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THE GREAT BRITISH RAKE-OFF

How the government has misled Parliament and the British people on public sector pensions

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Summary

- The government is misleading Parliament and the public over the cost to the taxpayer of public sector pensions. This takes the form of the government reporting its pensions cost in a different way from that required by pension regulations in the private sector.
- A *discretionary cost* method of calculation is used to determine what public sector employers and employees pay each year for their pensions, and is the 'generally understood' cost. It is based on an (arbitrary) assumption about investment returns (i.e. an interest rate of the government's choosing).
- The *official cost* method is based on IAS19 – the measure approved by the International Accounting Standards Board. The *official cost* method is the one which UK regulation requires for private sector pensions.
- For conformity with UK pensions law, and comparability with private sector pensions, therefore, public sector pensions should be accounted for at the *official cost*.
- Members of Parliament, the general public, and indeed public sector workers, are only told the *discretionary cost.*
- The government declares the *official cost* method, but only deep in its pensions accounts (as required by regulation). As a result, the situation is understandable only by experts.
- The difference between the two costs is huge. As an example, for the NHS Pension Fund, in 2020-21 the discretionary pension cost as a percentage of salary was 30.4%, and the official cost, 62.2%.[1]

1 Source: NHS Pension Scheme (England and Wales) Annual Accounts 2020-21, p17, Table G.

- This is a very important issue indeed, as the ‘unreported’ cost (the difference between the *official cost* and the *discretionary cost*) is enormous.
- I estimate the unreported annual cost at £57 billion in 2020-21, or approximately 30% of the public sector payroll.

Introduction

The UK government is now nearly unique as a UK employer in continuing to offer all its staff 'defined benefit' pensions. These are pensions whose value is not dependent on investment returns, but purely on an employee's salary record and length of service.

Almost all other employers in the UK have stopped offering 'defined benefit' pensions and instead now offer 'defined contribution' pensions, whose value depends not on an employee's salary and employment record, but on the amount of money that they and their employer have contributed over time, and, crucially, on the investment returns that those contributions have enjoyed.

This paper is concerned exclusively with *defined benefit* (DB) pensions for public sector workers. It does not deal with the State Pension, which is not an occupational pension.

There are a series of important questions and issues relating to these DB pensions, and many of these have been fully discussed elsewhere.[2] However, in this short paper I intend to concentrate on just one aspect of public sector pensions – the way in which their costs are reported by the government.

2 See, for example the 'Hutton Review' – the Independent Public Services Pensions Commission, March 2011 (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/207720/hutton_final_100311.pdf).

Pension 'costs'

When I use the term 'cost' or 'costs' in this paper, I mean the amount of money (sometimes expressed in cash terms, and sometimes as a percentage of salary) that the employer and employee together need to pay to secure (i.e. pay for) the additional pension earned in the year in question. I am always using *annual* costs here and the costs always relate to *one year's* extra pension entitlement.

So for someone who has to work for (say) 40 years to get their full pension entitlement, the amount that has to be set aside (i.e. paid) each year has to add up, after 40 years, to the total value of their ultimate pension 'pot' which will be used to pay their pension. But of course the exact amount required each year is dependent on many financial and human variables (age of worker, average life expectancy, returns on pension contributions paid in each year, etc.). This calculation is conducted in detail by the government and is called SCAPE.

To help the lay reader understand the arcane world of public sector pensions payments, in the next section I explain the mechanics of payments of the UK's public sector contributions and pensions. Then I explain how the SCAPE methodology works and has been used.

I then show that the government has been running, in effect, two 'books of accounts'; a policy which has led to a general misunderstanding of pension costs in the public sector.

Finally, I look at the effect of the government's choice of reporting in money terms.

All this may seem esoteric and only of interest to actuaries and financial economists, but the numbers are huge and the effect on the labour market and intergenerational fairness equally so. This is a problem on an enormous scale with very long horizons.

How the money flows

The government offers a DB pension to all of its employees, for which the Treasury receives pensions contributions. The government chose when it established these pension schemes many years ago not to invest the pension contributions it receives from its employees and employers, but rather to spend them.

This differs fundamentally from private sector pension schemes, which right from their appearance in the UK in the mid-nineteenth century have been based on the principle that money is contributed by employees and employers into a *pension fund*. The idea was that contributions paid into these funds, which are legally and practically separate entities from the employer, would provide sufficient money to pay pensions when they fell due without further recourse to the employer. This meant that promises from the employer could be relied upon, as the money was ring-fenced from any future receiver should the employer go bust.

Where the government is the employer, the position has been somewhat different.

