics of these five schemes.

There are also two further groups of pensions that represent a potential or actual liability of the Government in its role as employer or ex-employer: funded pension schemes of entities that are part of the public sector, and schemes of entities that are now part of the private sector, but which benefit in one form or another from government guarantees, explicit or implicit. Although this study

² *Unfunded Public Service Pension Schemes 2006 Cashflow Projections: Methodology, Assumptions and Data*, Government Actuary’s Department, 2006

excludes both these types of scheme, we list them for completeness in Appendix 2. They are relevant insofar as changes that might take place in the unfunded schemes are also likely to be reflected in these (mainly funded) schemes.

The most obvious is the Local Government Pension Scheme (LGPS), which is in the unique position of being a large, centrally provided scheme and a direct obligation on central government, but with locally administered funding that

treats the pension obligations as ring-fenced for each local authority. Benefits in the LGPS, while they have been recently modified, are similar to other (unfunded) public pension schemes. While the LGPS is funded, the funding level is significantly below 100% even on the optimistic return

It seems likely that if this report's recommendations, or anything similar, become law, then the pressure on many funded schemes to reform along similar lines will be intense

assumptions adopted by most schemes. It seems likely that if this report's recommendations, or anything similar, become law, then the pressure on many funded schemes to reform along similar lines will be intense. It is hard to imagine, for example, that the generous arrangements for university lecturers in the (funded) University Superannuation Scheme could remain unchanged if the (unfunded) Teachers' Pension Scheme were significantly modified.

Despite recognising the possible future linkage between unfunded and funded schemes, this report will make no further reference to funded schemes, except to the Public Sector Transfer Club in Chapter 3 (members listed in Appendix 3).

Why limit the report's scope to unfunded schemes?

As will become clear, the interest rate (or discount rate) used to value liabilities is a critical determinant of both the size of the outstanding liabilities – today's value of the aggregate of the future pension payments – and also the required contribution rates – or current service cost in actuarial language – to fund pension promises in full.

In pension schemes, both private and public, there is an active debate as to the appropriate discount rate to be used for valuing both outstanding pension liabilities and current service cost. Much of Chapter 1 is devoted to explaining why this issue is so important.

In funded schemes, investments are often expected to generate higher returns than from "risk free" investments because the trustees explicitly choose to invest in entities such as equities (shares). Many pension fund actuaries argue that this higher rate of return should be used as the discount rate for liabilities. However, in an unfunded scheme, there is, by definition, no opportunity to take on investment risk to earn a higher rate of return. This limits the scope of the debate about discount rates and allows the conclusions of this report to stand up to scrutiny without the extra complication that discussion of risk/return trade-offs introduces.

1

What is a Public Sector Pension Worth to an Individual?

Interest Rates

Interest rates are fundamental to the calculation of the cost of pensions. This chapter will illustrate in layman's terms the profound effect that interest rates have on pension costs.³

Base case pension fund

By way of example, let's assume that a pension fund has one member – and that this member is just retiring after 40 years' service, having reached the age of 65. This member's salary at retirement was £60,000 pa and this has given him a pension of £40,000 pa.

The aim is to calculate two values:

- The size of the total pension liability today (the day of retirement) to the pension fund, which is the same thing as the value to the pensioner. Note that it is the value of future pension payments *today* that we wish to calculate, not at some time in the future.
- What fixed proportion of this member's salary the pension fund would have had to receive from the aggregate of both the employee and the employer as pension contributions for the 40 years of his employment to have enough money "invested" to pay the pension promised. This annual payment is called the "current service cost", and is often expressed as a percentage of salary. For a pension to be fully paid for by the employee and employer each year, the combined pension contributions must equal the current service cost.

In our base case, the following simplifying assumptions are made:

- The pensioner is male and retires on a full pension at 65. This is less generous than most existing public sector schemes, where the normal pension age is 60 (55 for the armed forces, police and fire services).
- He has worked for the same public sector employer for 40 years starting at age 25.
- His pension scheme gives him 1/60th of final salary for each year of employment, but no other entitlements such as a spouse's pension, lump sum on retirement or ill-health benefits. Most public sector schemes offer either

³ Record N, *Sir Humphrey's Legacy: Facing up to the Cost of Public Sector Pensions*, Institute of Economic Affairs, London, 2006. The reader wishing to gain a more mathematical understanding of interest rates and their relationship to pension liabilities and current service costs is referred to Chapter 2. A PDF of this monograph is available at <http://www.iea.org.uk/record.jsp?type=book&ID=390>

1/60th or 1/80th accrual rates (police and fire services offer better); however all schemes offer spouses' and dependants' pensions and generous ill-health provisions, and the 1/80th schemes offer lump sums at retirement. So the simple 1/60th we have assumed is less generous than the reality in the public sector.

- The pension he receives is index-linked each year to the Retail Prices Index (RPI). This preserves, but does not enhance, the purchasing power of his pension once he retires. This full index-linking is provided in all the unfunded public pension schemes unlike most private schemes.
- He dies at 85 in line with the current Government Actuary's Department life expectancy for 65-year-old males in public sector schemes.⁴
- The interest rate at which the pension fund can invest money is 1% pa above RPI inflation. This real interest rate ("real" meaning above inflation) is fixed for the whole of the paying-in period and the whole of the 60-year pension period and is risk-free. This is an important assumption, which will be justified later, along with the illustration of the effect of differing interest rate assumptions.
- The pensioner enjoyed a 3.7% pa increase in his salary in excess of RPI over the course of his 40-year employment. In today's money that would have meant a starting salary of £14,600 in 1969. This value is not chosen at random, but reflects actual average experience for males in the NHS and civil service schemes, as reported by GAD.⁵

As will become clear, the interest rate has a huge impact on both of the values we want to calculate: outstanding liability and current service cost. Readers may be puzzled, however. Terms such as "interest rates" and "investing" are being used, yet we are dealing here with unfunded public pension schemes – schemes where no money is set aside and so no money is invested.

Before explaining exactly what "unfunded" means, we are going to treat this base case unfunded pension fund as if it were funded. This is not a new concept; the Government Actuary's Department (GAD) calculates what unfunded pensions cost and are worth in this way.⁶

Time-shifting

The reason for treating unfunded pension schemes as though they are funded is that otherwise there is no way of calculating what an unfunded pension costs or is worth. This is because £100 paid 20 years ago as a pension contribution is worth a great deal more than £100 to be paid in 20 years' time as a pension. If we save money now, its real value will grow through interest earned, and therefore as an employee we would expect our pension contributions, even to an unfunded pension scheme, ultimately to be returned to us with interest, even if no money is actually invested.

For all the unfunded public sector pension schemes, an annual contribution is made by a combination of the employee and the employer to cover, in theory, the cost of the pension in the future. At the time of writing, for the main schemes, these contributions are on average 6% of salary from the employee and about 14% of salary from the employer. So about 20% of salary in total is paid to the Treasury each year in contributions. The police and fire service schemes are more

4 GAD 2006, op cit

5 GAD 2006, op cit; p 12, Section 8, Table 10 – annual increase calculated from the male salary scale from 25 to 60 in five-yearly increments, but based on 40 years, ie assuming no further rise in scale after age 60. GAD 2006 assumes 2% pa general salary growth in public sector pay in excess of inflation. The rise in the salary scale is therefore 1.7% pa. Interestingly, in the calculation of current service cost and liabilities of unfunded schemes in the resource accounts, GAD routinely uses 1.5% pa general salary growth rather than 2% pa. This reduces both cost and liabilities in the resource accounts, and was a (relatively minor) point of disagreement between GAD and the author in *Sir Humphrey's Legacy*. A consistent position on salary growth from GAD would be helpful

6 Through a technique with the acronym SCAPE – superannuation contributions adjusted for past experience

generous, and so more expensive. One of the civil service pension schemes is non-contributory, which means that the employer (the Government) pays the whole of the roughly 20% annual “cost”.

How unfunded public sector pensions are paid for

Each public sector employer that offers staff an unfunded public sector pension is sent a bill each year by the Treasury. In theory, the amount paid should cover the Treasury for all future costs of the pension liabilities that are incurred by the employer in that year – the current service cost. In fact the bill is for a different amount to the current service cost (the reason is discussed in the main text). In return for their payment of pension contributions to the Treasury, public sector employers have no further liability to their staff and the Treasury takes on responsibility for all future pension payments.

The contributions paid by employers are, in the main, made up of both employers’ and employees’ contributions. In the two largest schemes, employees pay 6% of salary and employers pay 14%, making 20% of salary in total. Contribution money paid to the Treasury is taxpayers’ money allocated by the Treasury to the employer and then sent straight back to the Treasury as pension contributions.

Contributions are not invested by the Treasury – they are spent in the year in which they are received – hence the expression “unfunded”. Payments by the Treasury to pensioners are made out of general taxation. In 2007-08, pension contributions were £19.03 billion, the current service cost was £29 billion, and payments to pensioners were £21.32 billion. (Source: PESA 2008; Table D.1)

But, and here is the first really important point: the Treasury actually receives cash both from public sector employers and employees to pay for their future pensions. The payments are not “notional” or “in theory”. This is real cash paid to the Treasury each year.

In 2007-08, the Treasury estimated that it would receive about £19 billion in total from these contributions. So, in one sense, the pensions *are* funded – the Treasury receives real money from all the public sector employees and employers.⁷ However, it does not invest the pension contributions but instead uses them for current expenditure. By doing so, the Treasury avoids having to borrow that amount in the gilts market and thus saves itself the interest on the debt that it would otherwise have had to pay.

How the Treasury “invests” contributions

So if it is not borrowing, as it would otherwise have to, how much is it saving in interest by receiving these contributions?

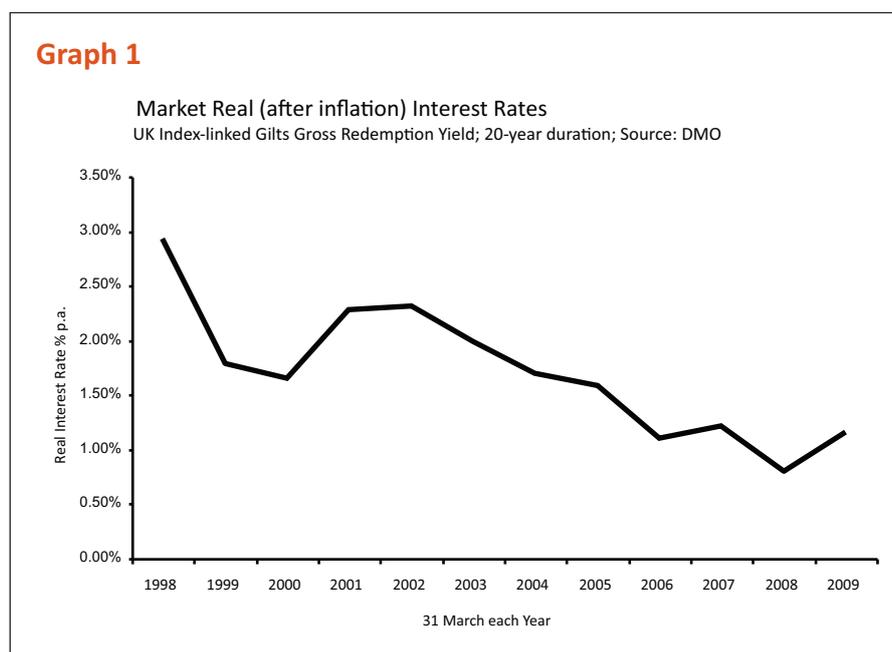
The answer is the interest payable and principal uprating had it borrowed index-linked gilts, which are promises made by the Government to pay a fixed rate of interest for a fixed period of time, with both the interest and the principal uprated by RPI – in effect preserving the purchasing power of the investor. We choose index-linked rather than conventional gilts because all public sector pensions are index-linked – hence index-linked gilts are a good match for pensions.

⁷ Source Public Expenditure Statistical Analyses (PESA) 2008; Table D.1; Row 2 Contributions Received, 2007-08 Estimated Out-turn. PESA is published every year by HM Treasury in about April and is one of the key annual documents for public expenditure analysis and planning

The interest rate at which the Government can borrow index-linked money is, not surprisingly, the real interest rate – the interest rate in excess of inflation – prevailing in the market at the time. Since the Government borrows from the market at prevailing real interest rates then, by forgoing borrowing, it must in effect be investing at the prevailing market real interest rate too.

Real interest rates have varied quite widely over time. Graph 1 shows the real interest rates prevailing in the market over the past ten years. The interest rate illustrated is a long-term one – a 20-year duration interest rate.⁸ Twenty years also turns out to be the average duration of the main pension schemes. So Graph 1 shows the annual 20-year duration real interest rate prevailing in the market on 31st March from 1998 to 2009, and therefore the interest rate at which the Treasury “invested” the pension contributions by not issuing 20-year gilts at these market rates.⁹

Graph 1



⁸ Duration has a technical meaning in finance, and is roughly speaking the average life of an investment between contribution and payment, which in most public sector schemes is about 20 years. This is obviously much shorter than individual memberships of schemes, but contributions arrive, on average, later than halfway through a career because real salaries rise with age, and leave, on average, halfway through retirement as the pension pot is spent. We know the duration of government schemes because we know the sensitivity of scheme liabilities to changes in interest rates. See Record N, *Sir Humphrey's Legacy*, IEA 2006, for more on duration in this context

⁹ Source: Debt Management Office. We have taken the weighted average of the real yield on the two nearest duration index-linked gilts straddling the 20-year duration based on DMO calculations. For 31st March 2009, index-linked gilt 1.25 % 2027 has a duration of 16.5 years (yield 1.21% on 31st March 2009), and index-linked gilt 1.25 % 2032 has a duration of 20.4 years (1.15% on 31st March 2009). Weighted average by distance from 20 years = 1.15% pa

It is clear from this graph that our 1% pa interest rate assumption above was not entirely arbitrary – it is roughly the average real interest rate over the past four years.

Pension contributions needed

Our calculations reveal that 48% of our base case public sector employee's pay has to be paid to the Treasury each year for the full 40 years to finance his pension on the assumptions we have made. This is a surprisingly high cost – more than twice what the Government is currently receiving in contributions from employers and employees combined – and the following sections discuss why. Full details of the calculation are in Appendix 4.

Under current arrangements, such an employee, if he is in the NHS or teachers' schemes, pays 6% of his salary towards his pension. The employer pays about 14%, so the Treasury is paying the rest: 28% of salary for 40 years. At the moment, neither the Treasury nor Parliament explicitly recognise that they are paying this additional subsidy, which accounts in part for the rapid growth of public sector pension liabilities to nearly 80% of GDP at market value. It appears in the Government's accounts,

insofar as it appears at all, in the rise of outstanding unfunded pension liabilities. The bill will be paid by the taxpayer over the next 50 years.

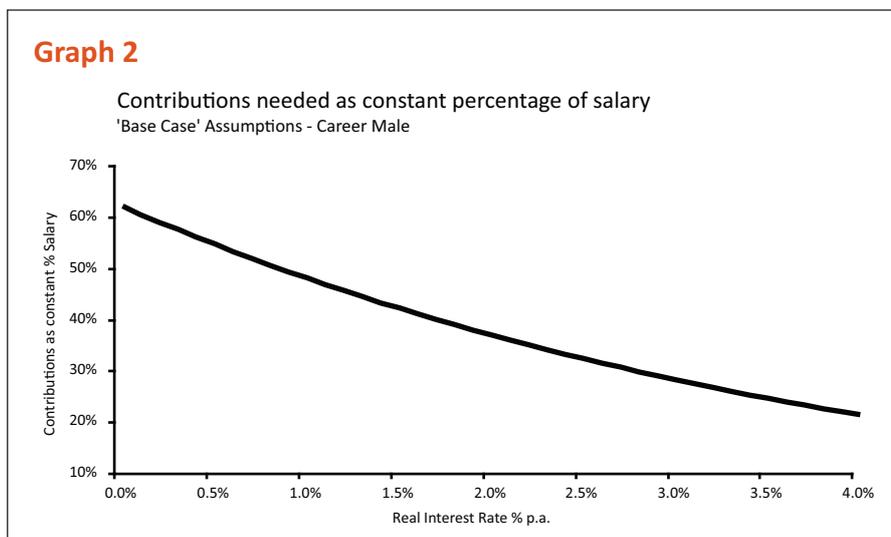
The cost is so high for two main reasons. First, the employee works for 40 years and then expects a pension of 2/3rds of his final salary for 20 years. Even allowing for inflation, his salary has been going up for the whole of his career, so he earns on average over his career a salary of £32,260 pa (in today's money, stripping out inflation). However, he receives a pension of £40,000 pa, so actually gets a higher average income in retirement than he does in employment. This is because of the career real earnings increases – 3.7% pa for males – that have been evident across the public sector.¹⁰ The assumed real increase over inflation of 3.7% would have to fall to 2.3% pa for the average pension just to equal average salary after inflation was stripped out.

Second, the real return on investment (1% pa) is lower than the annual real increase in salary. So the rate of return on investment does not keep up with the growth in the potential pension. This means that for each year that passes in employment, the pension promise becomes more valuable and is therefore commensurately more expensive to finance.

The real interest rate seems a poor return to saving, but remember that this investment rises each year by 1% pa plus inflation. In all of these calculations inflation has been stripped out, because all salaries and pensions in public sector schemes go up with inflation.¹¹ So the investment has to go up with inflation too. Even so, 1% seems rather low and, in a recent historical perspective, it is. The average 20-year duration “risk free” real interest rate over the 11 years 1998-2008 was 1.6% pa (see Graph 1). But the market sets the interest rate, not the Government, and the flip-side of this is that the Government can borrow long-term money very cheaply – indeed at only 1% pa real interest. This cost is low historically and a good deal for taxpayers. So cheap borrowing for the Government is offset by the relatively higher pension contributions required to cover the cost of pensions.

But what happens if our assumptions on the interest rate or salary growth are wrong?

In Graph 2, we can see the effect of holding all the above assumptions constant, but varying the real interest rate applied in the calculation.



