Responses received to the consultation on the discount rate used to set unfunded public service pension contributions in an individual capacity.

1. Derek Lindsay:

To minimise the impact of the change in discount rate on the employer/ taxpayer (intention per paragraph 1.31), I would suggest that the impact of the reduction in the discount rate should match the impact of the move from RPI to CPI so that the two net off to zero. This would be important from an employer perspective since under the cost share agreement the increased contributions arising from reducing the discount rate would not be shared and would be a cost to the taxpayer.

My response to the questions asked in the consultation document are:
1) Main change is from an employer perspective since under the cost share agreement the increased contributions arising from reducing the discount rate would not be shared and would be a cost to the taxpayer.
2) The plurality objective is not so relevant for Scotland as the NHS are not looking to bring in the private sector as is the case in England.
5) I would recommend the local government pension scheme as being closest to the NHS pension scheme and would therefore suggest a discount rate of 2.5 per cent to 3 per cent above RPI inflation.
6) Five yearly review suggested given one of the objectives is 'stability'

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2. Lucy Currie:

I am writing to respond to the consultation on discount rates for unfunded pulic sector schemes in an individual capacity.

It is clear that the reason for reviewing the discount rate is to reduce it, and hence increase member contributions. This is not appropriate; a review of discount rates should be conducted when there is an actuarial justification for doing so. I see no reason why the current approach has ceased to be appropriate at this particular time, rather than at any other point in time.

Moreoveor, any review of the discount rate should be based on rigorous and independent actuarial advice. The structure of the consultaiton seems to be to ask the general public what they believe an appropriate discount rate to be. Does the Treasury believe that the general public have the skills and knowledge to do this? It seems rather strange to ask respondees to set out detailed proposals for the future discount rate, when in the same document the Treasury feels it is necessary to explain to respondees what a discount rate is and how it is used. If the Treasury will really base this decision on what people with no actuarial background believe is appropriate, this is extremely alarming. Conversely, if the Treasury is to base its decision on its own actuarial advice, why is it consulting on detailed aspects of the discount rate-setting methodology?

In particular, question 3 asks what the advantages and disadvantages of the different approaches are. Has the Treasury not considered these itself, or received advice on this? If

not, potentially the disadvantages of a proposed approach could be such that it should be discounted immediately; how can we be sure that this is not the case?. If relative merits have been considered, why has the Treasury not set out its analysis here?

In addition, question 5 is essentially a request for actuarial advice. Wht does the Treasury feel it is appropriate to ask non-actuaries for this, or indeed actuaries who have not been formally engaged to provide advice based on full supporting information?

The point on high pension costs being a barrier to plurality of public service provision is irrelevant when considering discount rates. Pension costs should not be managed by manipulation of the valuation basis. There will be a range of suitable bases, and within that a suitable range for each assumption, including the discount rate. This suitable range is based on actuarial principles, not the government's policy considerations.

Given that this is a drive to decrease the disount rate and hence increase contributions, I would make the following points:

- the reduction in costs due to the move to CPI should also be allowed for when setting new member contribution rates

-a decrease in discount rate should impact sponsor as well as member costs. How will this be reflected?

-this move is part of a wider strategy by the government to undermine public sector pension provision. In light of this, an allowance similar to the "catastrophe" allowance should be included in the discount rate to reflect the very real risk that the government will take further steps to reduce public sector pension provisions, or indeed walk away from them entirely.

A further point to note is that the consultation proposes that no change is made to the discount rate used to value past liabilities. This seems inconsistent with the approach commonly adopted under private occupational pension schemes' scheme funding regime; namely, that past service reserves are set using a prudent basis, and that ongoing contributions are set using a basis closer to best estimate. If the Treasury proposes to keep the discount rate for past reserves the same, to be consistent it should increase, not decrease the discount rate for future service contributions. I would be interested to know what the actuarial justification is for using a more prudent discount rate for future service than for past service.

I am also unsure why a lower discount rate is suitable for longer term liabilities and would appreciate clarification on this point. Members are paying contributions based on their own accrual and hence the term of the liabilities is based on the age of the membership. The fact that in future, new joiners may also begin to accrue benefits is irrelevant.

I do hope that the Treasury undertakes much more extensive and rigorous analysis based on appropriate actuarial advice. The approach as it currently stands is no way to go about making a decision which could adversely impact so many public servants.

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3. Professor Richard Disney:

My views are, in summary:

i) The current discount rate is too high.

ii) The discount rate suggested by IoD and IEA is too low and the rationale for their choice implausible.

iii) Broadly, public pension liabilities should be discounted, according to the Aaron-Samuelson rule, at the expected growth of the overall pay bill which is broadly labour growth + productivity growth i.e. around 2 to 2 and a half per cent in the UK context.