Governments in Western democracies typically don't go bust and repudiate their obligations to their own citizens. This means that should a government choose, it could offer pensions to its employees without having to put money aside into a separate fund. Several Western governments have taken this route, while others have chosen to fully or partially fund them. UK, German and French federal occupational pension systems are largely unfunded; the US is mixed (with substantial funding at state level, but much less at Federal level), whereas, for example, Sweden has a partially funded federal system and Switzerland has a fully funded system at Cantonal level and partially funded at federal level. The UK operates a nominally fully-funded system at local authority level, but a completely unfunded system for the major central

government schemes. It is solely these latter schemes (principally NHS, teachers, civil service and armed forces) that I am dealing with here.

Despite no actual funds being invested for the main public sector schemes, the government has chosen to mimic the actions that any employer offering a pension would have to take by, in effect, making the UK Treasury act like a pension fund.

So a public sector employer (say an NHS Trust or a Local Education Authority) is required by the government to pay *contributions* to the Treasury towards the pensions offered to their staff as if the pensions were funded. As I have described, these contributions are not actually invested, but are put into the general revenue pot by the Treasury and spent.

As I have already mentioned, the Treasury has devised a system called SCAPE, which calculates the contributions needed *as if* the contributions were invested. This was, and is, a sensible idea, since it gives the Treasury, the public sector employer and the employee a firm basis to understand the cost of their pension – one that should be comparable to a private sector funded scheme.

Once contributions have been paid by the employer and employee to the Treasury, then the Treasury picks up the burden and risk of paying the pensions promised (just like a pension fund in a funded scheme).

If the Treasury were to operate a funded pension system, it could, according to SCAPE, invest the money it received in contributions, for example in index-linked gilts[3] – a risk-free form of inflation-proof investment. These index-linked gilts could be constructed in a portfolio to be a near-perfect risk-match for the pensions promised.

This brings us to the crunch – the results from SCAPE are very sensitive indeed to the data and assumptions, and the most important input (i.e. the one that SCAPE results are most sensitive to) is the interest rate that is applied to the contributions in the 'invested' money.

3 Index-linked 'IL' gilts are bonds issued by the UK government which pay a small coupon (annual payment), but whose value at maturity (and coupon) is uprated each month by the rate of inflation. At the moment (and since IL gilts were first issued in 1981) the inflation index used to uprate them has been RPI. This is no longer the government's favoured measure of inflation, which is CPI. On average, CPI is about 0.9% p.a. lower than RPI.

How pension costs are calculated – SCAPE

As I have already described, to calculate how much an additional year of a DB pension promise costs, the government uses an actuarial calculation called SCAPE. This stands for Superannuation Contributions Adjusted for Past Experience.

By far the most important variable in the SCAPE calculation is the interest rate that is applied to the 'invested' contributions. This determines how fast they grow to pay more (or less, if the interest rate is low) pensions in the future. The future may be very distant indeed – a 25-year-old may still be alive at 90 – so the contributions paid at aged 25 may be invested for 65 years. £100 compounded at 2% per annum over this period is £382; and at 5% p.a. it is £2,384 – 6½ times as much!

The key point for the reader is that higher interest rates mean lower pension costs, and vice versa.

The original idea for SCAPE was that it would use the market interest rate of index-linked gilts as the interest rate, as this represents an investable risk-free instrument that can be bought at differing maturities to very closely match the pension payments as they fall due.

There is a live debate amongst pension experts as to what is the most appropriate interest rate to use to calculate pension liabilities (and therefore annual pension costs) and I summarise the various positions in Appendix 1.

Suffice it to say that because all the major public sector schemes (listed in Appendix 3) are *unfunded*, there are no actual investments, index-linked gilts or otherwise, for the SCAPE principles to be carried out with real money.

So in practice, the entity that exercises control over the interest rate used in SCAPE is the entity that controls the reported ‘cost’ of public sector pensions.

This control extends not just to what the employers, employees and the public are told is the cost of the pensions, but also to calculating the size of the contributions that the Treasury receives in return for agreeing to pay the pensions as they fall due.

Two different interest rates

The SCAPE interest rate

The government has never used the index-linked gilt market interest rate (i.e. actual interest rates) in its calculations for SCAPE. There does not appear to be clear original documentation of why not, but there is a fully argued case for the current choice of 'SCAPE Interest Rate' in HM Treasury's 'Consultation on the discount rate used to set unfunded public service pension contributions: Summary of Responses'.[4]

Until 2011, the SCAPE interest rate used was the Social Time Preference Rate (STPR), which is a real (i.e. above inflation) interest rate that the government has decided reflects the time preference of society in considering major long-term projects' viability. This interest rate's use has been created and defended on the allocation of public capital over extended periods of time for the benefit of the public. Projects like roads, bridges, hospitals and schools have been assessed using this measure.