10 The individual average increase in male pay in the public sector over and above RPI is 3.7% pa over a 40-year career, GAD 2006, op cit

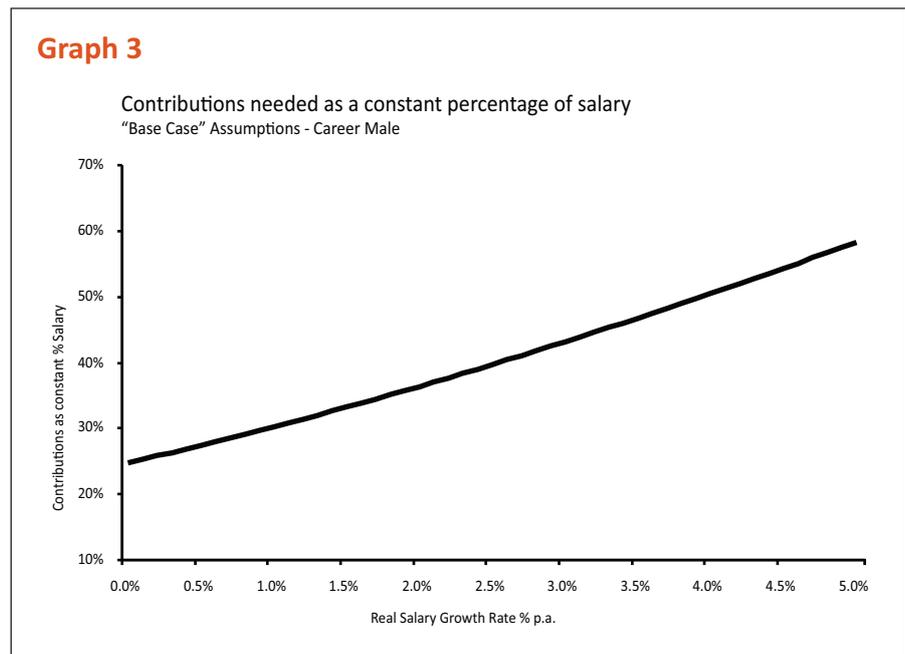
11 Public sector salaries have risen faster than inflation, even though there is no legislative requirement that they should. Public sector pensions-in-payment are linked to inflation by legislation

The annual contributions needed to provide for a 2/3rds final salary pension (which is the same thing as the current service cost) in the sample pension vary widely with the interest rate. We can also see that even at 4% pa real interest rate the cost of providing a pension in this example is more than 20% of salary – the current contribution level for most schemes. The costs shown in the graph, based on one employee with a 40-year career, are higher than the costs in a whole pension scheme offering an equivalent pension, because a significant proportion of scheme members will not work for 40 years – they will leave early or arrive late, and this dilutes the cost.

This graph is the most important in this whole report. If the contributions paid each year are less than the amount required in this graph (or its equivalent for the whole pension scheme), then the provider of the pension, in this case the Treasury, is providing a hidden subsidy to the employee. Hidden subsidies are always undesirable because they distort decision-making and benefit one sectional interest at the expense of another. This one is particularly pernicious precisely because it is so poorly recognised, even by professionals in government, who, along with MPs, are the custodians of the public purse.

The interest rate can also be held constant and other assumptions varied. This could be done for almost all the variables in our example, but just two are illustrated below. The first is the salary growth assumption. GAD has studied individual salary progression and it observes, and assumes, (a) that public sector salaries have, and will, rise by 2% pa over RPI in perpetuity to reflect real growth in the economy, and (b) that the average individual male will experience a salary scale growth of 1.7% pa (from 25-65) on top to reflect increasing seniority throughout his career. The average female will experience 1.1% pa salary scale growth.¹²

This report takes 2% pa + 1.7% pa = 3.7% pa to be our base case assumption on salary growth, and Graph 3 shows the contributions required to provide fully for the sample pension at 1% pa interest rate, but with a varying salary growth assumptions.



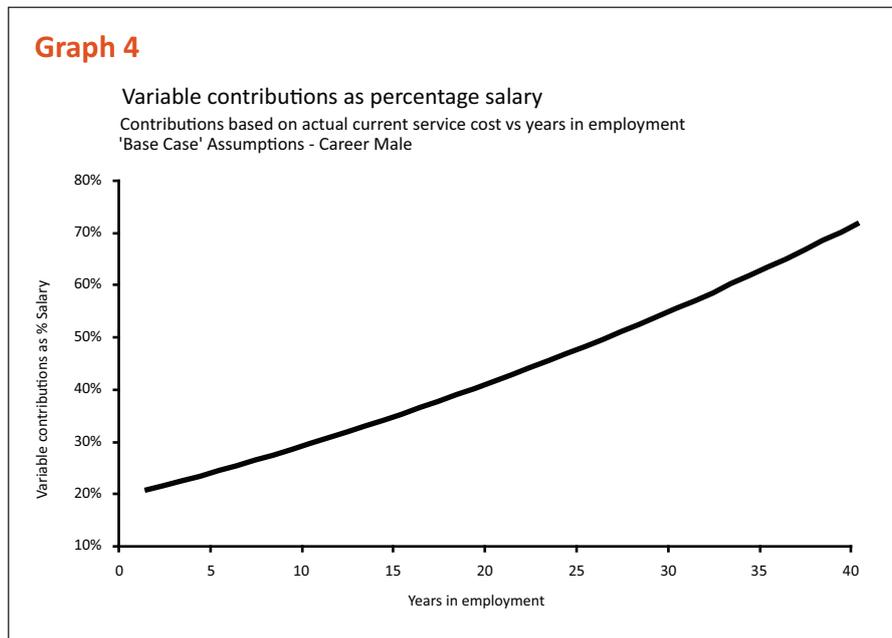
12 GAD 2006, op cit; footnote 5 for detail

It is clear from this graph that salary growth is also a very important variable in the cost of a pension – and that high fliers are disproportionately rewarded by the design of final salary pensions.

A second important factor, the scale of which is not widely appreciated outside the actuarial profession, is the effect of long service on the current service cost of a pension. In Graph 2 and Graph 3, we maintain the assumption that contributions as a percentage of salary are constant with respect to age and long service. So the calculations have assumed that the employee works the full 40 years until 65, and is charged constant contributions (as a percentage of salary) on that basis right from the word go.

However, we could instead calculate contributions each year on the basis that the employee was going to leave his employment at the end of the relevant year. So for year 1 of employment at age 25, the contribution required would only have to be sufficient, when accumulated with interest, to pay 1/60th of his starting salary, uprated by RPI inflation, in 39 years' time. The next year, the contribution would be recalculated to be sufficient to pay 2/60ths of the next year's salary in 38 years' time, and so on. Since the employee in our base case stays in employment for the whole 40 years, then the accumulated contributions, with interest, calculated in this way will by definition equal the accumulated contributions under the constant percentage of salary constraint.

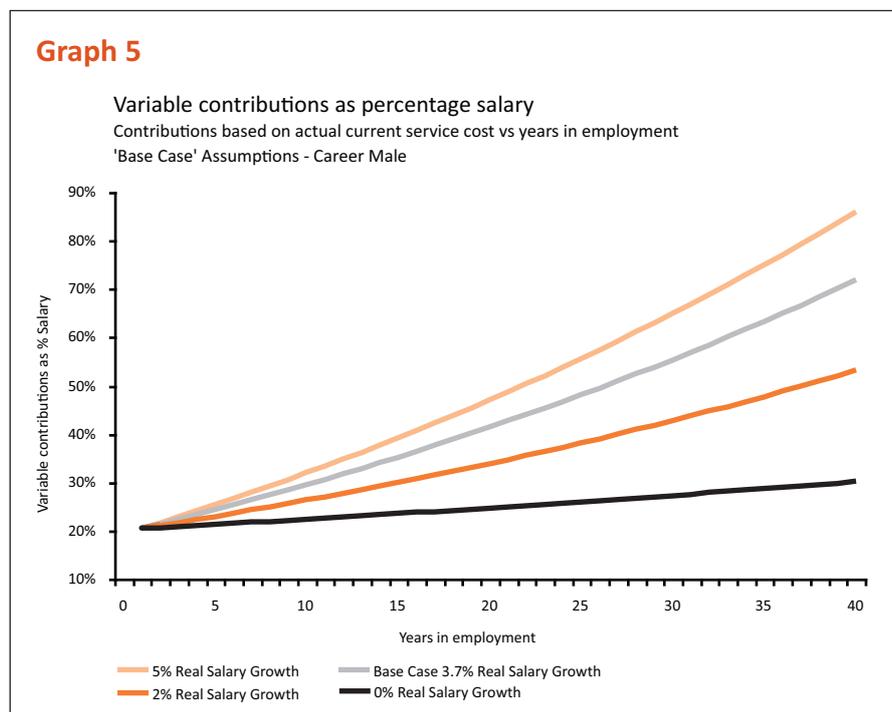
Graph 4 shows the current service cost and, therefore, the contributions required each year if the constant percentage constraint is released.



The results are startling – the early cost of the pension is relatively low, but the cost at the end of the employee's service is extremely high; the last year's contribution is 72% of pay. The contribution rates required for the later years are so high because the later rises are large in absolute terms due to the growth in real salary, and affect every future pension payment. The rise in the actual cash contributions is even steeper – since the larger percentages needed at the end of a career are percentages of a larger salary. Given that the average contribution in this example is

48% of pay, it follows that, if everyone pays equal contributions as a percentage of pay, in final salary schemes in general the young subsidise the old, and in public sector schemes, the taxpayer subsidises the old much more heavily than the young. Of course, if the young work for the public sector themselves until they retire, they will enjoy the same benefit later.

Finally, it can be shown, again with base case interest rate assumptions but allowing variable contributions each year, the differing contribution rates required to fund our example pension, but with four different real (ie indexed to RPI) career annual salary growth rates – 0%, 2%, the base case, 3.7% and the high flier, 5%. Graph 5 illustrates just how important salary growth rates would be for individuals' contribution rates if they were required to fund the rise in their pension asset accurately each year.



This graph also shows just how important both salary growth and years in employment are in the value of the final salary pension. Graph 5 shows the contributions required to fund pensions expressed as a percentage of salary. What does this mean in terms of money, rather than percentage of salary? Suppose two people start work 40 years apart on the same starting salary in today's money – say, £15,000 pa. The contribution for their first year of pension is £3,060, or 20.4% of their £15,000 pay. One, the low flier, experiences 2% pa real growth to his salary over 40 years. The other, the high flier, experiences 5% pa real growth in his salary over 40 years. The low flier's final year contribution would be £17,234, or 53.1% of his £32,471 final salary; the high flier's would be an amazing £86,422, or 85.9% of his £100,571 final salary.

To summarise Graph 5: younger workers and the lower fliers subsidise older workers and the higher fliers.

2

Case Studies

Categories

We have conducted a series of interviews with both public and private sector workers of around retirement age. Broadly speaking, we have tried to find people who represent one of four categories: high flier, medium flier, low flier and career break. Within each of these categories, we have selected examples of both public sector and private sector workers. We have avoided private sector workers who are members of closed final salary pension schemes because they are not representative of what young or new workers can expect to receive. Our private sector interviewees therefore have mainly or wholly defined contribution pensions.

The categories are defined by the rate of salary growth over a career.¹³

- **High Flier** – real salary growth greater than 5% pa over a career. Private sector workers tend to have less consistent progression, so this definition has had to be a little flexible. A typical high flier will earn more than £130,000 pa at retirement.
- **Medium Flier** – real salary growth around 3% pa over a career. Middle-ranking civil servants fall into this category, with teachers generally at the bottom end. A typical medium flier will earn around £50,000 pa at retirement.
- **Low Flier** – real salary growth around 1% pa over a career. Manual workers and lower-grade clerical workers fall into this category. A typical low flier will earn around £22,000 pa at retirement.
- **Career break/late joiner/early leaver/mixed career** – employees who have taken 10-20 years out of the workforce (or joined late or left early). The majority who fall into this category are women. Workers returning after a long break tend to lose out under the final salary rules and this adversely affects their pension in both the public and private sectors.

The vast majority of public sector workers will fall into the medium and low-flier categories, however the importance of the much smaller number of high fliers lies in the disproportionate amounts of money they take from public sector pension schemes.

Interviewees

All the interviewees talked to Policy Exchange on the basis of full confidentiality. They volunteered their career history, pay history, pension contributions and current pension or pension pot. Many could not remember much of the details of their pay, their pension contributions, or indeed the pension arrangements from

13 As will be evident, real careers are often complicated, and so we have not managed to get our case studies into as neat categories as we would like

their early career. This is not surprising since this is often more than 30 years ago. Few had written records of their pay history or pension contributions, although some were assiduous record keepers. Hence there has been an element of reconstruction to complete the history of each interviewee.

The profession, dates and ages given for each interviewee are correct, but all the other facts (names, company names, working and living locations) that would enable their identities to be revealed have been changed. Any similarity, therefore, between our fictitious names and actual persons is entirely coincidental. All salary figures quoted are gross of tax, as are pension contributions and pension payments.

Calculating the annual cost of an interviewee's pension

We have summarised the varied and complicated experiences of our interviewees by calculating from what they have told us about their salary history and their pension the amount of money that they would have had to set aside annually to fund their pension in full. We have expressed this annual amount as a percentage of salary. We have made certain assumptions to do this, and these assumptions are spelt out in the section "Quantifying Contributions" below. Since the assumptions are the same for all the interviewees, any errors in these assumptions will have a common effect on all the calculations.

Public sector interviewees

A GP (high flier)

Dr Colin Hamilton is a recently retired GP. He started as a GP in 1980, having worked in a hospital for three years as part of his medical training. He cannot remember his starting salary, though when he moved over to general practice it was equivalent to that of a junior doctor in hospital.¹⁴

Dr Hamilton recalls it, though, as being very difficult to live on. House prices were rising strongly in this period, and inflation and interest rates were both in double figures. He joined his partnership on a salary equivalent to about a third of what the other partners were on, but earned as much as them after four years. His earnings gradually went up over the years with inflation and the general growth in GPs' earnings to about £90,000 pa five years ago. In 2004, a new government initiative meant that GPs' salaries started increasing considerably. "We were set a whole lot of targets, which to the Government's surprise most doctors met, meaning that they were paying out much more money than they expected. My final salary was as much as £160,000 pa."

Having retired at age 60 in March 2008, he now receives a pension (index linked to RPI) of around £60,000 pa. This is for 31 years of service and is based on all of his final salary. On top of this, he received a lump sum of £180,000 tax free. He put no money towards another pension: "What was the point? I couldn't afford it when I was younger and I realised that the NHS pension was very generous the older I became." When we asked Colin how much he thought he had contributed to his pension, he said that he did not worry about this, as it was all taken care of by his accountant. "There was nothing further to worry about."¹⁵

In terms of other retirement income, he has invested his lump sum, while he owns a share of the health centre he worked at. He could have carried on until he was 70, but wanted to retire as he was happy his pension was already sufficient.

¹⁴ The salary for a senior house officer (a junior hospital doctor appointment) in 1977 was about £3,800 pa

¹⁵ GPs are not employees of the NHS; they are private contractors who are paid an annual fee per registered patient; they are responsible for the costs of the practice and distribute the surplus as partnership drawings (salary). Despite this, their pension is based on their "salary" in their final few years, which is to some extent under their own control

Colin agrees it is a generous pension, but recalls the hard work he put in to become a GP. “On top of your A levels, you have about eight years of training before you even start earning any money. Even then, the pay is very low to begin with. Moreover, not everyone gets on to the training course – it’s competitive.” He accepts that GPs’ salaries have grown considerably, and given that pensions are based on final salary he wonders whether or not the Government can continue to finance them. He also sympathises with those in the private sector who have lost out. “My friend has been investing in a pension all his life and his situation is a disaster now, an absolute disaster.”

A Teacher (medium flier)

Keith was a physics teacher all his working life. He has recently retired at the age of 57 from a state grammar school. He started work in 1971 on a salary of £1,743 pa, and retired in 2005 on £35,300 pa. His salary progression was reasonably stable, with the “odd jump here and there”. His pension income is currently £15,900 pa, and he received a lump sum of £47,700 on retirement. His pension arrangement is unusual, as some of it is paid by the local council due to an early retirement (at 57; he is 60 now) “on the grounds of efficiency”. He accrued 34 years’ worth of a pension, plus two and a half years that he bought at 21% of salary (“one also had to pay the employer’s contribution and some actuarial adjustment”). His pension is thus based on 36.5/80 of his final salary, all of which was pensionable.

Keith also put money aside under the Additional Voluntary Contributions (AVC) scheme, which gave him a lump sum of nearly £36,000 (in addition to his £47,700 pension scheme lump sum), buying him an annuity of £1,890 pa. This is a fixed annuity, unlike his occupational pension which is index-linked to inflation, the amount of which he is “not very pleased with at all”. “At the time that I joined, great claims were being made for it [the AVC scheme], with very optimistic projections about the growth of the fund. Unfortunately, the stock market did not achieve anything like the figures claimed and annuity rates fell considerably. I stopped my contributions after a few years.”

“And as to the level of my present (Teachers’ Pension Scheme) pension, I do not consider this to be generous. Teachers have not been well paid throughout my career, so the final salary on which the calculation is made is low: £15,900 pa is not a great deal to live on. Although I am getting what I expected to get, I am not pleased with it. Few would go into teaching for either the pay or the pension. But I am pleased that I am not dependent on a private pension. However, while I would readily accept that private pensions are in a mess, I do not see this as an argument for making public sector pensions less secure.”

Concerning current liabilities, he sees how a jump in salary can make a substantial difference to the cost of a pension. “I know of someone who was promoted from deputy head to headmaster in his final years of teaching, yet received a pension based on this higher salary. I do not consider this to be fair.” However, he points out that high costs have arisen for other reasons too. “Governments used the pension scheme in the 1980s and 1990s to get rid of surplus or incompetent teachers. I know of numerous cases of retirements as early as 50 years of age, which were financed by the Teachers’ Pension Scheme, in which the beneficiaries received a double advantage: there was no actuarial adjustment for early retirement and the pensions were even enhanced by as many

as ten years. The beneficiaries, many of whom are only in their early sixties now, will clearly continue to cost the scheme the non-contributed part of their benefits for many years to come. If there is a problem with teachers' pensions at present, it results, in large measure, from the way that they have been used to finance government policies, which should not properly have been charged to the pension scheme."