Response to HM Treasury consultation on the discount rate used to set unfunded public service pension contributions

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3 March 2011

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Disclaimers and acknowledgements

I am a Research Professor of Economics at the University of Sussex, chair of the Armed Forces Pay Review Body and a member of the Senior Salaries Review Body. I alone am responsible for the views expressed in this paper; which does not represent the views of the University of Sussex or of either pay review body. Neither I nor members of my immediate family have a financial interest in any unfunded public service pension scheme – I am a member of the Universities Superannuation Scheme, a funded defined-benefit private pension scheme. I am grateful to Nicholas Barr and Michael Johnson for comments on an earlier version of the note which appears as the Appendix.

Technical note

I have throughout this response referred to real interest rates by reference to the Retail Price Index (RPI). This is simply a matter of convenience since both indexed UK government bonds ('indexed gilts') and the social time preference rate (STPR) used in government investment decisions are linked to the RPI.

Introduction

The most important objective in setting the discount rate for valuation of public service pension contributions should be to value these contributions in a way that reflects the true cost of pension provision so that public expenditure and employment decisions are made in this light. Proper costing is essential to ensuring, for example, that public sector workers pay a fair share of the full costs of their pension provision and are not unfairly well treated compared with members of private sector pension schemes. Proper costing is also essential to making comparisons of total remuneration between workers in public and private sectors. It is particularly important that the true costs of public service pensions are not silently passed on to future generations of taxpayers.

Full costing of unfunded public service pensions does not necessarily imply that pension contributions in the public service should be the same as those in private sector employment; the government has inherent advantages as a provider of pensions. Different employers have different advantages in the marketplace and there are other respects in which private sector employers have inherent, not unfair, advantages.

In an unfunded public pension scheme, employee and employer contributions are effectively lent to the Treasury in exchange for which the Treasury has the obligation to pay pensions when they become due. The question of what rate of return should be attributed to the actual employee contributions and the notional employer contributions is a counterfactual question: what would the Treasury do if it did not have access to the pension contributions? The analysis in this document is based on different possible answers to this question. It turns out that a key issue is how the financial markets perceive government pension debt alongside government bonds.

One guiding principle of the analysis in this response is that because the government has inherent advantages as a pension provider, any proposition which arrives at the conclusion that public sector pensions are more expensive than private sector pensions must either be methodologically wrong or must imply that the public sector pension schemes are inefficiently designed. Specifically, the discount rate used in the valuation of unfunded public service pensions should not be less than the discount rates used in the valuation of funded schemes.

The argument that because public pensions are indexed government obligations they should be valued at the interest rate on indexed government bonds falls foul of this principle. The interest rate on indexed gilts is lower than any of the interest rates used to value funded private pension schemes so using the indexed gilts rate to value public service pensions would have the paradoxical implication of making public service pensions more expensive to provide than private sector pensions. The one peculiar and implausible set of circumstances in which it is appropriate to use the indexed gilts rate to value public service pensions is a set of

circumstances in which it would be easy and advantageous to move public service pensions immediately on to a fully funded basis.

The main conclusion of this response is that the rate of discount applied to public investment, the 'social time preference rate', is the most appropriate rate to use in the valuation of unfunded public pension schemes

Responses to consultation questions

Question 1: Chapter 1 sets out the expected impacts of a lower discount rate. Are there any other impacts arising from a change in the discount rate?

I have nothing to add to the analysis in Chapter 1 of the consultation document.

Question 2: Chapter 3 sets out objectives for the Government in setting the SCAPE discount rate. Are there other objectives that should be taken into account?

There are no additional objectives which I would add to the list in Chapter 3. However, I do not believe that all the objectives in Chapter 3 have equal weight.

The most important objective is that the rate should be a *fair reflection of the opportunity cost* of financing unfunded public pensions, and a *fair reflection of risk* is part of the assessment of cost. (In the arguments presented below, I assume that risks to government income are incorporated into market interest rates on government borrowing and discount rates on public investment.)

It is desirable that the pension system support *plurality in the provision of public service*, but undesirable that the discount rate be moved from the level which fairly reflects true costs in order to support plurality in public service provision. Other policy interventions should be used to promote this objective if problems are seen to arise from the fact that public sector employers have genuine cost advantages in the provision of employee pensions.

It is desirable that the discount rate be set in a way that is *transparent and simple*, but inter-temporal economics and actuarial science are difficult subjects which often defy simple explanation; and the economics of unfunded pension schemes is not widely understood. The rate should be set according to the correct principles, and effort put into explaining these principles; rather than the rate being set on a basis chosen *because* it is transparent and simple.