However, pensions are not a 'public project', they are a private contract between an employee and an employer, in which in most contexts (i.e. private pensions) the market rate of return is the critical element, since real money has to be put aside to earn interest, dividends and capital growth to be sufficient for the pension fund to pay the pensions when they fall due. This is not an academic exercise about spending public money now for public benefit later.

4 'Consultation on the discount rate used to set unfunded public service pension contributions: Summary of Responses', HM Treasury, April 2011 (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/190119/consult_discount_rate_summary_responses.pdf).

But in the context of the SCAPE calculation of the cost of public sector pensions, the STPR interest rate (and hence the SCAPE interest rate) was fixed at 6% p.a. until 2003, then changed to 3.5% p.a. A Treasury memorandum to the Treasury Select Committee of June 2003,[5] and the 2003 HM Treasury 'Green Book' (the government's 'bible' for assessing public projects)[6] to which it refers set out the reasons for the change.

Then in 2011, under pressure from the private sector about unfair competition for jobs (because public sector pensions were so generous) and from taxpayers about future tax burdens on them, the government conducted a new consultation about the best methodology to use for the SCAPE interest rate. Four options were considered (the interest rates at the time of the consultation are in brackets):

- STPR (3.5% p.a. real)
- Forecast real GDP growth (initially, 3% p.a. real)
- IAS19, the international standard for funded pension funds (at the time about 2.9% p.a. real).
- Index-linked gilts market interest rate (at the time about 1.45% p.a. real)

Following this consultation, the Treasury chose the second option - forecast real GDP growth interest rate - as their SCAPE methodology for the next decade. Their argument was that this would ensure that the pensions offered did not outstrip the ability of the public finances and the economy to pay them. The argument for this choice is set out in 'Consultation on the discount rate used to set unfunded public service pension contributions: Summary of Responses' (HM Treasury, April 2011).[7] In 2011 the forecast growth rate, and hence the SCAPE interest rate, was set at 3% p.a. real. This was reduced in 2016 to 2.8% p.a. real, and again in 2018 to 2.4% p.a. real, as the OBR reduced its forecast of real growth. Real GDP growth from Q1 2011 to Q1 2021 was 0.35% p.a.,[8] so all of these numbers have turned out to be too high.

5 'Further supplementary memorandum submitted by the HM Treasury: discount rate', Select Committee on Public Accounts, minutes of evidence (https://publications.parliament.uk/pa/cm200203/cmselect/cmpubacc/155/2120414.htm).

6 'The Green Book: Appraisal and Evaluation in Central Government', HM Treasury (https://webarchive.nationalarchives.gov.uk/ukgwa/20080305121602/http:/www.hm-treasury.gov.uk/media/3/F/green_book_260907.pdf).

7 See footnote 4.

8 Source ONS Gross Domestic Product (ABMI): chained volume measure: seasonally adjusted. 2020-21 saw a dramatic drop in GDP through Covid-19 lockdown; Q1 2010 to Q1 2020 real GDP growth was 1.75% p.a. This was still below the SCAPE interest rate.

Nevertheless, these are interest rates that have been used to determine the contributions paid by employees and employers for their public sector pensions.

Two interest rates and two sets of government pension accounts

However, the story is more complicated than this, as earlier, in 2005-06, the government had decided that it was going to introduce a new interest rate in the SCAPE calculation.

It did so on the advice of its professional advisors, who told the government that the UK Financial Reporting Advisory Board, and also by this time the International Accounting Standards Board, had mandated the choice of interest rate private pension funds should use for their equivalent of SCAPE calculations – the calculations to set contributions and to assess pension fund solvency. The interest rate chosen for this role was the AA[9] bond rate. This is an interest rate at which high quality private companies can borrow money and was designed to represent an interest rate which a prudent pension fund could achieve in their investments. The international regulation which set out this as the required interest rate was International Accounting Standard 19[10] (IAS19).

The government could have chosen at this point (i.e. 2005-06) to replace the discretionary SCAPE rate (in 2005-06 still based on Social Time Preference) with the IAS19 interest rate, but it did not.

Instead, the government began to use two interest rates, not one, in reporting the finances of their unfunded public sector pensions, in two separate sets of accounts.

To conform to the National and International Accounting Standard, they presented two concepts calculated using SCAPE methodology and the IAS19 interest rate:[11]

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9 AA is a credit rating for large private companies. It is not the highest rating possible (which is AAA), but it does indicate a firm which is very creditworthy.

10 'IAS 19 Employee Benefits', IFRS (https://www.ifrs.org/issued-standards/list-of-standards/ias-19-employee-benefits/).