A Policeman (medium flier)

Murray is a retired police officer. He retired after 40 years in the force, but returned as an executive officer within the crime management unit after nine months, in 2005. He returned to a full-time job similar to his old one, in order to supplement his £1,300 a month pension and help with the mortgage. "My pension was insufficient; I had commuted a lot of my pension into a lump sum." He was a constable for 11 years – starting on £12 a week net – and a sergeant for 29, retiring on a salary of £39,350 pa. His current job pays "roughly the same" as his pension. Although he had intended to work for only two years, he is still working now, as he wants to wait for the market to improve so that he can sell his house, move to Devon and care for his wife.

He did not give much thought to his pension early on. "Not one bit; I was happy for the system to carry me along." This was not only because of how far in the future retirement was, but also that policemen then were paid less than postmen and milkmen, though there was the promise of accommodation. However, the more he progressed, the more he appreciated that his employer would be looking after him during retirement.

Though he is quick to point out that the police contribute more as a percentage of their salary than anyone else, he worries about how the Government can continue to pay for these pensions when the population is ageing. "I am part of the baby-boom generation, yet there are fewer young people. I do wonder how they can keep paying these pensions without taxes having to rise."

When asked about his plans for permanent retirement, he says that in spite of his age he cannot afford to do this, and sees himself working indefinitely. When asked about his opinions, he says that he thought that contributing what he did, plus what the police contributed on top of that, if invested over the length of his service ought to give a substantial pension. He adds that his pension is a fair reflection on what is an "unsociable and dangerous" job in which many men do not reach the end of their service. But if this obligation turned out to be too expensive, it is not for the Government to renege on it: "They have made a commitment at the beginning of your service, and it is up to them to honour it. In the first place, pensions should be formulated in a transparent and sustainable manner which is understood by both the employer and employee."

A GP (career break/late joiner)

Harriet retired as a GP last year at 69. Her medical career began relatively late, in 1981. Back then, she was earning £10,000 pa working as a junior hospital doctor. Before this, she was in the private sector, but used the lump sum she received on leaving to fund her way through medical school. In 1985, she started work as a GP, earning £15,000 pa. Her salary rose steadily to a maximum of £110,000 pa in 2003: "I earned a lot more than most because I was doing lots of extra work, in-

cluding in hospitals and work for the homeless, for which I was paid. I did work very hard.” After this, she became ill, and this limited her to part-time work. She recalls earning £35,000 a year until she retired.

On retirement, she received a £100,000 lump sum, and receives an annual pension of £37,000. She is not entirely familiar with the mechanism of how her pension was calculated, given that she was ill for her final few years. “I was quoted a pot value and I had contributed well to it.” When asked how much thought she gave to her pension she said: “None at all, but I didn’t need to. There was this pension, and then my husband worked too, so I was never under any pressure to think about one.”

When asked whether she thought that her pension was a fair reflection of her work, she says that it is generous, but justified. “It’s a tough, tough life. There were considerable periods where I was not paid much, and doctors work very hard – especially in hospitals. But I can see where issues of sustainability come from. Everyone is getting older, and more people than ever are entitled to these pensions.”

A mixed career (medium flier)

Tim is 62. He started working in 1964 at the age of 18. He worked for various construction firms – starting at £3.50 per week (£180 pa). In 1967, he was earning £7.50 a week (=£390 pa “big money in those days”), and in 1971 he joined the Greater London Council as “sort of a mature student” where his starting salary was £1,100 per year. He stayed at the GLC until it was disbanded in 1985, by which time his earnings had risen steadily to £17,000 pa.

“I paid the standard 6% of salary towards my GLC pension, which the authority topped up.” When he left, he was given the value of his pension in one lump sum of £108,000, which was transferred to a defined contribution private sector pension provider. This was topped up by £15,000 compensation as a result of the mis-selling scandal. But in 24 years, its value has fallen, even in nominal terms: “Last week it was worth £118,000. How can I retire on that? I don’t think I’ve done anything wrong since 1985, yet my dream of retiring at 62 has well and truly faded. I live in Dorset; commute to London on a weekly basis, and it is wearing me out. I have suffered from heart failure, and I don’t know how long I can keep this up for. I really think the pensions industry could have done better – don’t forget we had a period of high interest rates in that time.

After leaving the GLC, he worked as a quantity surveyor for five years, earning £25,000. He lost his job in the 1990s recession and obtained a teaching degree at his own expense. He has worked for an educational board since 1991. On starting there he earned £25,289 and now earns £55,000. His current employer offers him a defined benefit, index-linked pension worth £12,000 per year, and a lump sum of £16,000 if he retires at 65. If he retires now he is entitled to the same lump sum, but an annual payment of £8,000. “It’s not worth retiring now. If I wait I can get a higher payment, while pension annuities cannot get any worse. I am waiting for better times so I can get more out of my £118,000 pot.”

Tim realises that public sector pensions are expensive. “One pound of four of my council tax goes on town hall pensions and I can see why. I can understand why they offer them, though; they want to encourage their workers to stay with them. But how can the private sector get anywhere near these bomb proof schemes?”

A Cleaner (career break/part-timer)

Isobel worked as a cleaner for her local council in the South East to help to supplement her son's education. She is 60 now, and worked part time continuously from 1990 until last year, when she retired. She worked for ten hours a week to begin with, earning a modest £22 a week (£1,150 pa) for this. Her final salary was £464 a month (£5,560 pa), when she was working a 14-hour week. She was contributing £23 per month – or 5% of salary – when she retired.

The Local Government Pension Scheme is funded, though the same principles of contributions and accrual apply as in the unfunded public pension schemes. Nonetheless, Isobel's pension arrangement is unusual. Until about 1995, part-time staff were not offered a retirement plan, so her pension has accrued for only 13 years. And because she worked part time, her pension was condensed down to the full-time equivalent for five years. She receives £737 each year, rising with inflation, and her lump sum was £2,377.

She receives the state pension (nearly the full amount), and her husband brings income in too, so she does not live off her occupational pension alone. And she seems quite pleased with it. "It's not much, but I think it's a fair reflection of the work I did and the amount I contributed each year. I didn't join for the pension, so I see this as a bonus. But it would be pretty difficult to live off." And in terms of thinking about the pension while she was working: "I did not really think about it. They sent me forecasts as to what it might be when I retired and that was that."

Private sector interviewees

A Partner in an accountancy firm (high flier)

Richard is 57 and is intending to retire between the ages of 60 and 65. He has been an accountant for his entire career, starting on £8 a week (£416 pa) in 1971. He qualified as a chartered accountant in 1976, earning £3,600 per annum; he earned £12,000 once he became a partner in 1982. He is currently earning about £75,000 pa and expects this to rise slightly before his retirement, although he has enjoyed higher salaries in the past, peaking at £145,000 in 1998. Richard has a defined contribution pension, which means that his contributions are with a private pension provider, which invests them in the market. On retirement, he will have to buy an annuity, either from his current pension provider or another one if it offers a better annuity rate.

He currently contributes £3,500 each year towards his pension pot, and has contributed more in the past. Three years ago, this pot was worth around £300,000, "though don't ask me what it's worth now; with everything that has been going on with the stock market recently I dread to think." During his career, his pension has always been at the back of his mind, and of late he has been worrying about it. "I just go along and contribute, but I'm resigned to the fact that its value will probably have depleted by the time I want to retire. I aim to retire before I'm 65, but to be honest I don't know if I will be able to, with what annuities are paying these days."

He sees public sector pensions as being generous, although says that it is compensation for the relatively lower pay that they have experienced over the years. "As far as I am aware, workers in the public sector have, until recently, been

paid less for doing the same job, so I guess their pension – and not having to worry about it – is part of the deal.”¹⁶

An IT Consultant (medium flier)

William graduated from university in 1964 with a postgraduate degree in operations research, when he started his career with a multinational electronics firm. After four years there, he moved to work for a large international food manufacturing company, where he stayed until 1983. He was posted to the US in 1976. After six years in America and having started to raise a young family, he wanted to come back to the UK – an unusual choice in the difficult economic conditions of 1982. Soon after his return, he joined a software development firm, before starting up his own software company in 1986. He still works for this company today. Most of his roles in his two multinational employers were analytical, management and quality control focused.

His starting salary in 1964 was £1,050. He started with the food firm in 1968 on £2,400 pa, and returned to the UK with a salary of £23,300 pa in 1982. When he joined the software company, he was paid £25,200 pa, and while self-employed his earnings have ranged between £34,000 and £68,000 pa. At his first employer, he contributed towards a pension (along with his employer), though when he left he took the option to cash in his pension. “I blew it on a holiday; I thought I was indestructible.”

While at the food firm, he took advantage of a non-contributory defined benefit scheme, and on leaving, he transferred the pension he had accrued to Equitable Life. The value of the pot at the time was £13,000, which he topped up with regular lump sums. By the time Equitable Life ran into difficulty in 2001, he had taken out two policies with it. He moved one policy to Standard Life, and Equitable Life charged him 7.5% for the privilege. For the years he worked for the software company, he contributed towards another – Target Life – which also ran into difficulties. “I have had an unfortunate track record with my pensions.” The value of his pension pot with Standard Life is £153,200, while at the end of 2007 his pot with Equitable Life was worth £104,300. He tells us that he has contributed to his pension funds on a sporadic basis, but normally between 5% and 9% of his salary, and often topping this up with lump sums.

He is 66 now – well above the retirement age for most public sector workers – but intends to continue working indefinitely. “I love the job and I have no intention of retiring soon.” He has even deferred his state pension, though he receives a modest \$360 per month (approx £3,100 pa) Federal Benefit for his work in the US. “I think I need a bigger pot if I’m to retire on a decent pension, though I made a conscious decision not to put a huge amount into my pension because I needed the liquidity in case of a rainy day in the business.” When asked if he could sell his business and put this towards his pot when he retires, he said that the value of the business is too dependent on outside factors for him to rely on that.

When asked his opinions on pensions in general, he says: “I have been lucky enough to be in good enough health to have been able to work for all of my life. But because I have paid taxes every single week of my working life, and because I have had to worry continuously about my pension, I think something has to be done about pensions in the public sector. I have seen opinion change since the

¹⁶ If Richard used his current estimated pension pot of £300,000 at age 60 to buy an annuity with characteristics similar to a public pension (RPI index-linked; 50% spouse’s pension, but no lump sum), the best quote available on the FSA’s price comparator website on 5th Feb 2009 would give a pension of £10,452 pa; <http://www.fsa.gov.uk/tables/>

mid-1990s. You used to be paid less in the public sector for doing the same job, but you did have a better pension and longer holidays. Now, however, public sector salaries have overtaken and gone way past those of the private sector, so the case for giving better pensions as well no longer exists.”¹⁷

Cosmetic Sales Assistant (low flier)

Elizabeth is 63, and worked from the age of 16 in 1963. She has had a career in cosmetics and beauty for her whole working life. She started on £4.50 per week (£234 pa): “I had to work six days then, and I gained a qualification too.” Her pay rose to £7.50 per week (£390 pa) in 1965. Between then and 1968, her earnings rose to £20 per week (£1,040 pa). After that, she moved between department stores and cosmetics companies, with no significant pay rises. Her last job was as a packer for a cosmetics firm, for which she had worked for 11 years, earning £16,000 a year until she was made redundant in November 2008. She is trying to find work in various department stores, as she had intended to retire at 65. “They didn’t pay us much at all; I am just grateful my husband works too.”

Elizabeth did not save for a pension while she was working. “It’s not something I really thought about. Had I known I was going to be working for any length of time (at her most recent employer), I would have opted into the company scheme. But it was minimal, so I didn’t bother, but I could have afforded a small one myself.” She lives off the state pension and her husband, 62, will benefit from a company pension when he retires. “To be honest, the state pension is not that much, but when my husband starts receiving it, and if you live within your means, it’s adequate.”

When asked about the public sector, she spoke of her friend in local government. “It doesn’t bother me how much she earns, because she is put under quite a lot of stress. But I don’t think her work warrants the pension she gets – I mean it is worth something like half your salary, and given their budgets are stretched I don’t think it’s right.”

Sales Assistant (mostly part time/short career break – but on a final salary scheme)

Irene is 62, and has been working for a major department store as a sales assistant for 25 years. She officially retired at 60, but has returned to work with reduced hours, and takes advantage of her company pension. Before she retired, she was earning £6.70 an hour, working seven hours a week (£2,440 pa). She had worked along these lines for the previous 15 years. She now works four hours a week; her husband works for an auction firm. Her pension, which is a final salary scheme, comprises a £500 pa payment and a tax free lump sum (at 60) of £17,000. “It is minimal – less than £10 per week. I guess it’s because of the £17,000 I received up front. It’s a trade-off.”

She started working at 19 for a print room. This was full time, at £17 a week (£885 pa). At 22, she had her first child and this is where her career break started. At 28 she returned to work as a part-time cleaner, working ten hours a week on nights, earning £19 (£990 pa) – “good money at the time”. At 37 she joined the department store where she still works.

Her £500 pa pension tops up what she receives from the state (£53 a week, £2,750 pa). When asked how much she contributed towards her company pension, she says “I definitely contributed, but I have absolutely no idea how

¹⁷ If William used his current estimated pension pot of £257,500 at age 66 to buy an annuity with characteristics similar to a public pension (RPI index-linked; 50% spouse’s pension, but no lump sum), the best quote available on the FSA’s price comparator website on 5th Feb 2009 would give a pension of £10,392 pa; <http://www.fsa.gov.uk/tables/>. Remember William is 66, so he has already lost out on six years of retirement in comparison to a typical public sector worker

much". She is annoyed with the amount she gets from the state. "To be honest, I feel cheated. I was paying the 'half-stamp' and I have lost out. I would have thought my National Insurance contributions were enough, but I don't get anywhere near the full amount [of the state pension]. Once I stop earning, where is the money going to come from?" When asked about when she intends to retire, she said: "I don't know. I will work for however long my body allows it." She has no other pension.

And when asked about pensions in the public sector, she does not have any knowledge about these. "I do know someone who works for the local council, and she'll be getting a lovely pension soon. Other than that, don't ask me about other people's pensions because I have no idea."

Comparing these case studies

These case studies highlight some interesting issues. The public sector workers typically did not think about their pensions in their early careers, and if they did, they did not think them particularly generous. However, the older they got, the more they came to value them – locking them into the public sector so as to avoid losing them. Typically, the public sector workers did not know much about the detail of their pensions; how much they or their employers contributed to them, or exactly how the formula worked. Most recognised how much better off they were than their private sector counterparts.

Similarly, the private sector workers did not think much about their pensions when they were young. But as they got older their awareness rose, but the general experience was one of disappointment at the amount of money they had managed to save; at the returns they got from their savings; and disappointment also at the size of the pension their pension pot was going to turn into when they retired. Most would not be taking index-linked annuities – they reduce the early payouts too much – so exposing private sector pensioners to the full effects of possible future inflation. Even those who took straight (fixed) annuities complained that they got much less than they expected.

Quantifying contributions

The calculation techniques in Chapter 1 are used to calculate the pension contributions that our interviewees would have had to contribute as a fixed percentage of their annual salary to provide themselves with the pensions that they are now receiving (or are going to receive). Only one important assumption is necessary, since we have actual salary growth, career length and pension amounts, and this is the interest rate. For this purpose, we will assume a real interest rate of 2% pa. This is higher than the average real return of the past ten years (1.6% pa), and much higher than currently prevails (1% pa). However, 2% pa can be considered a reasonable long-term average real return for 40 years of recent history.

Graph 6 shows a bar chart of the ten case studies, and the estimate of the annual contributions that would have had to have been made over the employees' whole career to secure the pension that they now have. The percentage quoted is the percentage of salary that they would have had to have contributed each year they were employed to provide the index-linked pension they now receive. The methodology applied is exactly the same as in our base case set out in Chapter 1.

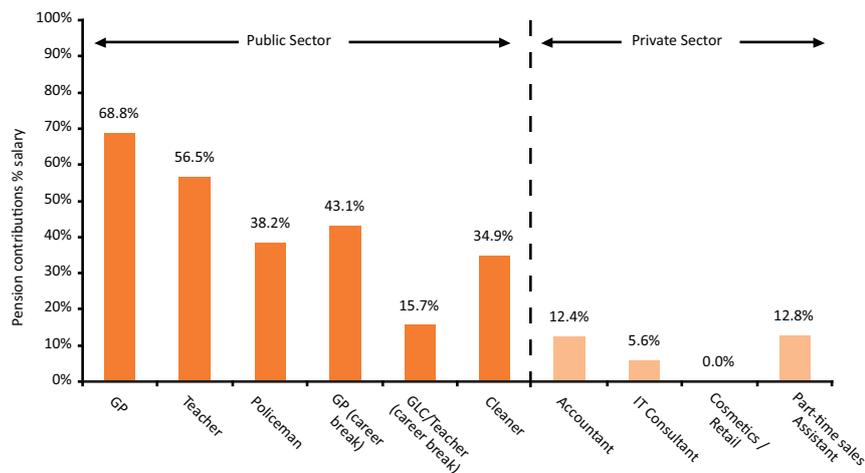
Note that this means that in the graph we use 2% pa to calculate the cost of an annuity at retirement. In the text, we show annuities that are available from the private pension providers for those private sector employees with a pension pot at retirement. These market-priced annuities yield much less than 2% pa – in the case of the annuity for the IT consultant, it yields -2.5% pa real return on the assumptions we have made.¹⁸

The contrast between the public and private sectors is stark. Within the two sectors, the contrast between lower and higher fliers is equally stark. The career break/mixed career interviewees also fare visibly worse than their counterparts who take no breaks.

With the exception of Elizabeth (the cosmetic sales assistant, who declined the opportunity to join a company pension scheme and hence has no private pension), all of our interviewees have some additional pension over and above the state pension. However, many people will retire with no income other than the state pension and, depending on their circumstances, Pension Credit.¹⁹ This emphasises even more sharply the contrast between public sector employees and most of the remainder of the UK population.