It is desirable that the rate be reasonably *stable*. Given that the decisions being guided by the rate are necessarily long-term decisions involving inter-temporal choice over decades, the parameters which guide that choice should be stable. Any proposal for choice of the rate which could involve significant and frequent changes

must be conceptually wrong. It is desirable that practice in the public sector should mirror good private sector practice as much as possible, and review of the SCAPE discount rate on a similar frequency to which funded pension schemes conduct actuarial reviews seems appropriate.

Question 3: Chapter 3 sets out four options. What are the advantages and disadvantages of the four options identified by the Commission for the approach to setting the SCAPE discount rate?

Option (a) - a discount rate consistent with private sector and other funded schemes

The advantage of this option is that it creates a 'level playing field' in pension costs between the public and private sectors. However, the public sector has certain advantages in the provision of pensions (favourable access to financial markets, strong employer covenant, economies of scale in pension administration) so it should be cheaper for the public sector to provide pensions than even the largest and most secure private sector employer. Setting the SCAPE rate lower than the discount rates used in private sector pension valuation would imply that it is inherently more costly to provide pensions in the public sector, and this is clearly wrong. It follows that the rates used in private sector pension valuation provide a useful *floor* for the SCAPE rate.

As an illustration of such floor rates, one could take the rates derived in the recent report of the Government Actuary [2] on the calculation of the rebate for opting out of the state second pension: in his 'best estimate' calculations (the ones which the Secretary of State actually used to set the rebate), he uses discount rates of RPI + 3.9% for a scheme member 25 years from retirement, RPI + 3.1% 10 years from retirement, and RPI + 1.7% at and after retirement, all derived from the returns to typical pension fund asset portfolios. On the somewhat more risk averse 'typical funding' basis, he derives rates of RPI + 2.75% pre-retirement and RPI + 1.25% post-retirement. Paragraph 3.6 of the consultation document suggests rates would be "in the region of 2.5 per cent to 3.0 per cent above RPI inflation" if this approach were followed; and this range is not out of line with the Government Actuary's rates.

Option (b) - a discount rate based on the yield on index-linked gilts

A representative recent example of the case for making the SCAPE rate equal to the yield on index-linked gilts is the 2010 report of the 'Public Sector Pensions Commission' (PSPC) [5] (*not* Lord Hutton's Independent Public Service Pensions Commission) which (p.20) states: "Firstly, this [government pension] commitment is an asset to the employee which is every bit as valuable as an index-linked gilt.

When calculating the value of a pension it is therefore reasonable to discount the amount of the pension at the rate of return from index-linked gilts."

This argument is incorrect, firstly because a public pension commitment is *not* "every bit as valuable as an index-linked gilt" – this year the government has switched the indexation of public pensions from RPI to CPI, reducing at a stroke the value of its pension commitments by something like 15% on average. Had the government done this to index-linked gilts, it would have been regarded by the financial markets as in default. Furthermore, it is questionable whether pension scheme members value the index-linked pensions provided by unfunded public pension schemes more highly than the index-linked pensions provided by funded schemes which are typically not invested wholly in indexed gilts. More fundamentally, the question to hand is *not* how pension scheme members value pensions, but what it costs the employer to provide the pension.

Turning then to the question relevant to this consultation, the cost to the public sector employer, the PSPC argues: "Secondly, the Government is using the money from pension contributions to pay for current spending – it is doing this instead of borrowing using, for example, index-linked gilts. As such, the rate of return it should pay should be the same whether it borrows by taking pension contributions from public sector employers and making pension promises in return or by issuing index-linked gilts."

The first point to make about this is one cannot simply use the market price of indexed gilts as the cost to the government of an indexed obligation. The market price of indexed gilts tells us the value of such a bond *to the private sector*. But the UK government is not a private buyer of indexed gilts, it is a monopoly seller, and we should not expect the opportunity cost to a monopoly seller of a product to be equal to the market price. Of course, other governments can sell indexed bonds, but bonds issued by different governments are not perfect substitutes, and the UK government should expect the price of indexed gilts to fall the more bonds are issued, that is to say, the interest rate to rise the more it borrows. The value of an indexed gilt to the public sector is the marginal revenue from its sale not its sale price; equivalently, the marginal cost of borrowing is not the interest rate but the marginal increase in borrowing costs as borrowing rises.