11 See, for example, NHS Pension Scheme Resource Accounts 2005-06, p.6: 'Following a decision by the Financial Reporting Advisory Board (FRAB) that the discount rate for pension schemes should, in accordance with FRS17, be based on the AA corporate bond rate, the discount rate has been changed with effect from 1 April 2005 from a real rate of 3.5% to a real rate of 2.8% (6% to 5.37% gross)'.

1. The outstanding pension liabilities
2. The ‘current service cost’

The first is largely self-explanatory; the second is actuarial-speak for the annual pension ‘cost’ (see the ‘Pension costs’ section above for the definition of ‘cost’).

But, instead of also calculating the pension contributions based on IAS19, the government continued to calculate the pension contributions based on their discretionary STPR rate.[12] So a gap opened up between the international standards’ pensions cost and what the Treasury said it was (and likewise charged its public sector employers).

To be clear, there is no logical reason to calculate the current service cost using one interest rate and the pension contributions using another. In the case of unfunded schemes (like these), these two concepts are in practice identical – the contributions are supposed to recognise (i.e. be the same as) the pension cost.

In 2005-06, the IAS19 interest rate was different, and lower than, the discretionary STPR interest rate. The IAS19 rate was 2.8% p.a. and the STPR interest rate 3.5% p.a. real. The use of this lower interest rate raised the ‘current service cost’ (remember – lower interest rates mean higher pension costs), but the pension contributions did not change (at least not because the interest rate changed).

To take one example – the NHS Pension Scheme. In 2005-06, the Treasury received £6.4 billion in pension contributions (the SCAPE calculation based on the discretionary interest rate), whereas, the current service cost (the SCAPE calculation based on IAS19 interest rate) was £7.4 billion (£1 billion higher). This year was the first time the current service cost (the pensions cost) and the pension contributions were different – and in this and all subsequent years, the contributions were lower than the pensions cost.

12 For a pension fund to remain solvent, contributions and current service cost must be the same over time. In practice, for private sector pension funds, if past contributions turn out to be inadequate to cover the outstanding liabilities, then contributions often have to run higher than current service cost to close any solvency shortfall. This can and does regularly happen as current service cost calculations are themselves subject to approximations and assumptions (for example as to investment returns, inflation, earnings growth and mortality).

This change was almost invisible to the public, and not just because only an actuary would understand this, but because although both figures were published, nothing appeared to hang on the higher current service cost figure. To the Treasury, to the public sector employers and employees, and to the public, the cost of NHS pensions had not changed – it remained at £6.4 billion p.a.

But in reality, everything hung on the new figure. The 'missing' £1 billion was in effect added to the outstanding liabilities (which is the total owed by the Treasury over time in pensions) and the outstanding liabilities also rose because it now appeared that the notional fund required to cover these pension liabilities would enjoy a lower return in the future – the IAS19 return. Hence its value would have to be higher to compensate for the lower expected future return.

The scale of the problem

IAS19 interest rates have fallen substantially in the past decade with the advent of quantitative easing and the 'zero-interest-rates' policy of the Bank of England.

In 2020-21, the SCAPE interest rate was 2.4% real p.a., but the IAS19 interest rate was *minus* 0.5% real p.a., a difference of just under 3% p.a. in a calculation that is very sensitive to interest rates.

Taking the NHS pension scheme again as the example (NHS 2020-21 Pension Accounts, Table G, p.17 - see Appendix 4 for details), the gap between the current service cost and pension contributions has ballooned to £17 billion[13] a year!

Most people have difficulty with very large numbers (billions get confused with millions), so perhaps it is more understandable to express this as an average percentage of salary.

In the NHS Pension Scheme in 2020-21, contributions from employees were 9.8% of salary (this is a figure recognisable by millions of employees from their payslips); contributions from the employer were 20.6% of salary, so the total contributions in 2020-21 were 9.8% + 20.6% = 30.4% of salary.

But the current service cost for 2020-21 was 62.2%! This means that on average every NHS employee is getting 62.2% of salary worth of pension (i.e. a fabulously generous pension) at a cost of only 30.4%, of which he or she only pays 9.8% out of his/her salary. It also means that the taxpayer (to be more exact, future taxpayers) have no idea that the pensions

13 £17 billion = [(62.2%-30.4%) x £53.3 billion]. £53.3 billion is the NHS Payroll based on Table G.

promised by the Treasury have only been half accounted for, and indeed both the accounted-for half and the unaccounted-for half will have to be paid by them – future taxpayers. This is because the whole public sector system is unfunded and no money has been set aside for this purpose.