Graph 6

Annual pension contribution rates required to provide pension as fixed % of salary; 2% real interest rate assumption



18 In our base case example (Appendix 4), we do not include a spouse's pension, whereas actual public pensions include a 50% spouse's pension. The annuity we quote for the IT consultant in our case studies includes a 50% spouse's pension, so in fact the yield offered is higher than -2.5% pa real. However, we have handled all the case studies identically so that the comparative graph is accurate, even if the contributions required are systematically too low

19 Pension Credit is a new means-tested state benefit designed to ensure that no one in the UK over retirement age has to live on less than £130 a week for a single person and £198.45 week for a couple. Its means-tested nature means that, for many people on low incomes, saving for retirement is pointless

The anomalous public sector employee (Tim, with the mixed career at the GLC and as a teacher) is an unusual case. He earned a local authority final salary pension early in his career, but accepted a lump sum to give up his pension rights. This lump sum has gone down, even in nominal terms, over the 24 years that it has been invested by the pension provider – this is a strongly negative real interest rate and truly terrible investment performance. Then by way of compensation, he joined the Teachers' Pension Scheme much later in his career, and will have earned 21 years' or so entitlement, which will give a pension of about a quarter of his final salary.

The anomalous private sector employee (Irene, the part-time sales assistant), ends up with a higher contribution as a percentage of her salary than any of the other private sector interviewees. This is because however much she missed out

on the most valuable aspect of a final salary scheme by taking a career break, being part time and a low flier, she still reaps the advantage of having her years of entitlements uprated with average earnings over time.

We have conducted these calculations at a fixed 2% pa real interest rate. This is higher than available now in the market so today's annual cost would be higher, and indeed we can calculate how these respective contributions would vary if we changed the interest rate assumption (we have looked at 0%-5% pa real). While this alters the absolute level of the contributions required, changing the interest rate assumption does not change the relative costs of each of the employees' pensions.

3

What do Public Sector Pensions Cost the Nation?

The report has concentrated so far on the impact of public sector pension on individuals. In this chapter, it will concentrate on the impact of these unfunded pensions on the nation – and in particular on taxpayers. So while the last two chapters dealt mainly in percentages of pay, this chapter deals with billions of pounds.

Outstanding pension liabilities

The “outstanding liability” is the sum of all the future payments that a pension scheme is committed to make, whether or not the employee has retired. That sum is always struck at a particular point in time, so any pension liability calculation has to have a date on it, and all payments to be made in the future are “discounted” to the calculation date.²⁰

Referring back to our single pensioner model, the outstanding liability that the £40,000 pa of index-linked pension entails can be calculated; we just have to choose a date on which to make the calculation. The most obvious date is the point at which the liability of the employer is at its greatest, which is on the employee’s 65th birthday.

As set out in Appendix 4, the Government’s outstanding liability to our base case pensioner on his 65th birthday is £721,800, or just over 18 times the guaranteed index-linked pension for life.²¹ This amount, and therefore the multiple, is sensitive to interest rates (higher rates mean lower liability), and it is also sensitive to longevity. A female employee with the same service record and salary path would have a higher liability because of her longer life expectancy. The multiple for a female in the example above, based on GAD longevity projections of 23 years at age 65, would be 20.5 times the pension.

In the example, a 20-year life expectancy is assumed for a male aged 65. This is in line with GAD’s near-term projections, but is lower than its long-term expectations, as it expects longevity to keep improving.

Increased longevity has been blamed for some of the underfunding of funded private pension schemes in the past ten years or so, but this is the continuation of a long-term trend. Life expectancy in the UK population has been improving at the very high rate of nearly three months a year for the past 130 years.²² Most pension funds, including public sector funds, now include continuing increases in longevity in their current liability calculations. Hence, in the calculation of

²⁰ Discounting is fully discussed in Record N, *Sir Humphrey’s Legacy*, IEA, 2006. However, generally, today’s discounted value of a payment of, say, £100 in ten years’ time is $£100/[(1+r)^{10}]$, where r is the discount rate (or interest rate). Intuitively, today’s discounted value of £100 in ten years is that amount which, if invested in a ten-year fixed rate-investment with the interest reinvested, would equal £100. At a 1% pa interest rate, today’s discounted value of £100 in ten years’ time is £90.53 = $100/[(1.01)^{10}]$

²¹ At 0% real interest rate it would be 20 times – ie the number of years in retirement

²² This is more fully discussed, with sources, in Record N, *Sir Humphrey’s Legacy*, IEA, 2006. GAD has plenty of information on general population longevity on its website: www.gad.gov.uk

outstanding liabilities, this report does not alter any of the longevity assumptions embedded in the public sector schemes.

Whole scheme liabilities

Our single pensioner base case is a microcosm of a complete pension scheme. In a real scheme, there will be employees of all ages, with a mix also of short and long-service staff. The shorter service employees may have started out in their teens or twenties in the public sector and then moved to a private sector job, and so left the pension scheme, or they may have one or more career breaks (more common with women), or they may have joined the public sector late in life, and worked there until they retired.

The liabilities of a pension scheme are not struck on any particular employee's 65th birthday, but regularly, once a year. On a fixed date (31st March for unfunded public sector pension schemes), the actuary will calculate all the outstanding pension liabilities – from the payments due to be paid from 2049, when our newly started 20-year-old will be retiring at age 60, until his death, to the payments due to be paid next year to their oldest pensioner at, say, 108. All the future pension payments will be discounted to the date of the calculation.

In each case, the actuary will use mortality tables, which show the average expectation of life for each employee or pensioner, as well as many other assumptions including salary growth, staff turnover within the employer, spouses' longevity, early retirement through ill-health and so on.²³

Each individual will have his or her version of the calculation in Appendix 4. The actuary's job is to combine these disparate employees, former employees below pension age, known as "deferreds", and pensioners into one financial unit. This unit will include:

- Outstanding liabilities
- Annual current service cost
- Annual contributions
- Annual pensions in payment

These values are dealt with in turn.

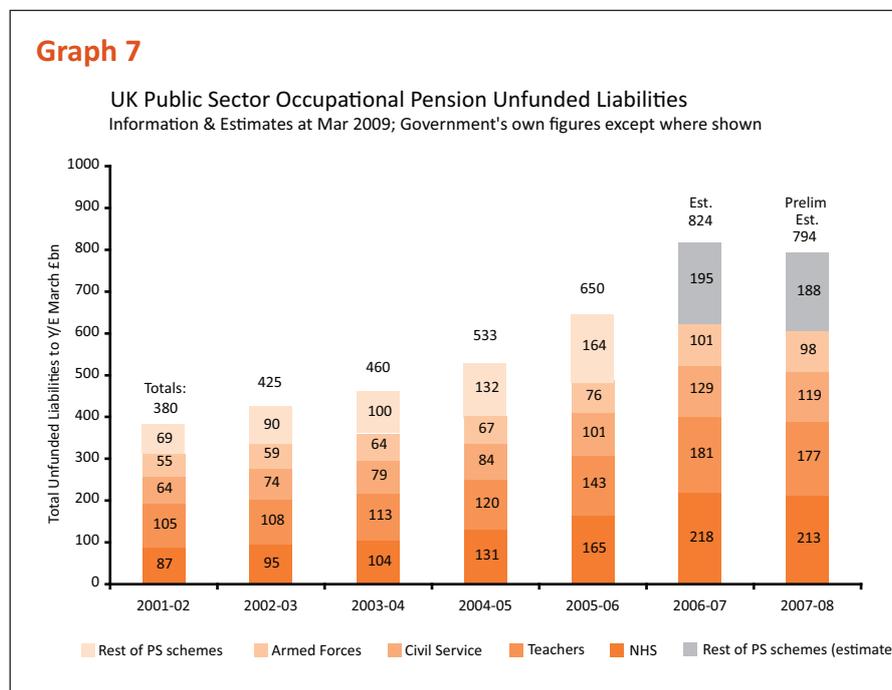
There are two sources of official information on public sector occupational pension liabilities: pension scheme resource accounts, which provide a figure for each scheme, and estimates of the aggregate of all unfunded schemes that the government provides from time to time.

A combination of the resource accounts, in effect the annual reports and accounts of the pension scheme, and some aggregated figures, mostly given in Parliament, provide a reasonably clear view of the aggregate liabilities – with the significant caveat that they are based on the Government's own assumptions.

Graph 7 shows the aggregate unfunded public sector pension liabilities since 2001-02. The values to 2005-06 are the Government's own figures, mainly announced in Parliament. The values for 2006-07 and 2007-08 are estimated by us on the basis of the 2006-07 and 2007-08 resource accounts for the four large schemes (NHS, teachers, civil service and armed forces), plus estimated liabilities for the minor schemes that make up the balance. We have used the same information that affects the large schemes, particularly the assumed interest rate, to estimate the smaller schemes' liabilities. On 31st March 2008, the Government raised the real

²³ Mortality tables are taken from the actual longevity of relevant sub-sets of the population. So the mortality of, say, teachers, is generally lower than the mortality of manual workers. It is the actuary's job to select the most appropriate table and extrapolate longevity trends using his chosen longevity model

discount rate it uses to value pension liabilities from 1.8% pa (applying to liabilities at 31st March 2007) to 2.5% pa. This discount rate rise is the sole cause of the observed decrease in the outstanding liabilities at 31st March 2008.



The government's discount rate

The Government's own estimates of its unfunded pension liabilities require the extensive use of assumptions about future behaviour of key economic variables, and also extensive knowledge of the demographic and financial profile of the pension fund members. This information is only available to the Government, as the employer and administrator of the pension schemes, and so the task of the external observer is limited to testing some of the major assumptions. This report will test only one – the discount rate.²⁴

The discount rate that the Government uses to value its liabilities and to calculate the current service cost is not a market rate. It is a rate chosen by a governmental committee called the Financial Reporting Advisory Board (FRAB).²⁵ Each year, the FRAB advises the Treasury on the appropriate discount rate with which to value its pension liabilities.

Until 2005, a fixed real discount rate of 3.5% pa was used "based on a review of long-term historical patterns of real rates of return on gilts".²⁶ From the financial year 2005-06, the FRAB decided to adopt a discount rate based on yields of AA-rated corporate bonds of more than 15 years' maturity. This is in line with the requirement of the FRS17 and IAS19 private sector accounting standards for funded schemes.²⁷ Nowhere has the board provided a clear rationale as to why a funded private sector accounting standard discount rate is favoured over the market rate for government borrowing.

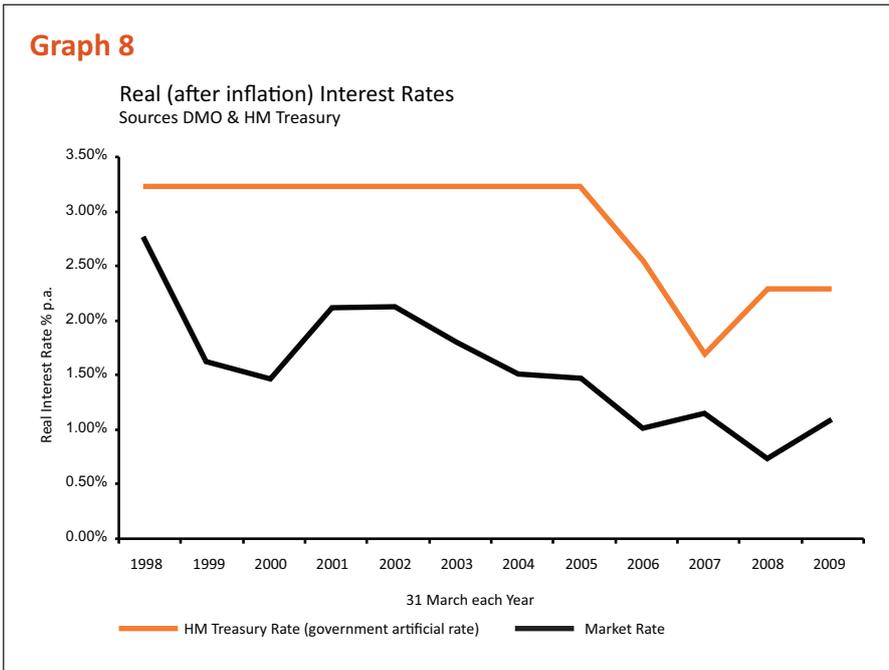
To make clear the difference between the FRAB's recommended rate and the government borrowing market rate, Graph 8 compares these two values for the past 11 years.

24 In Sir Humphrey's Legacy three assumptions were tested – the discount rate, longevity and salary growth. Space and materiality forbid us from dealing with the latter two in this report

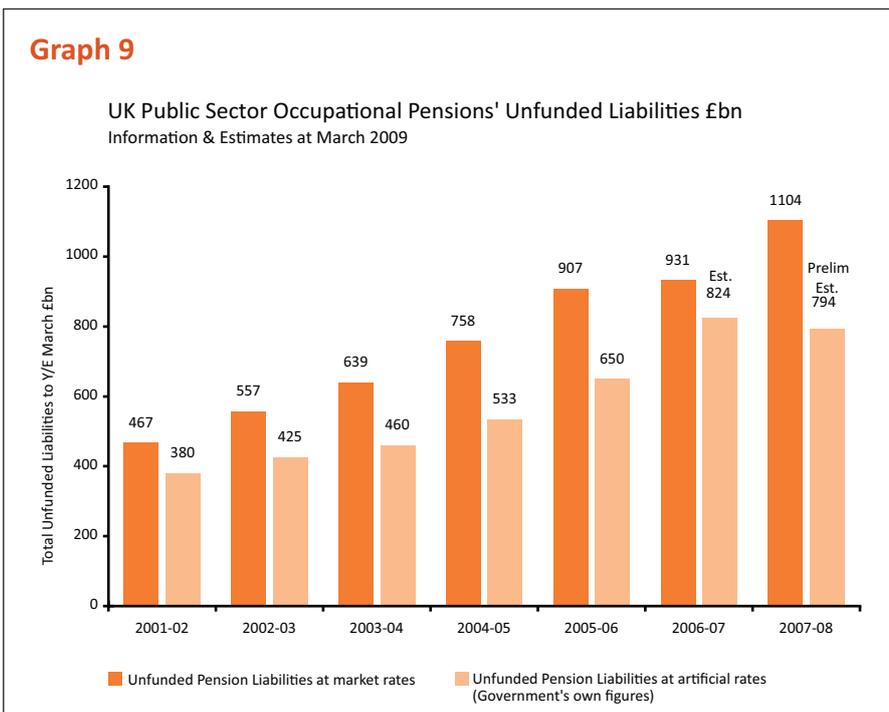
25 There is a lot of publicly available information about this board. See the Treasury website: http://www.hm-treasury.gov.uk/psr_frab_index.htm

26 Seventh Report, Section 2.10, Financial Reporting Advisory Board, June 2004

27 These standards, introduced in the private sector in the past few years, require an employer's pension costs and liabilities to be measured using market rates of return from AA-rated bonds



The graph illustrates the heart of the problem within the state unfunded pension schemes: the Government has chosen to use an arbitrary discount rate which produces a totally different financial picture from the one we get if we use the market rates. From the information that the Government provides in the resource accounts, the sensitivity of total liabilities to interest rates is known and is approximately a 20% change in liabilities for each 1% change in the assumed interest rate. This sensitivity is not fixed; it can change slowly over time and alters with respect to the interest rate.²⁸ There is enough information, however, approximately to revalue historical liabilities at market interest rates, rather than the Government's administered rates. Graph 9 shows this.



28 See Record N, Sir Humphrey's Legacy, IEA, 2006 for more on this and also the January 2008 update: <http://www.iea.org/record.jsp?type=book&ID=428>

Why have liabilities been growing so fast?

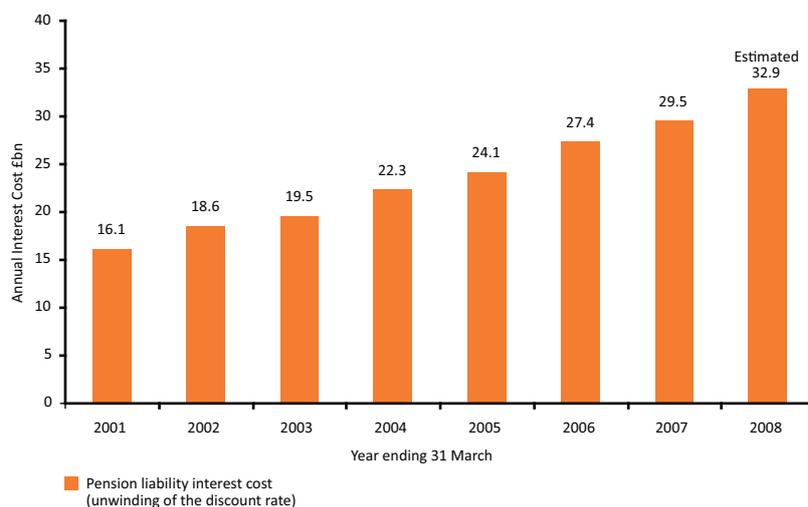
Whether or not the Government's liability figures, based on artificial rates or on market rates, are used, the same question applies: why have liabilities been growing so fast? The answer lies in one general and two specific observations.

First, in all pension schemes, funded or unfunded, liabilities are calculated as the *discounted* future aggregate pension payments of the scheme. This means that each year there is a year's worth of "unwinding of the discount rate" (or in normal language "interest on the debt") and this is not paid in cash, instead it is rolled up into the liabilities. So for its unfunded schemes, the Government is borrowing, and each year it has to pay interest on that borrowing. As will be shown below, these borrowing costs are not trivial – in fact in 2005-06, the interest paid on these unfunded liabilities exceeded the interest paid on the National Debt for the first time (see Graph 11). Since the interest is not paid in cash, the rolling up of the interest is a permanent source of increase in liabilities.