In round numbers, the NHS pension scheme represents about 30% of total public sector pensions (it is the largest of the schemes). So, if the same pattern is repeated across all the public sector schemes, then the amount of annual expenditure that is unreported is c. £17 billion / c. 30% = c. £57 billion! This is for just one year, and just to give a vague idea of how much it is, it is larger than the whole payroll of the NHS (which is £53.3 billion)!

Whole of government accounts

The IAS19 interest rate (i.e. the official rate) has been consistently used by government in preparation of the *magnum opus* of government accounting – the Whole of Government Accounts (WGA).

This is a relatively new report (the first one was in 2009-10) and aims to account for government income, expenditure (the revenue sheet), and assets and liabilities (the balance sheet) in a similar way to private companies. This is to calculate everything on what is known by accountants as an 'accruals basis', rather than the current government accounting practice, which is to account on a cash basis.

In very simple terms, if, say, in 2021 the government irrevocably promises to pay, say, a hospital, £100 million in 2022, then on a cash accounting basis, government expenditure in 2021 is zero, and in 2022 is £100 million. In accruals terms, expenditure in 2021 is £100 million, and in 2022, zero. This is because the 'promise' to pay is accounted for as expenditure; the cash left in the bank as an asset, and the money owed in 2022 as a liability.

The key thing about accruals is that it takes into account all promises, debt, liabilities and assets – i.e. it is as full a picture as is practically possible of the financial position of the government.

The WGA is a complicated set of accounts to prepare and it is typically published more than a year after the end of the year to which it refers. At the time of writing (September 2021), the Covid-affected WGA for 2019-20 (i.e. the fiscal year ending 31 March 2020) has still not been published.

However, because the WGA is prepared under international accounting standards, and hence uses the IAS19 interest rate, it shows clearly, and without the 'two rates' problem revealed above, the scale of the annual spending on public sector pensions and the outstanding pension liabilities.

For 2018-19 (the latest WGA available), the figures are as follows:

Outstanding pension liability in unfunded schemes:	£1,756 billion
Current service cost:	£58 billion
Whereas:	
Employer and employee contributions:	£23 billion

So in 2019-20, £58 billion - £23 billion = £35 billion was spent by government (in additional liabilities to pay pensions) which no-one in Parliament and no member of the public was aware of. As it happens, there was also a legal judgement that went against the government (Sargeant and McCloud) in respect of transition to a new pension arrangement, and that added a further £29 billion to the pension cost incurred in that year (not included in the above).

Finally, pension liabilities are calculated as at the date of the valuation in a method known as 'present value'. This means that future liabilities are reduced (and increasingly reduced the further in the future they are) to account for the interest rate that is applied to them (in this case, the IAS19 rate). Each year, future payments get one year closer to the valuation date (and so rise accordingly), so each year there is a charge to the revenue account called 'Interest on liabilities'. In the 2018-19 accounts, this charge on government expenditure was £44.6 billion. This charge reflects that fact that government has spent the money it has received from employers and employees, rather than invested it. It has, as we have shown, also charged employers and employees far too little, so their cumulative contributions would have not provided anything like sufficient funds had the pensions been funded rather than unfunded.

The details of these figures are in Appendix 5.

Conclusion

The government chose, some 16 years ago, to adopt two differing accounting methods for public sector pensions 'costs'. This was a decision designed to retain some control within government of the costs of these pensions. But the 'cost control' is illusory; the current arrangements control the reporting of the costs but not the actual costs, so that they continued to appear to be 'affordable' and 'reasonable'.

This approach, maintained by consecutive governments, has in my opinion subverted the concept of independent reporting and has brought UK public sector pension accounting into disrepute.

Tellingly, the costs methodology that government utilises in setting its pension contributions would breach pension regulations if conducted by a private company. That company would be sanctioned; required to apply the national and international standards to its pension accounting; and required to 'top up' the inadequate employer contributions to cover the resulting deficit. Failure to do this would render the company vulnerable to winding-up.

A Treasury public consultation on the artificial SCAPE methodology interest rate has just closed (19 August 2021).[14] To be clear – in my opinion, this consultation is a mechanism for choosing an interest rate in the future that continues to suit the insiders involved, and to allow them to 'choose' the cost of public sector pensions that they reveal to the public, Parliament, public sector employers and employees. Whatever their choice of SCAPE

14 'Public service pensions: Consultation on the discount rate methodology', HM Treasury, June 2021 (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/996113/SCAPE_Discount_Rate_methodologyFD.pdf).

interest rate, the real cost to taxpayers of these pensions will remain unaltered, and much, much higher than any private sector employee is a beneficiary of.

The questions that the government needs to answer are as follows:

1. Why does the government use an artificial rate to calculate its pensions costs, when its own actuaries sign off the pension accounts by saying that the artificial rate produces a cost (and hence contributions) that covers less than half the real[15] cost?

2. Why does the government consider it appropriate to encourage an increasingly wide gap between public and private sector pension provision?

3. Why are Parliament and the public not able to compare, on a common basis, pensions on offer in the public and private sectors? Unless they can, no sensible debate about the future of public sector pensions can take place, nor will the labour market be able to operate fairly and transparently.

4. Finally, has the government thought about the intergenerational issue? These very generous public sector pensions are not funded. They will therefore have to be paid by the current working generation and at least two further generations through their taxes. This represents a major transfer of wealth from younger to older generations – younger generations which (public employees apart) are not going to benefit from pensions anything like as generous as these.

15 I.e. a cost comparable to private sector pensions.

Appendix 1: Calculating pension liabilities

Interest rates

The actuarial profession recognises several different interest rates (actuaries tend to use the expression 'discount rate') for calculating DB pension liabilities. In summary, the choice often depends on the purpose to which the liability calculation is intended to be put.

A recent (March 2021) briefing note from the UK Pensions Regulator[16] helpfully sets out five different ways of calculating liabilities, in effect using five different discount rates. It may seem bizarre to the lay reader that experts have five different ways of calculating what one might imagine should just be 'a fact', but the complexity of the history of pension valuation, and the failure of many supposedly solvent pension funds, has led to this proliferation of techniques. The Pension Regulator's paper lists the five different valuation methods as follows:

a. **Buy-out valuation/section 75** - how much it would cost to buy out the scheme with an insurance company

b. **PPF/section 179** - the valuation method used to calculate the deficit as recorded in the PPF 7800 index

c. **Self-sufficiency and low dependency** - how much it will cost for the scheme to not need the support of the employer any more or to reduce it to a minimal level

16 'A quick guide for journalists: Understanding the different ways of valuing a defined benefit (DB) scheme' , The Pensions Regulator, March 2021 (https://www.thepensionsregulator.gov.uk/-/media/thepensionsregulator/files/import/pdf/understanding-db-_scheme-funding.ashx).

d. Technical provisions - the amount needed to pay members' benefits in full as they retire, based on the scheme's approach for financing these benefits, and prudent financial and demographic assumptions

e. Accounting valuation - the liability reported in the sponsoring employer's accounts (IAS19)

Each of these methods will use a different interest rate, and the reason for this is that the actuarial profession has struggled with the question 'how well funded is this pension fund?'.

An example will help. If a pension fund has assets of, say, £100 million, and these are predominately invested in equities with a historic return of, say, 5% p.a., then what interest rate should the actuary discount the future cash flows[17] (i.e. liabilities to pay pensions) that stretch out into the far future – often up to 80 years?

A credible answer would be to use 5% p.a., as this might seem to be the most likely rate of return of the assets (i.e. a return on assets able to match the growth of the liabilities with the passage of time). This would be the 'technical provisions' method.

But such a valuation depends on there being a solvent employing sponsor who can step in to bolster the fund's assets should the fund portfolio not perform as well as predicted (i.e. less than 5% p.a.). Hence this valuation method does not create financial independence for the pension fund, which is ironic since the purpose of a pension fund is to be independent of the employing firm's ability to pay over a very long horizon.

Suppose that the firm sponsoring a pension fund had just gone bust. The pension fund (ring-fenced legally from the company) has nowhere to turn to if the equities in its portfolio do not perform well enough in the future (i.e. return 5% p.a. for the next 20 or more years). In this situation, with no ultimate guarantor, to be solvent the pension fund must be able to buy a set of securities which pretty much exactly match the liabilities owed over the far future. This portfolio cannot contain equities (which are risky) and

17 If a pension fund owes £1,000 in 20 years' time, the actuary will *discount* this £1,000 to a value today (called 'present value') using their chosen *discount rate* (5% in this example) by dividing £1,000 by ((1+0.05)^20)) = £377. If the discount rate is only 1%, then the present value is £1,000/((1+0.01)^20) = £820. This makes the present value of pension liabilities very sensitive to the chosen discount rate.

indeed can probably only contain very high quality bonds (high quality means that the issuer must not be at any risk of reneging on its promises), most of which will also have to be index-linked to cover the regulatory requirement in the UK that most DB pension promises are required to offer index-linked pensions. The highest quality index-linked bonds in sterling available in the scale required for a large pension fund are UK index-linked gilts (see footnote 3). Valuing a pension fund using UK index-linked gilts would be similar to method (a) above - buy-out valuation/section 75.

We could look at other methods and examples, but in summary, each one serves a different purpose related to the funding of the liabilities.