Graph 10 shows the interest incurred by the Government in this unwinding of the discount rate from its own official figures.²⁹ Note that the Government rightly includes inflation in the discount rate calculation: since the rate of inflation is known at the end of every year, the full nominal interest rate (real rate plus inflation) can be used as the discount rate. The same would be true of a real asset like index-linked gilts. Although an index-linked gilt might offer a real yield of, say, 1.5% over inflation ex-ante, once the relevant year had passed, the actual return of the gilt would be inflation, say 3% pa, plus 1.5% making 4.5%.³⁰

Graph 10

Unfunded Public Pension Interest Costs £bn (Government's own figures)
Unfunded Pension Liability; Source PESA 2008 (HM Treasury); Year to 31 March each year



29 Source: Public Expenditure Statistical Analyses 2008, Table D.1 p178: row 5 Unwinding of discount rate (= contribution to non-cash items), HM Treasury

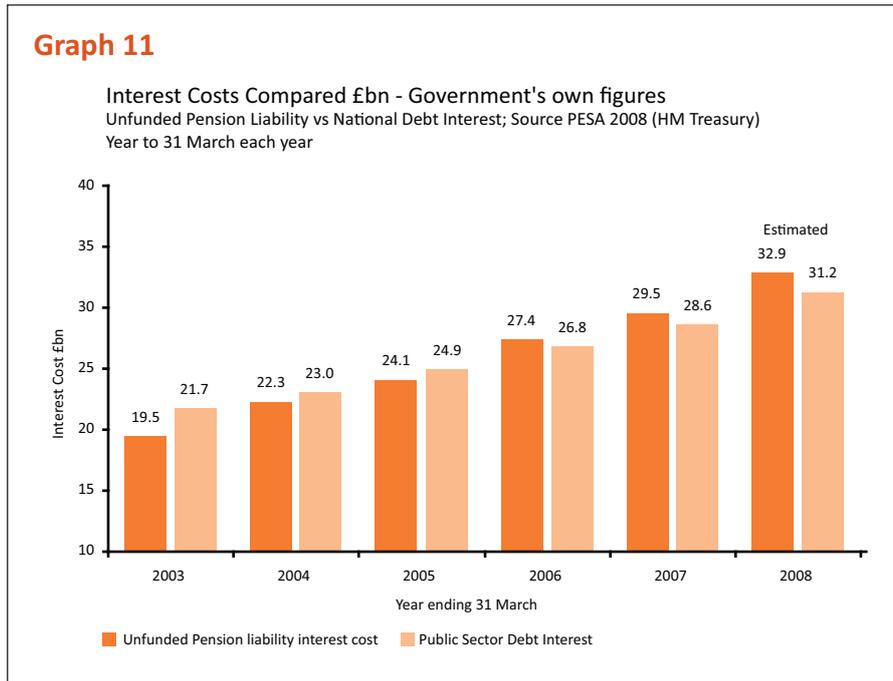
30 Strictly speaking, the return of an index-linked gilt yielding 1.5% in a year of 3% inflation would be $(1.015 \times 1.03) - 1 = 4.55\%$. This only matters when either the yield or inflation, or both, are high

31 Public Expenditure Statistical Analyses 2008; Table 5, p 58, row 1.7, Public Sector Debt transactions, HM Treasury

Each year the unfunded liability will rise by the amount of the interest (£32.9 billion in 2007-08), other things being equal, because the Government does not pay the interest; it rolls it into the liability.

Graph 11 shows the unwinding of the discount rate (the figures from Graph 10) compared to the interest paid on the National Debt.³¹ The figures in Graph 11

are the Government’s own, taken from the Treasury’s annual public spending bible – Public Expenditure Statistical Analyses (PESA).



The rate of growth of interest payable on unfunded pensions has been faster than the rate of growth of interest on the National Debt because the former is rising faster through salary increases and through the rolling up of the interest – it pays interest on the interest in the subsequent year, and so on.

This “unwinding of the discount rate” phenomenon occurs in all calculations of liabilities in pension schemes – but funded pension schemes earn interest or investment returns on the pension fund assets – and in the perfectly-matched fund, the interest on the assets exactly match each year the interest on the liabilities.

Of the two more specific observations about the rapid rise in the liabilities, the first is that new liabilities are being taken on at a greater rate than pensions are being paid. We can state this because, since 2005-06, even on the Government’s own artificial assumptions, annual current service costs are greater than pensions-in-payment. At market interest rates, the current service cost has always been greater than pensions-in-payment. This is actuarial jargon for saying “the value of the new liabilities taken on each year are greater than the liabilities expunged by the payment of pensions”. Two factors have exacerbated the rise in current service costs: the strong rise in relative earnings in the public sector in the 2000-2007 period,³² and continued increases in public sector employment.³³

The second specific reason for the rapid rise in liabilities is the fall in the real discount rate over the decade. As can be seen in Graph 8, both the Government’s artificial rate and the market rate have fallen substantially since 2002. This has the effect of raising the liabilities, although a rise in interest rates would equally well cause them to fall.

The fall in real interest rates during the decade has given the Government lower borrowing costs on the National Debt than it would otherwise have had, reducing public expenditure on debt interest. At their lowest, 50-year fixed real rates on

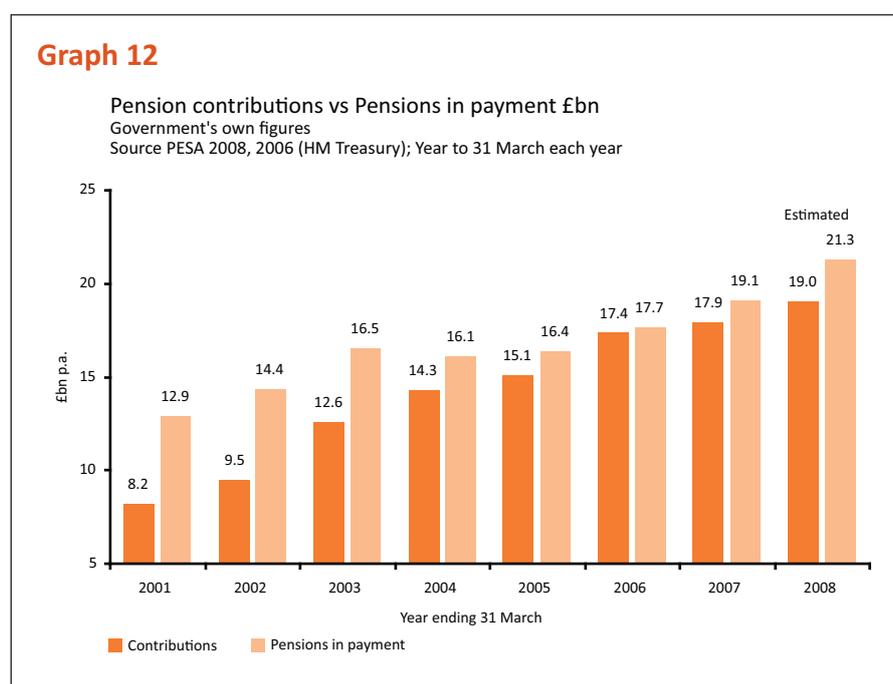
32 Public sector average annual earnings increase Dec 1999- Dec 2008 = 4.2% pa (source: ONS Series LNNJ) versus private sector over the same period = 3.7% pa (source: ONS Series LNKY)

33 Public sector employment rose by 10.2% from December 1999 to December 2008 to 5.78 million (source: ONS Series G7AU) versus private sector employment over the same period, which rose by 7.0% to 23.60 million (source: ONS Series G7K5)

index-linked gilts fell well below 0.5% pa, so the scope for further savings from interest rate falls is limited.³⁴

Aggregate annual pension costs for unfunded public sector pensions

As has been shown, money received from pensions' contributions is spent by the Treasury, not invested. Graph 12 illustrates that the amount paid out by the Treasury each year to its existing pensioners in unfunded schemes has been running just slightly higher than the contributions received. This is pure coincidence. Payments to pensioners could easily be much higher than contributions received, as in a very mature fund such as British Coal's, or much lower, as in an immature fund such as Vodafone's.



In essence, therefore, the Treasury has been using contributions received for the next generation's pensions to pay the current generation of pensioners. (This is exactly how Ponzi or pyramid schemes work. Existing investors in Ponzi schemes who wish to take their money out are paid by new investors' money, rather than fictitious returns. The schemes collapse when no new investors can be persuaded to invest.) Existing pensioners will have paid their contributions years ago and the Treasury spent the money it received then on other things.

If the Treasury had not received the cash payments from employee/employer contributions in 2007-08, but still had to pay the pensions it had promised years ago, it would have had to borrow about £19 billion more in 2007-08. Borrowing costs money, so in a sense the Treasury is "investing" the contributions by not borrowing because it saves the interest it would otherwise have to pay.

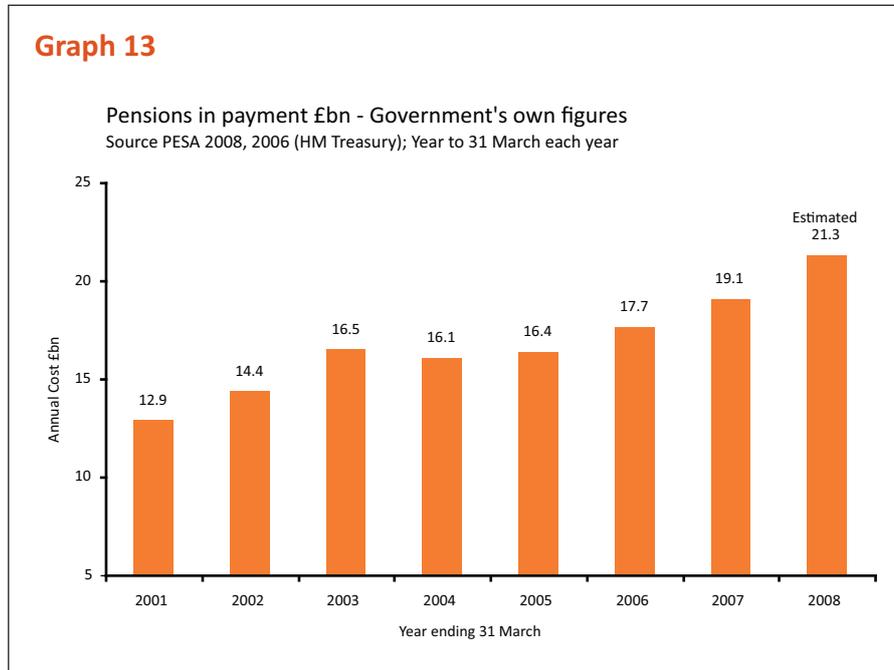
How pensions' costs appear in the Government's accounts

This section deals with the annual costs of aggregate unfunded public sector pensions, and shows how they appear in the Government's accounts. It also shows

³⁴ The lowest real yield for index-linked gilt 2005 was recorded on 12th August 2008, when it was 0.25% pa. (source: DMO)

how they would appear in the Government’s accounts if the accounting principles applied were those generally applied to a funded scheme.

Graph 13 shows the amounts that the Government has paid out in pensions from its unfunded schemes in the past eight years.³⁵



The Government publishes the above figures. However it does not specifically present them as the cost of pensions in its own accounts, since most of the cost of pensions is absorbed in departmental budgets and subject to accounting adjustments that make the costs hard to see. However, the numbers above represent the “cash cost” of pensions, and when ministers think of the cost of pensions, they think of these numbers. Indeed, after all the adjustments, these are the numbers that are ultimately included in total current public expenditure.³⁶

Using the Government’s own figures and assumptions, what would government expenditure look like if unfunded pension costs were treated like a funded scheme’s costs?

Ignoring some minor details, the annual expenditure treated this way would be:

- current service cost (new liabilities taken on in the year)
- less* investment returns for the year (nil for an unfunded scheme)
- plus* unwinding of the discount rate
- less* pensions-in-payment³⁷

All accounting of funded pensions treats the cost of pension provision in the year as the current service cost – never as the actual pensions paid out, which are paid for out of the accumulated invested current service costs over the years.

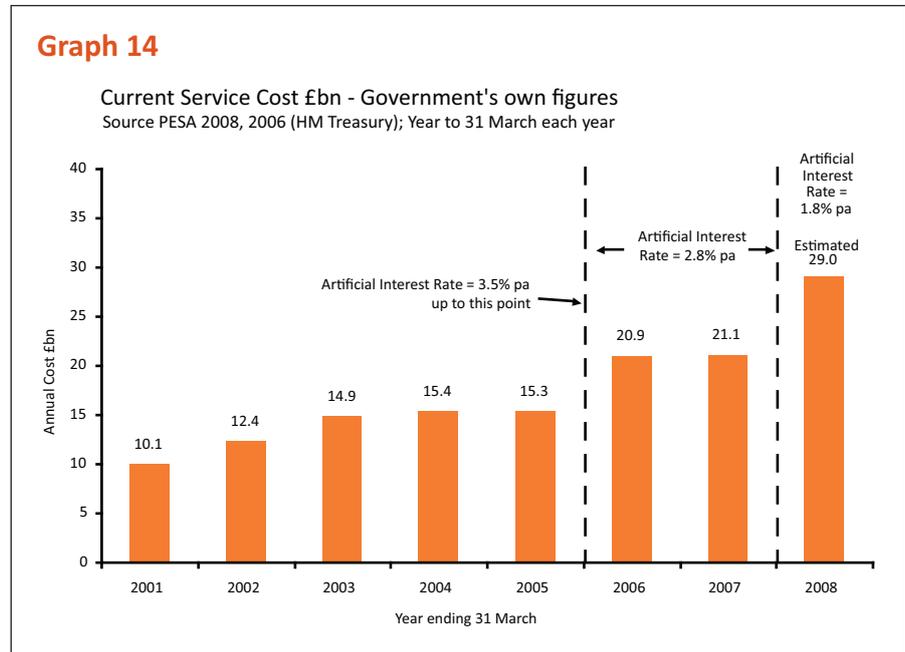
We have already dealt with the very large unwinding of the discount rate (the interest cost of the liability) in Graph 10. There are no assets, so there are no investment returns. This leaves the current service cost.

35 Source: PESA 2008 Table D.1; penultimate row; PESA 2006 for years 2001 and 2002; Table B.1, HM Treasury

36 We take total current public expenditure (ie what the Government thinks total current public expenditure to be) as Total Managed Expenditure, (fourth row from bottom) in PESA 2008, Table 1.1 p12. This is effectively the cash that the Government spends each year

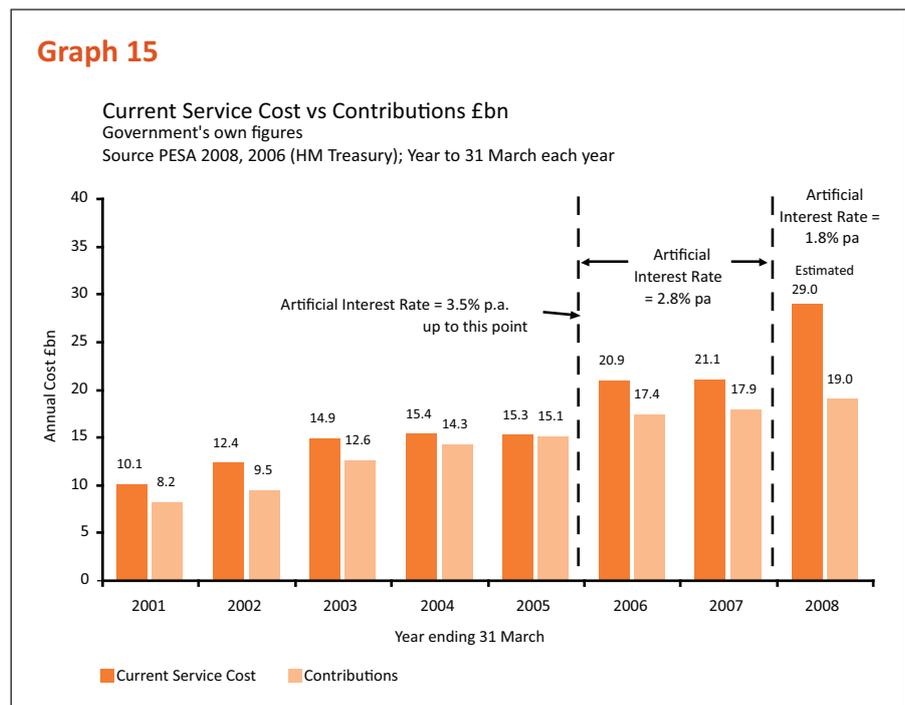
37 Pensions-in-payment are not excluded because they represent liabilities expunged, but because this is the figure that the Government currently reports as annual pension expenditure

Graph 14 shows the current service cost (pension contributions needed to pay for pensions accrued in the year) on the Government's own figures, which are based on artificial interest rates.³⁸



Contributions compared to current service cost

If its methods were internally consistent, the Government would charge public sector employers the full current service cost for the pensions' liability it is taking on each year as shown in Graph 14). Indeed, this is the principle of the SCAPE (superannuation contributions adjusted for past experience) methodology.



38 Source: PESA 2006, Table B.1 and PESA 2008, Table D.1, row 1, Change in Liability

However, with no apparent explanation, the Government has asked its actuaries to continue to calculate the contributions payable to the Treasury on the basis of a fixed interest rate of 3.5% pa real. This has the effect of dramatically reducing the amount that both employers and employees have to pay for their pensions.

Graph 15 below compares contributions paid in aggregate by employers and employees with the Government's calculated current service cost.

So when the Government decided to reduce the artificial interest for calculating the service cost, to 2.8% in April 2005 and then to 1.8% pa in March 2007 (much nearer the 1.2% pa interest rate prevailing in the market at the time), it failed to pass on this new higher cost to employers and employees in the form of a higher contribution rate. In the year to 31st March 2008, this hidden subsidy amounted to £10 billion (£29 billion less £19 billion). Note that for the year to 31st March 2009, the Government has increased its artificial interest rate to 2.5% real.

Should the Government use artificial interest rates?

It is clear that artificial interest rates allow the Government to fool both itself, and its employers and employees, into thinking that pensions are cheaper than they actually are. This may sound innocuous enough – after all, the Government will always be in a position to pay the promised pensions – but it is not. It prevents normal economic forces and rational decision-making from working and discriminates against the 80% of UK employees who do not have a public sector pension.