This variety of liability methodologies would be somewhat academic, were it not for the inconvenient fact that the choice of discount rate does not just affect the outstanding liabilities (or more accurately, the present value of the liabilities), but also the current service cost (i.e. the annual cost of the pension) and therefore cash contributions required from the sponsoring employer. My observation is that there has been tremendous commercial pressure (downwards!) on pension costs and contributions, hence very strongly presented arguments for higher discount rates reflecting the mix of risky and/or return-seeking assets in pension portfolios. Regulators have been pressing in the opposite direction, seeking lower-risk portfolios and hence higher contribution rates. This has been fuelled by high-profile pension fund failures through inadequate funding.

The UK's unfunded public sector pension schemes

The variety of interest rates enumerated above are designed to deal with funded pension schemes. But the liabilities position is very different for the UK's *unfunded* public sector pension schemes. There is no 'funding position', since there is no fund. The guarantor is HM Treasury. I believe that this fact makes the only defensible discount rate the index-linked interest rate,[18] adjusted for that fact that index-linked gilts are indexed to RPI, and public sector pensions are now indexed to CPI. My argument is as follows.

Under the current arrangements, public sector employers (NHS Trusts; Schools etc.) pay both employer and employee pension contributions each year to the Treasury. With this payment employers relinquish all

18 But see my caveat below.

further pension obligations to the Treasury, which becomes fully responsible for fulfilling all the pension obligations.

The Treasury does not ring-fence the contributions; they go into the consolidated pot and therefore contribute to general government revenue in the year in which they are received. However, these contributions allow the Treasury to borrow less than it otherwise would in the relevant year in which the contributions are received, and then borrow more than it otherwise would in the subsequent series of years in which pension payments are made.

So for budgeting purposes, the 'return' that the Treasury receives on the contributions is the interest saved from not borrowing in the year in which the contributions are received, with a reducing 'balance' as pensions are paid out in subsequent years and borrowing increases, ceteris paribus. If the Treasury refrains from borrowing in maturities and in a form that best matches the duration of the future pension payments, then the best proxy for the 'return' that should apply to that years' contribution is the approximately 20-year duration index-linked gilt market rate (i.e. the government's average cost of borrowing).

A public sector pension fund

The financial position of the Treasury (owing future pension obligations, with no comparable assets) could be *exactly replicated* by the government creating a pension fund, placing all public sector pension liabilities in that fund (with no recourse to the Treasury), and funding this new fund with index-linked gilts issued by the Treasury. The initial size of the new fund would have to be determined by a SCAPE calculation using the market index-linked gilts interest rate (adjusted for the RPI-CPI gap) and the amount of contributions that this fund would have to receive each year from public sector employers and employees would have to be the current service cost using the same index-linked gilt interest rate (i.e. typically 60-80% of pay). The Treasury would have to fund these contributions by additional borrowing from the market, but the financial position of the Treasury would remain exactly the same if the additional borrowing matched the maturity and indexation structure of the pension liabilities it had relinquished.

What would change dramatically would be the reporting. The government would have doubled its apparent indebtedness from c. 100% GDP to more than 200% GDP and would appear to the running a deficit in 2020/21 approximately £94 billion[19] larger than at present. This might all sound very unattractive for the government, but it would reflect the reality of the cost of public sector pensions, rather than the current reporting. Just to emphasise – *such a change would not alter the actual cost of public sector pensions over time*.

Using IAS19

The disadvantage of using the index-linked gilts rate for the liabilities discount rate is that it produces a cost of pensions that is not comparable to (and higher than) private sector funded schemes. Hence in this paper, I accept that the comparability argument should win and that IAS19 is an appropriate rate to calculate the current service cost.

19 £94.3 billion = current service cost £110 billion (=(62.2% x £53.3 billion)/0.3) (see footnote 13); *plus* cost of financing £39.1 billion (estimated from 2020-21 pension scheme accounts); *minus* pensions in payment £42.2 billion (HMT PESA 2020, Table D1); *minus* employee contributions £12.6 billion (estimated from 2020-21 pension scheme accounts).

Appendix 2: Defined benefit pension schemes in the public sector

Until seven or eight years ago, almost all of the public sector pension schemes[20] offered a 'final salary' pension. This was a pension which offered, typically, 1/60th or 1/80th of each employee's final salary per full year of service in the scheme plus lump sum.

More recently, as a result of the 'Hutton Review' of public sector pensions,[21] schemes have moved to calculating pensions on the basis of average earnings – so called Career Average Revalued Earnings or CARE. These pensions, which have replaced final salary arrangements for all new accruals, base (as the name implies) the ultimate pension on career average, not final, salary. But the RE part of the CARE acronym refers to the case that in all these average salary schemes, the salaries recorded in each year are revalued (i.e. uprated) by a measure of cumulative inflation.