And our view is by no means unique. The International Public Sector Accounting Standards Board has recently set out a new standard – IPSAS25. This is based on the international private sector Standard IAS19, which in turn has strong roots in FRS17, the equivalent UK standard for private sector entities. Interestingly, in IPSAS25 there is no distinction between funded and unfunded schemes – public sector liabilities are all to be discounted at the same market rate. It specifically requires that:

- Financial assumptions shall be based on market expectations, at the reporting date, for the period over which the obligations are to be settled. (para 90)
- The discount rate reflects the time value of money but not the actuarial or investment risk. (para 92)
- An entity makes a judgment whether the discount rate that reflects the time value of money is best approximated by reference to market yields at the reporting date on government bonds, high quality corporate bonds or by another financial instrument. In some jurisdictions, market yields at the reporting date on government bonds will provide the best approximation of the time value of money. (para 94)³⁹

Since the only market in index-linked bonds in the UK (particularly at the longer dates) is gilts, then the Government is obliged to use index-linked gilts to discount its liabilities and to calculate the current service cost if it is to conform to the IPSAS 25. It does not do this.

Ultimately, the question of whether or not the Government conforms to IPSAS25 is an academic one, however. What matters is what pensions cost employers and employees; what taxpayers are in practice required to fund and

39 IPSAS25; available at www.ipsas.org/PDF_ipsas_standards_ifac/IPSAS25.pdf

when; and whether or not the pensions that public sector workers receive are fair, and seen to be fair, in relation to private sector workers. These questions are addressed in the recommendations in Chapter 4.

Market interest rates

This section recasts the government figures that we have reported so far by changing the artificial interest rates to market interest rates, using the techniques explained in Chapter 1. This gets us closest to the true cost of public sector pensions as they are currently arranged. However, this exercise, although based on the Government's own figures, requires a series of adjustments, which by their nature can only be informed estimates. The current service cost has to be adjusted upwards to take account of the lower market interest rates; the outstanding liability on which the unwinding of the discount rate is calculated also has to be adjusted upwards (as illustrated in Graph 9); and the interest rate applied on the higher liability has to be adjusted downwards because market interest rates are lower than the Government's artificial rates.

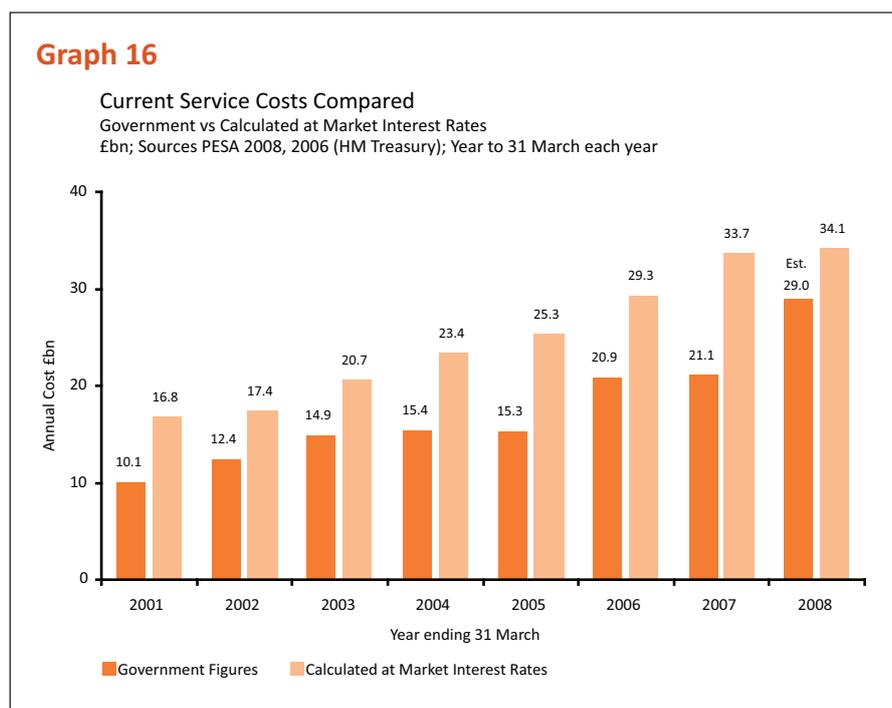
Each of these will be taken in turn, so that the reader can see how the adjustment is made.

Adjusting current service cost

As can be seen in Graph 2, the current service cost (contributions needed) to pay for a public sector pension is highly dependent on the interest rate.

We have built a financial model of public sector pensions that is designed to mirror the behaviour of the key pension measures (current service cost and outstanding liabilities) with respect to the interest rate.

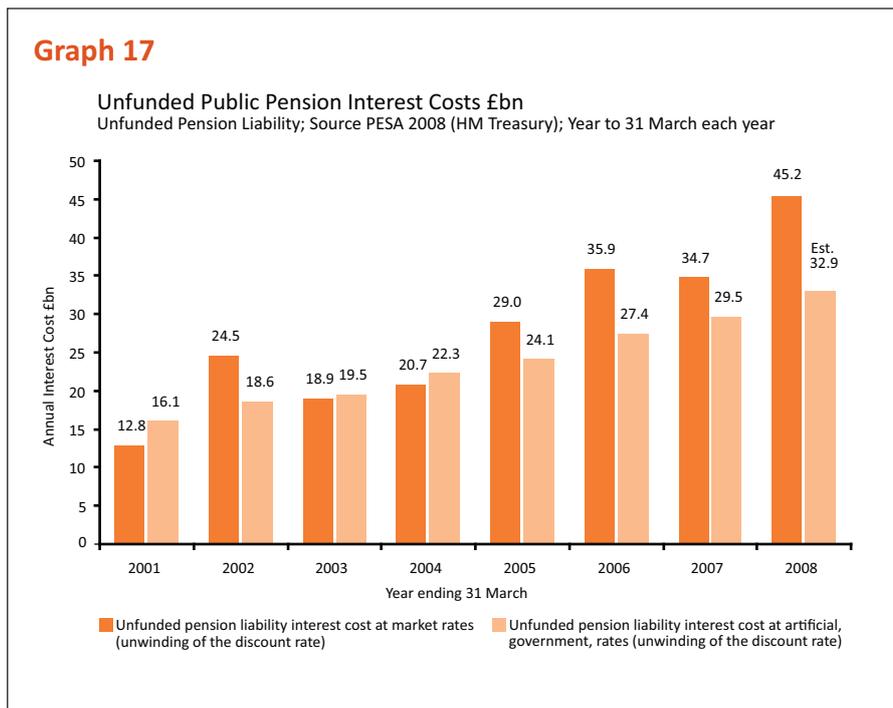
Using this model, the current service cost – calculated using government longevity and salary growth assumptions, but using market instead of artificial interest rates – can now be added to the picture in Graph 16.



Graph 17 shows that the calculated costs do not rise or fall smoothly because market interest rates are not stable. The Government’s use of artificial interest rates seriously underestimates the market cost of pensions. The narrowing of the gap in the year ending 31st March 2008 is sadly only temporary: the Government’s artificial rate will rise for 2008-09 to 2.5% pa, and the real market interest rate will fall to about 0.8% pa. We already know this because the calculation uses start-of-year interest rates; so the gap will widen in 2008-09. Moreover, this gap does not represent anything like the full hidden subsidy to public sector employees.

Adjusting the “unwinding of the discount rate”

The interest cost of not funding public sector pensions has already been seen in Graph 10. The figures in Graph 10, however, are the Government’s figures calculated on artificial interest rates. Graph 17 shows the same figures with the calculated “unwinding of the discount rate” superimposed. It is clear that even though the calculation is a function of two numbers, of which one is higher than the Government’s (the liability) and one is lower (the interest rate), the calculated figures are routinely higher.



The Government does not break down in detail its “unwinding of the discount rate” calculation. While the real interest rate it uses is known (it is the artificial interest rate), it is not entirely clear which dates the Government applies to get the inflation data. In our calculations we have taken the September year-on-year RPI percentage increase and used it to uprate the pensions payments, and therefore the liabilities, from the next 1st April.⁴⁰ So the real return (the unwinding of the discount rate) for, say, the year ending 31st March 2006 is the inflation rate for September 2004 which uprates payments from 1st April 2005, plus the market real interest rate that applies on 31st March 2005 (the start-of-year real interest rate).⁴¹

40 This is how public pensions are uprated in line with inflation

41 Strictly, we multiply (1+ each percentage), and then subtract 1 to get the percentage to be applied for the unwinding of the discount rate

Hidden subsidy

This brings us to the question: how much is the annual hidden subsidy to public sector employees? This question needs to be split up. The interest cost that is now getting so large is a result of the Government's choice to run an unfunded scheme for its employees. State employees had no input into or control over this decision. Nor should they be penalised in relation to those employees whose pension schemes are funded. This £45.2 billion 2007-08 is hidden borrowing costs, not a hidden subsidy. So we will strip this out of the equation.

Two real issues are left.

First, the Government has chosen to calculate the cost of pensions using artificial interest rates, rather than market interest rates. These artificial rates are higher than the market rates, which means that public sector employees and employers pay less for their pensions than they are worth ("worth" is the same as the "cost" to an unsubsidised individual). On the face of it, the contributions that employees and employers make should be based on the Government's artificial interest rate and so match the artificial (subsidised) cost that the Government calculates for pensions.

Second, the Government has gone one step further. Since 1st April 2005 it has chosen to continue to charge employers and employees a higher artificial interest rate than the one it uses for calculating the current service cost and the outstanding liabilities. To see the effects of this discrepancy we can take 2007-08 as an example.

The annual current service cost of all unfunded public sector pensions calculated at market real rates (1.21% pa on 1st April 2007 – the start-of-year) is £34.1 billion (see Graph 16). If the Government were to charge employees and employers what it thinks pensions cost at their artificial rate of 1.8% pa, the bill would be £29 billion (see Graph 16). This would be a hidden subsidy of £5.1 billion, or about 5.2% of pensionable payroll (about £97 billion).

But the Government is not charging its own calculation of current service cost; it has maintained a further artificial real interest rate at 3.5% pa, and is charging its employees at the cost that a 3.5% interest rate produces – £19 billion. This is exactly in line with our base case described above – but when calculated at a 3.5% pa real discount rate. So the real cost of pensions in 2007-08 is £34.1 billion, but the Government is only charging employers and employees £19 billion – a hidden subsidy of £15.1 billion. Of course employees themselves pay only about 6% of salary on average, although it does vary between 0% and 11%, which is about £5.8 billion, making a total subsidy (hidden and explicit) of £28.3 billion – or about £5,700 for each of the five million employees in unfunded public pension schemes.

As we have seen in Chapters 1 and 2, this subsidy is not shared equally among public sector employees: most of the subsidy goes to the long-serving and highly paid. For example, the total annual subsidy to GPs (public sector high fliers) is estimated to be their annual current service cost — we use 69%, the calculated current service cost for our GP case study — less their contributions of approximately 8%, which equals 61% of salary. With the assumption that their average salaries are £108,500 pa,⁴² this is a total annual subsidy of £66,000 pa each, of which the hidden subsidy is £53,200 pa.⁴³ There are 27,200 full-time equivalent GPs, so this is a total subsidy from the public purse of £1.8 billion pa just for GPs'

42 Average full-time male GP pensionable pay in March 2004 = £82,600, NHS Pension Scheme: Actuarial Investigation, 31st March 2004; change in NHS contributions 2004-2008 = +31.4%, NHS Pensions Resource accounts 2003-04 and 2007-08, so calculated average full-time male GP salary = £82,600 x 1.314 = £108,500

43 (69%-20%) x £108,500 pa = £53,200 pa. 20% is the total pension cost that the Government recognises

pensions.⁴⁴ GPs, who comprise 0.5% of public sector employees, are getting 6.4% of the entire public pension subsidy.

The pay of GPs and other doctors has risen particularly rapidly in the past few years; this has engendered a particularly high pension cost, and high value for the generation of doctors retiring about now. However, the next generation may experience lower real earnings growth and receive relatively less valuable pensions.

Public Sector Transfer Club and other anomalies

The Public Sector Transfer Club is a pension fund grouping designed to facilitate the free movement of staff across the various pension schemes in the public sector, and some in the private sector. There are no equivalent wholly private sector transfer clubs in the UK. Details of the club benefits can be found in several pamphlets designed for pensioners' information, but the principle is simple: transfers of pension rights between club members are generally effected by directly transferring earned years between employers.⁴⁵ Non-club transfers, by contrast, are effected by calculating a "service credit", which is a cash sum representing the notional value of the employee's pension rights built up in the scheme so far. However, service credits are almost always calculated using interest (discount) rates higher than the market gilts rate, and on less-than-generous assumptions on future pay increases (usually just RPI rather than salary) until retirement. This means that non-club transfers are usually less generous than club transfers. This is a problem that has been visible in the past (it is illustrated in one of our case study interviews), when private pension providers accepted these rather ungenerous cash service credits, and then invested the proceeds in private defined contribution pension funds.

The Public Sector Transfer Club is a sensible idea that does indeed facilitate free movement of staff. However, it is controversial because it embraces more than the main unfunded and funded public pension schemes – there are also a number of private sector and quasi-private sector pension schemes included in the list. (The full club membership list is shown in Appendix 3.)

Staff moving into the public sector from the private sector for, say, the second half or last quarter of their career, will be faced with a choice. Employees moving from a private club member scheme into the public sector will retire with a full, and very valuable, index-linked public sector pension, with the years earned in the private sector credited to the calculation of the public sector pension. Employees moving from all other private sector schemes face starting their years of credit mid-career, say at age 40 or 50, severely curtailing the value of both their private and public pension entitlement.

Career breaks

When an employee leaves a final salary pension scheme before retirement (say mid-career), every UK scheme, public or private, is obliged to uprate the final year's salary of the leaver by price inflation (RPI) to reach a final salary at retirement age on which the "earned years" apply. So for 20 years' employment in a 1/60th scheme, the deferred pensioner would get a pension of 20/60ths multiplied by the uprated final salary at retirement.

44 NHS Pension Scheme: Actuarial Investigation, 31st March 2004

45 See www.civilservicepensions-ni.gov.uk/the_public_sector_transfer_club-2.pdf

If, however, an employee in a public sector pension scheme leaves after 20 years, and then returns to the same scheme for the last five years before retirement, the pension is based not on the RPI-uprated mid-career salary, but on the final salary at retirement. This means, in effect, that by returning towards the end of their careers, even for just a year or two, public sector employees can raise their pensions by the difference between RPI and average earnings. This is typically 1.5% to 2% pa: 20 years of a 2% pa differential is an increase in pension of 48%. To our knowledge, all public sector pension schemes, but no (or very few) private sector schemes, offer this option.

Private sector teachers

There is a further anomaly specific to the teaching profession. Qualified teachers working in UK schools can move freely across the public and private sectors because the vast majority of teachers in private schools are entitled to be members of the public unfunded Teachers' Pension Scheme.

In practice this means that private sector schools choosing to offer a final salary pension scheme pay a total of 20% of payroll (6% employee contribution and 14% employer contribution) to the public Teachers' Pension Scheme.⁴⁶ The Treasury then takes full responsibility for all the pension liability to the teacher and his/her spouse, unlike in normal private company final salary schemes, where the company remains liable for any future deficits in funding.

Is the cost to the nation affordable?

The Government has estimated that spending on public sector occupational pensions will rise as a percentage of GDP from the current 1.5% of GDP to a maximum of 2% of GDP in 2027-28 and then fall back slowly again to 1.8% of GDP in 2057-58.⁴⁷ These figures are based on the cash cost of pensions-in-payment, not on either the current service cost or the contributions that employers and employees make. Ministers have argued that this cost is affordable and, correctly, that the forecast cost is invariant with respect to interest rate assumptions, on which much of this analysis is based.⁴⁸ There are, in our view, two key reasons why this is not a satisfactory answer to the question: is the cost affordable?

First, the estimates of future costs are based on a series of assumptions, including GDP growth; public sector employment levels; longevity; and public sector salary growth. Over the long periods of time that we are dealing with, even small changes in these assumptions can have a large impact on the actual outcome. This may be particularly relevant if we go into a prolonged recession.

Second, the estimated expenditure is expressed as an absolute figure, not relative to the numbers employed in the public sector compared to the private sector. There are about five million public sector employees who will benefit from public pensions, 20% of the current workforce. The current 1.5% of GDP expenditure comes from the £21.3 billion⁴⁹ pensions-in-payment to March 2008 divided by GDP (Q2 2007 to Q1 2008 = £1,421 billion⁵⁰). This expenditure is £4,260 per public sector employee even though the payments are to the much smaller number (about 2.4 million⁵¹) of public sector pensioners. We do not have good data on pensions-in-payment to private sector pensioners, but we have data on

46 From 1st January 2007, employers' contributions are 14.1% of salary and employees' are 6.4%

47 *Long-term Public Finance Report: An Analysis of Fiscal Sustainability*, HM Treasury, March 2008, Table 4.1

48 Correctly, because the size of future payments is not dependent on the discount rate; only the current value of those future payments is

49 PESA 2008 Table D.1; penultimate row, HM Treasury

50 Quarterly National Accounts, Table A2, current price GDP at market prices, ONS

51 GAD 2006, op cit

employers' contributions to funded pension schemes. In 2007, the total employers' and employees' contribution to funded occupational pension schemes was £44 billion, and to personal pension schemes, £19.7 billion.⁵² Funded pension schemes included all private sector occupational schemes, plus some 1.4 million employees in the funded Local Government Pension Scheme and numerous quasi public sector employers such as the BBC, the universities, the former Coal Board and the Bank of England. This funded category covers approximately 20 million workers. To get as close as we can to comparing like-for-like, we estimated earlier (in Graph 16) that the public sector pension contribution required to fund promises made in 2007 at market rates rather than artificial rates was £33.7 billion. So the contribution per employee in the public sector was £6,700 ($=£33.7\text{bn}/5\text{m}$), and the contribution per employee in the funded, largely private, sector was £3,200 ($=(£44\text{bn}+£19.7\text{bn})/20\text{m}$).

The absolute scale of public sector pensions is not, in our view, a sufficient test of affordability. The test is whether the amounts that the public sector is committed to in pension payments bear a fair relationship to the salaries of their employees and stand up to comparison with the private sector. In our view they don't.

52 Pension Trends, 25th March 2009, Table 8.14, ONS

4

What Should be Done?

Lifting the lid

Public pensions are tremendously valuable. This report illustrates the cost (ie the value) of the current public pension schemes and compares them with private alternatives. It also shows, by both individual examples and financial analysis, how different types of public sector worker receive very different levels of benefit from their pension schemes.