So, by way of example, if twenty years ago a retiring member of staff was earning £20,000 p.a., and the inflation index had risen by 2% p.a. between then and now, then the figure used for that year of the career average would be £20,000 x (1.02^20) = £29,718. A similar calculation would be used for all the years of service.

But in the change from final salary to career average, the government agreed to keep the change 'cost neutral', which meant, after they had

20 See Appendix 3.
21 See footnote 2.

looked at the numbers, that both the inflation index by which salaries were uprated, and the fraction earned each year (the final salary was 1/60th or 1/80th plus lump sum) were negotiated to ensure that was the case. For the NHS, the fraction went from 1/60th or 1/80th to 1/54th (i.e. a more generous proportion of a lower number). For inflation, earnings are uprated each year by CPI plus 1.5%.

Appendix 3: List of public sector pension schemes

The Civil Service Pension (Great Britain) Schemes

The Civil Service Pension (Northern Ireland) Schemes

Armed Forces Pension Schemes

NHS Pension Schemes

NHS Superannuation Schemes (Scotland)

Health and Personal Social Services Northern Ireland Superannuation Schemes

Teachers' Pension Schemes (England and Wales)

Scottish Teachers' Superannuation Schemes

Northern Ireland Teachers' Superannuation Schemes

Police Pension Schemes (administered locally)

Firefighters' Pension Schemes (administered locally)

United Kingdom Atomic Energy Authority Pension Schemes

Judicial Pension Schemes

Northern Ireland Judicial Pension Scheme

Research Councils' Pension Schemes

Appendix 4: NHS Pension Scheme accounts 2020-21[22]

The table below is an extract from the accounts, page 17.

NHS Table G – Contribution rate		
	2020-21 % of pay	**2019-20 % of pay**
Employer contributions	20.6%	20.6%
Employee contributions (average)	9.8%	9.7%
Total contributions	30.4%	30.3%
Current service cost (expressed as a % of pay)	62.2%	48.8%

Quote from the same page (p17) of the NHS Pension Accounts:

The pensionable payroll for the financial year 2020-21 was £53.3 billion (derived from employer contributions payable over the year). Based on this information, the accruing cost of pensions in 2020-21 (at 62.2% of pay) is assessed to be £33.2 billion.

22 'NHS Pension Scheme Annual Report and Accounts 2020-21', NHS Business Services Authority (https://www.nhsbsa.nhs.uk/sites/default/files/2021-07/CCS001_CCS0521624740-001_NHS%20Pension%20Accounts%202020-21_Web%20Accessible.pdf).

Appendix 5: Whole of Government Accounts – note 24 – public service pensions

The table below is an extract from the table on page 151 of the 2018-19 Whole of Government Accounts.[23]

Public service pensions	£ billion **Unfunded schemes**
Gross liability at 1 April 2018	**1,741.8**
Current service costs (net of participants' contribution)	48.4
Past service costs	29.4
Settlements/curtailments	-0.1
Interest on scheme liabilities	44.6
Contribution by scheme participants	9.6
Gains/losses on revaluation	
– Experience (gains) and losses arising on liabilities	-4.3
– Changes in assumptions underlying the value of liabilities	-70.3
Benefits paid	-43.3
Transfers in/(out)	0.3
Gross liability at 31 March 2019	**1,756.1**

23 'Whole of Government Accounts: year ended 31 March 2019', HM Treasury, July 2020 (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/902427/WGA_2018-19_Final_signed_21-07-20_for_APS.pdf).

It shows that the current service cost (i.e. the pension cost) for the unfunded schemes was £48.4 billion + £9.6 billion (employee contribution) = £58 billion. In addition, there is a charge for 'past service costs', which is substantial (at £29.4 billion) and has arisen through unanticipated changes in pension benefits in the year, in particular to a High Court judgement in Sargeant and McCloud that went against the government.

In the year in question the total contributions (employer and employee) to the £58 billion pension cost are estimated (from the major individual pension scheme accounts) to be £22.9 billion. So the 'missing expenditure' on public sector pensions in 2018-19 was £58 billion - £22.9 billion = £35.1 billion. We already know that this figure has risen substantially in the two years following 2018-19, as we have both the 2019-20 and 2020-21 main unfunded scheme pension accounts, from which we can make a very accurate estimate.

The reader will note that no mention is made of employer contributions in this table. This is because in revenue terms the employers' contributions are paid by one part of the public sector (e.g. NHS Trusts) to another part of the public sector (the Treasury) – so they net to zero in the accounts.

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