The present arrangements are thoroughly unsatisfactory for the following reasons.

- They benefit a small proportion (about 20%) of the working population and hugely benefit an even smaller proportion, largely at the expense of everyone else.
- They are particularly valuable to “no break” careers in the public sector (mostly men), as well as to high fliers.
- On average, they penalise women, who typically take career breaks and experience slower career progression, and anyone who moves from the public to the private sectors and vice versa (with the exception of the Public Sector Transfer Club, explored in Chapter 3).
- They are much more generous than almost all pensions available in the private sector, to an extent not fully understood by the public, or by Parliament. To make matters worse, they are not effectively reported by government.

For these reasons, pension arrangements in the public sector have to change. In our view, it is inappropriate for this report to make detailed recommendations about the shape of future pension schemes – contractual arrangements between employers and employees are best left to the parties concerned. Instead, we propose a policy framework within which public sector employers, employees and their unions can negotiate these decisions. However, before moving to our proposals, some key points of debate are worth rehearsing.

Funding or transparency?

This report has described a pension structure in which transparency of cost (to the taxpayer), and value (to the employee) has been almost completely lost. In simple terms, the employers are paying their employees more than they think they are, and the employees are receiving more than they think they are. This is a recipe for waste on a colossal scale.

In theory, the public sector could reform the contributions calculations to reflect market value along the lines we have proposed and the transparency problem would be solved. However, a good governance structure should recognise the forces that will act to undermine it and incorporate permanent ways of resisting these forces. Many of the constitutional arrangements in Western democracies, including the UK, do this – separation of legislature and executive; independent scrutiny arrangements in the public sector; an independent judiciary, and so on.

In the case of unfunded pensions, however, there is no natural interest or scrutiny group to police them. Almost all the parties with the power to modify the rules have an interest in pushing recognisable costs and liabilities into the

future and out of current budgets. At the parochial level, this is visible in the two-tier discount rates for current service cost and contribution calculations; in the use of pensions arrangements to facilitate early retirement and redundancy, and in the use of loose ill-health rules to allow enhanced pensions for early retirees at “no cost” to the employer.⁵³ At the national level, there is a historical parallel in the fate of the National Insurance Fund, designed in 1946 to be a compulsory contribution fund to pay for unemployment and pensions benefits, but subsequently reduced to merely another form of taxation, with no definable relationship between the contributions paid into the fund and the benefits paid out of it to individuals.⁵⁴ Today there is no identifiable National Insurance Fund, even though in theory there is still such an entry in the Government’s accounts.

So this report has opted to recommend a funded system, rather than just transparency. Funding has the advantage of creating a constituency (the Public Sector Pension Fund or similar) with formal powers granted by Parliament to scrutinise and control; with an interest in maintaining the integrity of the public pension system, and in resisting attempts to soften the often harsh requirements of pension economics on government budgets. Again, in simple terms, with a funded model, pension promises will have to be paid for in cash in the year they are promised. This is the language that politicians and electorates understand and naturally operate within. It is also the rule that applies in the private sector today under accounting standards FRS17 and IAS19.

We recommend that all funding is conducted with index-linked gilts. This will have the important advantage of leaving the cash required of the public sector each year unchanged, unlike the unfunded route, and satisfies the need for the Public Sector Pension Fund to minimise funding risk. It also sidesteps the difficulties associated with large public sector pension funds of distorting the asset markets, either through their sheer scale, or through political manipulation. In the gilt-funded model, the Government will simply issue tranches of new gilts monthly or annually in return for pension contributions, using prevailing market rates to price the gilts. There will be no direct market impact, just as the US Military Retirement Fund’s purchases of specially issued US Treasury bonds has had no market impact (see page 52).

In simple terms, with a funded model, pension promises will have to be paid for in cash in the year they are promised. This is the language that politicians and electorates understand

⁵³ *Occupational pension provision in the public sector*, Table 5, Pensions Policy Institute, March 2005

⁵⁴ The National Insurance Fund was established by the National Insurance Act 1946

Because funding is envisaged to be in gilts (UK government debt), there is no difference between the two models (funded/transparency) in the intergenerational transfer of value, except that the former may encourage the Government to reduce its borrowing.

Variable real interest rates

Real (index-linked gilt) market interest rates vary. In all of the report's earlier discussion, we have assumed that constant interest rates, at whatever level, apply across the whole of an individual's working career and retirement.

In practice, in a funded scheme we envisage contribution rates as percentage of salary being fixed annually, based on the market rates on an annual reference date. This will mean that each year the contributions required to fund pensions promises will vary.

One way that this variability could be managed would be to charge or rebate employers and employees proportionately. Today, employers in most of the large unfunded public sector schemes pay 14% of salary and employees 6% (total 20%). Suppose the cost rose to 25% of pay because real market interest rates fell, then employers could contribute 17.5% and employees 7.5% of salary. Likewise, if market interest rates rose, and contributions fell to 15% of salary, employers could contribute 10.5% and employees 4.5%.

Critics of the funding proposal will point to the difficulty in planning and budgeting that variability in market interest rates will impose on public expenditure (the employer's contribution), and indeed on employees' household budgets. Our response to this is that pensions are promises of largely fixed amounts of index-linked money in the distant future and, if we want to impose transparency and accuracy on these costs, contributions will need to reflect changing financial conditions. Exactly the same problem occurs with the interest payments on the National Debt – when market interest rates change, the interest cost of the outstanding debt changes. Pension contribution rates can be smoothed, within reason, around the required contribution level, but ultimately if they do not vary with real interest rates, they will not reflect financial market realities.⁵⁵

The timing of pension contribution adjustments, and the mechanism by which changing real interest rates are treated in a new funded scheme, are ultimately a matter for negotiation between employer and employee, and would be near the top of the agenda of the Public Sector Pension Fund if a future government wishes to go down this route.

Recommendations

There is a real need for a full and informed debate on the long-term future shape of public sector pensions. Before that can happen, however, politicians and the public need to understand the current cost and value of those pensions. Under current arrangements, cash pension contributions paid by employers and employees to the Treasury are swept up into the general pot, and treated as Treasury income. This has led directly to the failure to account for the cost of public sector pensions, and the current scale of liabilities.

Our key recommendations to improve the transparency and reporting of public sector pension liabilities are:

⁵⁵ It could be possible, in a variation of the final salary pension model, to fix contributions rates, say at a combined 20% of salary, and to vary the accrual rate each year to reflect prevailing market real interest rates: low real interest rates would push down the annual accrual rate from, say, 1/80th to 1/100th, and high real interest rates would push up the annual accrual rate from, say 1/80th to 1/60th. But once a year was complete, each pensioner would know the addition to the cumulative multiple of final salary that he or she had secured

- **Recommendation 1:** Public sector employers that make pension provision for their staff should pay, jointly with employees for contributory schemes, a cash amount each year equivalent to the full value of the pension benefits earned by staff in that year.
- **Recommendation 2:** Annual cash pension contributions should be used to buy index-linked gilts of sufficient value to pay for all pension promises made in that year. Indexed-linked gilts are to be purchased and issued at market prices. This will apply a cost discipline which is currently lacking.
- **Recommendation 3:** To reinforce this new discipline a Public Sector Pension Fund should be established to receive contributions, buy index-linked gilts and pay public sector pensions. It will be required broadly to break even each year, and to fully break even over the run of years. It will assess longevity and other external factor changes, and adjust pension contributions, which it will be responsible for setting, accordingly to break even in the medium term. Its own administrative costs, tiny in comparison with the size of public pensions, will be met by employer and employee contributions – it will not have any budget voted by Parliament, but will be a statutory body.

**The liabilities will match the assets, which will
be visible as assets (gilts) in the Public Sector
Pension Fund**

For this institutional arrangement to survive political pressure, it must be independently constituted (say like the Bank of England) and have an independent board, whose members are not themselves in receipt of public sector pensions, and who are appointed for fixed, non-renewable terms.

The above recommendations will not alter the cashflows in or out of the public sector. But they will show clearly the cost of pensions each year, and they will stop the hidden build-up of liabilities. The liabilities will match the assets, which will be visible as assets (gilts) in the Public Sector Pension Fund. At one level the public sector schemes will remain unfunded, since the liability remains on the Government's balance sheet, but in practical terms it will be charged and accounted for as if it were funded, and indeed hold valuable marketable securities like other funded pension schemes. This funding model or one similar has been used in other countries – for example in the US for military pensions. We briefly explore comparative international arrangements later in this chapter.

If recommendations 1-3 are implemented, then

- **Recommendation 4:** Existing public sector pension liabilities will be ring-fenced by the Treasury and allowed to run off over their remaining life. They should not be monetised, or form part of the Public Sector Pension Fund. All outstanding public sector pension obligations should be met in full.

There will be an inevitable overlap between the pre-transition liabilities and the new Public Sector Pension Fund's liabilities under these recommendations. We envisage that the existing arrangements will be used for pension payments and employee communications, and that professional actuarial expertise will

56 For example, the NHS Business Services Authority in the case of NHS pensions; Capita Hartshead which administers teachers' pensions etc

be used to ensure that all obligations incurred by the Public Sector Pension Fund post-transition are fully funded with cash.⁵⁶

The fiscal implications of the above recommendations will be substantial, even though the cashflow of the public sector will not have changed. On the basis of our estimates for 2007-08, the visible additional public spending will be 2.4% of GDP, or £34.1 billion (in 2007-08 money).⁵⁷ This will be funded entirely by additional sales of gilts to the Public Sector Pension Fund. Pensions-in-payment will continue to be a line-item in the public expenditure accounts, and the interest on the legacy unfunded public pension liability will remain outside public expenditure. With the passage of time pensions-in-payment will fall as the unfunded liability is paid off (50-plus years), and interest on the new liabilities will be offset by interest on the gilts in the Public Sector Pension Fund.

The only way to bring the unfunded scheme under proper budgetary control and amenable to rational decision-making by the participants is to recognise fully the cost in public expenditure

Critics of funding may point to the approximately £35 billion pa additional public expenditure as a powerful argument against its adoption. Our response would be that this money is already being spent: it is just being rolled

straight into debt via the opaque accounting of the unfunded scheme. We argue that the only way to bring the unfunded scheme under proper budgetary control and amenable to rational decision-making by the participants is to recognise fully the cost in public expenditure.

We think that it is highly likely that a Government adopting this route would impose a broad cap (perhaps the current 14%) on Treasury funding of employers' contributions to the cost of pensions. This would require post-transition pensions to be significantly lower cost than the existing pensions. Among the possible mechanisms to achieve this are – raising the retirement age; imposing a cap on pensionable pay (a multiple of average earnings?); and/or moving to a career average salary scheme.

Government will need time to plan its budget under the new arrangements, and employers and employees will also need time to become reconciled to the new costs, and/or negotiate amended schemes.

- **Recommendation 5:** The new arrangements will begin after a transition period in which employers and employees will know the new charging structures. This will allow for negotiations over the shape of future pay and pension packages.

If the policy is adopted by Government, then the Public Sector Pension Fund would be responsible, as its first obligation, for calculating and setting out the charges for the existing schemes, and the rules and practical mechanisms under which charging would be effected after the changeover. This is not a minor technical task, given the scale and complexity of public sector pension arrangements. As a very rough timetable, if the Government adopted this new policy in fiscal year 2010-11, then the following year the Public Sector Pension Fund might publish “dry run” charges

⁵⁷ This is the estimated current service cost at market interest rates for 2007-08

for 2011-12 and 2012-13, and the new arrangements could come into force on 1st April 2013.

These recommendations envisage fundamental and wide-ranging reform to the public sector pension arrangements. We think that they are the best solution to the growing problem of unfairness in pension provision between the private and public sectors. They also allow for sensible negotiations to find the best solution for each employer and their employees' unions. We believe that a similar model could be applied to the provision of pensions in the private sector in the future.

It is unlikely that these recommendations will reach the statute book unless they receive broad cross-party support. The goal of this report is to bring clarity of explanation and practical evidence to the general public and their elected representatives so that such cross-party support can be achieved.

International and domestic comparisons

Does the pensions structure we are suggesting exist in any other context with equivalent scale and/or quality of pensions' promise? Below is an analysis of two comparable schemes.

Bank of England

The Bank of England offered its employees a non-contributory funded final salary scheme very similar to the unfunded public sector schemes. In 2005 the bank revised the discount rate that it uses to calculate the current service cost and the contributions; it now uses risk-free, index-linked gilt returns as its discount rate. This has meant that the contributions required from the bank have risen to 44.3% of the pensionable payroll.⁵⁸ This is higher than our estimate of the current service cost of the unfunded public sector scheme – it is likely that the bank has a higher proportion of higher fliers than the rest of the public sector, with lower turnover and longer-serving employees. The terms of the pension are also very generous.

In its 2005 actuarial review, the bank's actuary found that, valued at gilts rates, the scheme was only 84% funded. He recommended, and the bank agreed, to make additional contributions between 2005 and 2014 to close this funding gap. In 2008 this additional contribution amounted to £52.5 million, or 78% of the pensionable payroll. This meant that for the year to March 2008, the bank made a contribution to its pension fund of £82.3 million, an amount which exceeded its salary bill of £67.3 million.

The costs of this scheme, now calculated at index-linked gilts market rates, have prompted the bank to close the final salary scheme to new entrants, who will be offered instead an average salary scheme. Existing final salary scheme members will be able to continue to accrue rights under the old scheme throughout their bank careers.

In its latest report, the bank states that it has now moved 71% of all of its assets into index-linked bonds (almost all index-linked gilts), and of the remaining 29%, 22% is in straight (non-indexed) bonds, with the balance in unspecified pooled vehicles. Only 0.1% is held in equities. The report is a model of clarity and transparency.⁵⁹

This structure is remarkably similar to the Public Sector Pension Fund that this report proposes. Indeed the benchmark duration of the bank's index-linked port-

⁵⁸ This was £29.8 million, based on a pensionable payroll of £67.3 million. The 44.3% included a 3% allowance for administration and investment costs

⁵⁹ *Pension Fund: Report and Financial Statements for year ended 29 February 2008*, Bank of England www.bankofengland.co.uk/about/humanresources/pensionreport.pdf

folio is 19.1 years – very close to the duration of 20 years we estimate for aggregate public sector pensions.

US Military pensions

The US Department of Defense Military Retirement Fund was originally a totally unfunded US federal pension scheme. In 1984, the US Government decided to amortise the unfunded liability over a 50-year period with annual amortisation payments into the fund by the US Treasury. The payments would be used to invest in specially issued US Treasury bonds. In 2006, the amortisation period was reduced to 42 years, aiming to make the fund fully funded by 2026. In 2008, the US Treasury planned to pay \$46 billion in amortisation payments, as well as the current service cost of current employees. The 2007 report of the Military Retirement Fund sets out the amortisation payments for the subsequent 18 years; the final amortisation payment is estimated to be \$127 billion.

In September 2008, the Military Retirement Fund had liabilities valued by the US Government at \$1,154 billion, and offsetting assets (US Treasury bonds) of \$253 billion.⁶⁰ US military pensioners are fully protected against inflation by cost-of-living-allowances awarded annually. The US government uses artificial discount rates (similar to the UK), and so the liabilities valued at market rates are somewhat higher than the \$1,154 billion shown in its accounts.

The amortisation programme agreed by Congress and implemented in 1984 has significant similarities with the recommendations in this paper. The 50-year amortisation period (now 42 years, with 18 still to run) is of a similar length to the amortisation that would be required to run off the UK's current unfunded liabilities under our recommendations.

Summary of comparative schemes

The two public sector employers highlighted, one in the UK and one in the US, have decided to convert their previous funding arrangements into, in effect, matched, self-sustaining funds, with index-linked government securities as the principal asset and an amortisation period to pay off any inherited unfunded liability. This approach recognises the importance of accurate recognition of the full costs of defined benefit pensions in the public sector, and also allows for fairness both between current and future generations, and between the same generations employed in the public and private sectors.

Our recommendations support these aims, and will allow for fairness in pensions in the future.

It is worth noting that the position of the UK appears to be unusual with respect to occupational public sector liabilities. Although there are to our knowledge no studies of comparable public sector pension arrangements across all OECD countries, a forthcoming report from the British-North American Committee shows that, valued at the respective market interest rates and based mainly on 2007 official figures, net unfunded public sector occupational pension liabilities for the US, Canada and the UK were respectively 28%, 27% and 85% of

The UK is unusual in having such a large, centralised public sector workforce (20% of the population); unusual in offering very generous index-linked pensions to almost all of these employees

60 *Military Retirement Fund Audited Financial Statements, Fiscal Year 2008*, p11, US Department of Defense; http://www.defenselink.mil/comptroller/cfs/fy2008/13_Military_Retirement_Fund/Fiscal_Year_2008_Military_Retirement_Fund_Financial_Statements_and_Notes.pdf

GDP.⁶¹ The much higher value for the UK, which includes the Local Government Pension Scheme, is because of the centralisation of public sector employment together with unfunded schemes, while American states and Canadian provinces, which form a large part of their respective governments' pension liabilities, are funded.

Most European countries also do not have large centralised unfunded occupational schemes relating purely to public sector workers, although some do have large unfunded nationwide social insurance schemes with very large liabilities indeed. A discussion of these lies outside the scope of this report.

In summary, it appears that the UK is unusual in having such a large, centralised public sector workforce (20% of the population); unusual in offering very generous index-linked pensions to almost all of these employees, and unusual in having no funding of any kind for this entire group. This has created a burden on the UK taxpayer greater than experienced in comparable countries, a burden from which only a narrow section of the population benefits. This report's recommendations aim to address and resolve these anomalies.

⁶¹ See www.bnac.org

Glossary

Accrual rate	Defined benefit pension schemes include a value (the accrual rate – often 1/60th or 1/80th), which represents the proportion of the final or career average salary earned for each year of employment to be paid as pension. Forty years employment in a 1/60th final salary scheme will mean a pension of 40/60ths = 2/3rds final salary.
Contribution rates	The annual payments made by employers and employees to the Government, expressed as a percentage of salary in that year, to pay (in theory) for the pensions being promised in that year.
Current service cost	The annual cost to the Government, expressed as a percentage of salary in that year, of taking on the obligation to pay for the pensions being promised in that year.
Defined contribution	A defined contribution (DC) pension scheme is one in which no promise is made by the employer as to the size of the ultimate pension that the employee receives. The size of the pension will depend on the aggregate amount and duration of contributions, and investment returns on the money invested. DC schemes are always funded.
Defined benefit	A defined benefit (DB) pension scheme is one in which a promise is made by the employer as to the size of the ultimate pension that the employee will receive. The size will depend on either the final few years' salary (final salary) or the average salary over the employee's career (career average scheme); the latter is also adjusted for inflation over the career. Other contributory factors include the accrual rate and years of service.

Discount rate (interest rate)	The interest rate applied in a calculation of the <i>discounted</i> or <i>present value</i> . The convention is to express discount or interest rates as the un compounded annual rate of return – so a 10% interest rate will turn £100 into £110 in one year.
Discounted	A future payment is discounted back to today by taking its <i>present value</i> . The interest rate used to calculate the present (or discounted) value is sometimes called the discount rate.
Duration	Duration is a measure of both the average maturity of a series of payments in the future (like pension payments or payments by gilts), and also a measure of the sensitivity of the <i>present value</i> of such a stream of payments to changes in interest rates. The duration measured in years is approximately (and conveniently) also a measure of the negative percentage change of the present value with respect to the interest rate. So if interest rates fall by 1% from 3% to 2%, then for a 20-year duration stream of payments, the present value of the payment stream will rise by $1\% \times 20 = 20\%$.
Gilts	UK government debt. Gilts are tradeable instruments (bought and sold on the stock market), which can be either conventional or index-linked. One unit of conventional gilts pays a fixed interest payment twice yearly, and then £100 at maturity. For example a 6% Gilt 2028 pays £3 per £100 unit on 7th June and 7th December each year, and £103 on 7th December 2028. Index-linked gilts pay interest and principal on the same basis, but each payment is indexed to the retail prices index (RPI). Because of the mechanics of indexation, there are additional complexities in index-linked gilts, including two types – eight-month lag and the more modern three-month lag. Most of the National Debt is in the form of gilts.

Liabilities	<p>The value today (see <i>present value</i>) of the future pension payments owed by an employer (the Government) to a current, former or retired employee. Liabilities measured in this way will always be smaller than the actual amounts paid in future, as the liability calculation takes account of the interest earned between today and when the payments are due.</p>
Mortality tables	<p>Mortality tables are compiled by the government actuary from public death records, and by insurance companies from the records of their customers, to provide companies offering life insurance or pensions (both financial products whose payout depends on the customer's longevity) with information on which they can base their products' pricing. Governments also need information about the population's mortality from the tables so it can plan pension and other benefits.</p>
Pension scheme resource accounts	<p>These are annual reports of the unfunded pension schemes, in which the key values of the scheme are published. They provide, <i>inter alia</i>, the size of unfunded liability, the current service cost, the contributions received and the pensions paid out. They also specify the key assumptions on which the valuations, current service cost, etc are based. The law requires that resource accounts for the year ending 31st March have to be laid before Parliament by 31st January the following year.</p>
Present value	<p>The value today of a payment or stream of payments in the future. If the market interest rate is 3%, and the future payment is £100 in ten years' time, the present value is $£100 / (1.03)^{10} = £74.4$. This is because if I invest £74.4 today at 3% compound, then in ten years I will have £100. More generally $PV = FV / (1+r)^n$, where PV = present value; FV = future value; r = interest rate; n = time to future payment in years.</p>

Real interest rate	The market rate of interest over and above inflation payable by index-linked gilts. The rate varies continuously according to market behaviour.
Unfunded	A pension scheme in which no money has been set aside to pay the pensions promised. If contributions have been received by an unfunded scheme, these are spent by the Government in the year in which they are received.

Appendices

Please note – lists (especially Appendix 2) are not exhaustive

Appendix 1 - Unfunded public sector pension schemes

- Armed Forces Pension Scheme
- Principal Civil Service Pension Scheme (Great Britain)
- Principal Civil Service Pension Scheme (Northern Ireland)
- NHS Pension Scheme (England & Wales)
- NHS Pension Scheme (Scotland)
- House of Commons Staff Pension Scheme
- House of Lords Staff Pension Scheme
- Health & Personal Social Services Superannuation Scheme (Northern Ireland)
- Teachers' Pension Scheme (England & Wales)
- Scottish Teachers' Superannuation Scheme
- Northern Ireland Teachers' Superannuation Scheme
- Police Pension Scheme (administered locally by police authorities)
- Firefighters' Pension Scheme (administered locally by Fire and Rescue Authorities)
- UK Atomic Energy Authority Pension Scheme
- Research Councils Pension Scheme
- Judicial Pension Scheme

Appendix 2 - Funded public sector & government guaranteed pension schemes

Funded Public Sector Schemes

- Civil Aviation Authority Pension Scheme
- Bank of England Pension Fund
- BBC Pension Scheme
- Local Government Pension Scheme (England & Wales)
- Local Government Pension Scheme (Northern Ireland)
- Local Government Pension Scheme (Scotland)
- Parliamentary Contributory Pension Scheme
- Royal Mail Pension Scheme
- Private Sector Pension Schemes with Some Element of Government Guarantee
- British Coal Staff Superannuation Scheme
- BT Pension Scheme
- Mineworkers' Pension Scheme

- Railways Pension Scheme
- Universities' Superannuation Scheme

Plus several partially guaranteed pension schemes for privatised businesses
(details not fully disclosed by Government)

Appendix 3 - The Public Sector Transfer Club

This list is accurate at August 2008, and lists only participating schemes, not closed schemes.

- Armed Forces Pension Scheme
- Arts Council of Great Britain Retirement Plan
- Assembly Contributory Pension (NI) Fund
- Atomic Weapons Establishment Pension Scheme
- The Audit Commission Pension Scheme
- The British Tourist Boards Staff Pension and Life Assurance Scheme
- The Cancer Research UK Pension Scheme
- Chartered Institute of Library and Information Professionals Pensions Scheme
- Church Commissioners' Superannuation Scheme
- The Civil and Public Services Association Pension Scheme
- The Principal Civil Service Pension Scheme
- The Commonwealth War Graves Commission Superannuation
- Council of Civil Service Unions; National Staff Side Pension Scheme 1972
- The Coventry & Warwickshire Hospital Saturday Fund Pension Scheme
- Crown Servants (Grosvenor) Pension Scheme
- English Partnerships Pension Scheme
- European Parliament (United Kingdom Representatives) Pension Scheme
- Birmingham Hospital Saturday Fund
- Federated Pension Scheme for the Royal College of Midwives
- The FDA Staff Retirement Scheme
- The Firemen's Pensions Scheme Order 1992
- Firemen's Pension Scheme Order (Northern Ireland) 1973
- Food From Britain Retirement Benefits Scheme
- Government Communications Bureau Pension Scheme
- Greenwich Hospital Pension Scheme
- Health & Personal Social Services Superannuation Scheme (NI)
- The Terrence Higgins Trust Pension Scheme
- Highland and Islands Enterprise Superannuation Scheme
- Home-Grown Cereals Authority Pension Scheme
- House of Commons Staff Pension Scheme
- House of Lords Staff Pension Scheme
- National Health Service (Isle of Man) Superannuation 1978
- IoM Manual Workers Superannuation Scheme 1977
- The Isle of Man National Transport Limited Pension Scheme 1978
- The Isle of Man Firemen's Pension Scheme 1978
- The Radio Manx Limited Pension Scheme 1980

- IoM Financial Supervision Commission Superannuation Scheme 1984
- IoM Insurance Authority Superannuation Scheme 1986
- Manx Electricity Authority Superannuation Scheme 1985
- IoM Superannuation (Harbour Police Civilian Auxiliaries) Scheme 1988
- IoM Airport Firemen's Superannuation Scheme 1989
- IoM Leisure Services Superannuation Scheme 2000
- The Isle of Man Local Government Pension Scheme
- Isle of Man Post Office Authority Superannuation Scheme 1999
- Legal Aid (Scotland) Pension Scheme 1977
- The Legal Services Commission Staff Pension & Assurance Scheme (No 4)
- E&W Local Government Pension Scheme
- Local Government Superannuation Scheme (Scotland)
- Northern Ireland Local Government Superannuation Scheme
- The Lord Chancellor's Advisory Committee on Legal Education and Conduct Staff Pension Scheme
- Medical Research Council Pension Scheme
- National Health Service Superannuation Scheme (England and Wales)
- National Health Service Superannuation Scheme (Scotland)
- National Museum of Wales Pension Scheme
- The New Towns Pension Fund
- The Principal Civil Service Pension Scheme (Northern Ireland) 1975
- Northern Ireland Public Service Alliance Death Benefits and Retirement Scheme
- The Northern Ireland Water Ltd Pension Scheme
- Northern Lighthouse Pension Scheme
- North South Pension Scheme
- The Pensions Trust for Charities and Voluntary Organisations
- The Percy Hedley Pension Scheme
- The New Police Pension Scheme 2006
- The QinetiQ Pension Scheme
- Research Councils Pension Scheme
- Royal College of Art Retirement Benefits Scheme
- Royal Free Hospital School of Medicine Pension and Assurance Scheme
- Staff Pension and Life Assurance Scheme of the Royal Hospital for Neuro-Disability
- Royal Ordnance Pension Scheme
- The St Mary's Wrestwood Educational Trust Ltd Pension Scheme
- Scottish Executive Rural Affairs Department Superannuation Scheme 2000
- The States of Guernsey (Public Servants) (Pensions and Other Benefits) Scheme 1972
- Guernsey and Alderney Teachers and Teachers' Families Superannuation Scheme
- States of Jersey; Public Employees Contributory Retirement Scheme
- States of Jersey; Telecommunications Board Pension Fund
- States of Jersey; Civil Service (Administration) Jersey Rules 1963
- States of Jersey; The Postal Pension Scheme
- Jersey Teachers' Superannuation Scheme
- Teachers' Superannuation Scheme (England and Wales)

- Northern Ireland Teachers' Superannuation Scheme
- Teachers' Superannuation Scheme (Scotland)
- Tavistock Institute of Human Relations Retirement Benefits Scheme
- Non Regular Permanent Staff of the Territorial Army and Administrative Staff of Army Sections of the Combined Cadet Force Pension Scheme
- Trinity House Lighthouse Service Pension Scheme
- The Trustee of the Member Contributory Pension (NI) Fund
- Turning Point Pension Scheme
- Combined Pension Scheme of the United Kingdom Atomic Energy Authority
- Unison Staff Pension Scheme
- Universities Superannuation Scheme
- University of Aberdeen Superannuation and Life Assurance Scheme
- University of Bristol Pension & Assurance Scheme
- University of Dundee Superannuation and Life Assurance Scheme
- University of Durham Retirement Benefits Plan (1969)
- The University of East Anglia Staff Superannuation Scheme
- University of Edinburgh Staff Benefits Scheme
- University of Exeter Retirement Benefit Scheme
- University of Glasgow Pension Scheme
- University of Liverpool Pension Fund
- University of London (and other employers covered by SAUL)
- University of Manchester Pension Scheme
- University of Newcastle-upon-Tyne Retirement Benefits Plan (1971)
- Oxford University Staff Pension Scheme (OSPS)
- University of Southampton Pension Scheme for Non- Academic Staff
- University of St Andrews Superannuation & Life Assurance Scheme
- University of Stirling Staff Pension Scheme
- University of Wales Superannuation Scheme
- University of Wales Aberystwyth Pension & Assurance Scheme
- University of Wales, Bangor Pension and Assurance Scheme
- Cardiff University Pension Fund
- University of Wales Swansea Pension Scheme

Appendix 4 – Example pension calculation

- All cash expressed in constant price 2009 £s (today is the pensioner's 65th birthday)
- All salaries, contributions etc are paid at year-end, so interest is earned on start-of-year accumulated pot, not year-end.
- NB: starting salary is £14,607 pa because this grows to £60,000 pa at retirement if compounded at 3.69% for 40 years (salary growth)

Annual salary increase over RPI	3.69%
Real interest rate % pa	1.00%
Contributions as % pay	48.0%
Annual salary on retirement	£60,000
Rate of pension accumulation	1/60th (Pension = 40/60 x £60,000 = £40,000pa)
Accumulated pot at retirement (65th birthday)	£721,822 (18.05 times pension)
Accumulated pot at death (85th birthday)	£0
Average salary over working life:	£32,262
Average pension:	£40,000

A	B	C	D	E	F	G	H
Year	Pensioner's age	Salary £	(=H _{t-1}) Start-Year accumulated pot £	(=48% x C) Contributions £	(=1% x D) Interest £	Pension £	(=D+E+F-G) Year-end accumulated pot £
1969	25	14,607	0	7,007	0		7,007
1970	26	15,146	7,007	7,265	70		14,342
1971	27	15,705	14,342	7,533	143		22,019
1972	28	16,284	22,019	7,811	220		30,050
1973	29	16,885	30,050	8,099	300		38,450
1974	30	17,508	38,450	8,398	384		47,232
1975	31	18,154	47,232	8,708	472		56,412
1976	32	18,823	56,412	9,029	564		66,006
1977	33	19,518	66,006	9,362	660		76,028
1978	34	20,238	76,028	9,708	760		86,496
1979	35	20,984	86,496	10,066	865		97,427
1980	36	21,759	97,427	10,437	974		108,838
1981	37	22,561	108,838	10,822	1,088		120,748
1982	38	23,394	120,748	11,221	1,207		133,177
1983	39	24,257	133,177	11,635	1,332		146,144
1984	40	25,151	146,144	12,064	1,461		159,670
1985	41	26,079	159,670	12,510	1,597		173,776
1986	42	27,041	173,776	12,971	1,738		188,485
1987	43	28,039	188,485	13,450	1,885		203,819
1988	44	29,073	203,819	13,946	2,038		219,803
1989	45	30,146	219,803	14,460	2,198		236,461
1990	46	31,258	236,461	14,994	2,365		253,820
1991	47	32,411	253,820	15,547	2,538		271,905
1992	48	33,607	271,905	16,120	2,719		290,744
1993	49	34,846	290,744	16,715	2,907		310,366
1994	50	36,132	310,366	17,332	3,104		330,802
1995	51	37,465	330,802	17,971	3,308		352,080
1996	52	38,847	352,080	18,634	3,521		374,235
1997	53	40,280	374,235	19,321	3,742		397,299
1998	54	41,766	397,299	20,034	3,973		421,306
1999	55	43,307	421,306	20,773	4,213		446,292
2000	56	44,904	446,292	21,539	4,463		472,295
2001	57	46,561	472,295	22,334	4,723		499,352
2002	58	48,278	499,352	23,158	4,994		527,503
2003	59	50,060	527,503	24,012	5,275		556,790
2004	60	51,906	556,790	24,898	5,568		587,256
2005	61	53,821	587,256	25,817	5,873		618,946
2006	62	55,807	618,946	26,769	6,189		651,904
2007	63	57,865	651,904	27,757	6,519		686,180
2008	64	60,000	686,180	28,781	6,862		721,822
2009	65		721,822		7,218	40,000	689,040
2010	66		689,040		6,890	40,000	655,931
2011	67		655,931		6,559	40,000	622,490
2012	68		622,490		6,225	40,000	588,715
2013	69		588,715		5,887	40,000	554,602
2014	70		554,602		5,546	40,000	520,148
2015	71		520,148		5,201	40,000	485,350
2016	72		485,350		4,853	40,000	450,203
2017	73		450,203		4,502	40,000	414,705
2018	74		414,705		4,147	40,000	378,852
2019	75		378,852		3,789	40,000	342,641
2020	76		342,641		3,426	40,000	306,067
2021	77		306,067		3,061	40,000	269,128
2022	78		269,128		2,691	40,000	231,819
2023	79		231,819		2,318	40,000	194,137
2024	80		194,137		1,941	40,000	156,079
2025	81		156,079		1,561	40,000	117,639
2026	82		117,639		1,176	40,000	78,816
2027	83		78,816		788	40,000	39,604
2028	84		39,604		396	40,000	0
2029	85						

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What is a Public Sector Pension Worth? Richard Disney, Carl Emmerson and Gemma Tetlow,
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Britain has a second national debt – one that is kept off the government’s balance sheet. This is the public sector pension debt, which has grown as successive governments have promised public sector workers defined benefit pensions, often worth two thirds of final salary, index-linked for life. Unfortunately, the government is not calculating the bill for these commitments properly. This report looks at “unfunded” public sector pension schemes and what their liabilities are now worth.

We apply proper financial methods to calculating the accumulated liability of these schemes and find that our second national debt is now much larger than the publicly acknowledged national debt. It is now worth 78% of GDP (£1.1 trillion) and the bill for servicing it now at £45.2 billion. The interest payments on the official national debt only amount to £31.2 billion.

The low contribution rates from public sector workers and their employers have been a major factor in this growth. The government asks for, on average, 6% of pay and employers for an additional 14%, i.e. 20% of total employee pay. However, over 40 years a typical public sector worker must have paid 48% of his salary into his scheme in every year of his career in order to pay for the pension payouts at the end of it.

The Treasury covers this annual 28% gap, which is being expanded as earnings in the public sector rise – those for men have been increasing at a real (i.e. after inflation) rate of 3.7% in recent years. The full pension subsidy to public sector employees is now £28.3 billion, of which £13.2 billion is employers’ contributions, £10 billion is acknowledged as “under-charging” by the Treasury, and the remaining £5.1 billion is not acknowledged at all.

To make sure that the bill for public sector pensions is managed in a proper, transparent way, we propose several reforms: that public sector employers pay a cash amount each year equivalent to the full market value of the pension benefits accrued by staff in a given year; that annual cash pension contributions be used to buy index-linked gilts of sufficient value to fully pay for all pension promises made in that year; that a new body be established to receive contributions, buy index-linked gilts, and pay public sector pensions; that existing public sector pension liabilities be paid in full, ring-fenced by the Treasury and allowed to run off over their remaining life. These changes will help Britain deal with its second national debt over the next few decades.

£10.00
ISBN: 978-1-906097-48-6

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