There is only one set of circumstances in which the PSPC's second proposition is correct: if the government faces a limit to its borrowing from the bond market *and* if the bond market treats gilts and pension debt as equivalent forms of government debt in the calculation of that limit *and* if the government faces an unchanging cost of borrowing up to that limit. In this case, an addition to pension contributions and obligations reduces by an equivalent amount the sum which the government can borrow in the bond market. The opportunity cost to the government of a pension promise is foregone bond market borrowing, and this marginal borrowing rate will be the indexed gilts rate only if the demand for indexed gilts is perfectly elastic. If the government acquires an additional £100 pension obligation payable in

10 years, it has to reduce its borrowing by the amount that at the indexed gilt rate would correspond to a £100 repayment in 10 years time, so the opportunity cost in present value terms is £100 discounted at the gilt rate.

The Appendix to this paper discusses the basic economics of unfunded pensions and shows that if the bond market treats gilts and pension debt as equivalent forms of government debt, then unfunded pension schemes could be painlessly switched into being funded schemes, holding only indexed gilts. In this case, the two pension schemes are strictly equivalent. It might then indeed be appropriate to use the indexed gilt rate as the SCAPE rate to value the unfunded scheme, as this is the appropriate rate for valuing the equivalent funded scheme.

Indexed gilts are a safe but expensive way to provide indexed pensions, which takes us back to the comment made on option (a): a public pension scheme which is more expensive than a conventionally funded private scheme is inefficiently designed and should be replaced.

If public pensions were in a funded scheme wholly invested in indexed gilts or in a strictly equivalent unfunded scheme, employers and employees would be paying much more for their pensions than they would in a funded scheme with a 'normal' portfolio of assets. As is set out in more detail in the Appendix, public pension schemes would be paying a high price for providing the government with cheaper borrowing than they would face in the open market. This would be both inefficient and unfair.

In any case, the key assumption here about the bond market seems simply to be untrue. One might think that the financial markets *should* rationally treat pension debt as equivalent to government financial debt. Media discussion of the fiscal problems of different countries and of the difficulties that some central European countries have recently faced in the bond markets because of their funded public pension schemes show, however, that financial market do not behave in this way; not least, perhaps, because the markets are aware that governments can default on pension promises more easily than on government bonds.

To sum up: if Giorgio Armani gives you a £2000 Armani suit, would you value this gift at £2000, though the suit cost him less than this to produce, it is not something you would spend £2000 of your own money on, and a hole labelled CPI indexation has been cut in each pocket?

Although the case for the use of the indexed gilt rate has superficial plausibility and has received much attention in recent years, it crumbles under close scrutiny.

Option (c) - a discount rate in line with expected GDP growth

The rate of expected GDP growth is very relevant to consideration of public sector pensions policy. The report of Lord Hutton's Independent Public Service Pensions Commission rightly gives much emphasis to the ratio of net public pension pay-

ments to GDP as an important indicator of the scale of the public policy problem. In interpreting the path of this ratio, it is, of course, necessary to take account of contextual issues, such as the changing size of the public sector and the demographic structure of different parts of the public sector workforce, but it remains an important statistic.

There is a reasonable argument to be made that the valuation of unfunded pension schemes is a scholastic exercise and that one should simply focus on the role of public pensions in the fiscal landscape, for which the ratio of pension payments to GDP is the key indicator. This is certainly a very respectable argument to make in relation to state pensions. One doesn't then need a discount rate. But if one wants to consider important issues that are not captured in the fiscal statistics, like employment cost comparisons in public and private sectors, a pension valuation and a discount rate are needed. There is, then, simply no available argument that translates the fiscal statistics into a discount rate related to GDP growth. The GDP growth rate is an important statistic in establishing the fiscal significance of public pensions, but it has no role in establishing a discount rate for pension valuation.

Option (d) - a Social Time Preference Rate

The case for using a social time preference rate (STPR) is that this is the rate used in the appraisal of public investment, so it should equal the rate of return on the marginal public investment project. As the Appendix sets out in more detail, an unfunded pension scheme makes pension savings available to the Treasury. Therefore the opportunity cost of the pension scheme depends on the answer to the counterfactual question: what would the Treasury do if it did not have access to the pension contributions? One possible answer, that it would sell fewer gilts, leads in certain circumstances to option (b); but another possible answer is that Treasury borrowing via unfunded pension schemes allows additional public investment, which earns a return equal to the social time preference rate.

In an unconstrained market for government borrowing, the government should increase its borrowing so long as the marginal cost of borrowing is less than the STPR and should increase public investment as long as the marginal return on public investment is greater than the STPR. At the optimal levels of government borrowing and investment, the marginal cost of borrowing and the marginal return to investment are both equal to the STPR. It matters not whether the pension contributions which flow in to the Treasury from employee contributions and SCAPE transfers allow an increase in public investment or a reduction in public borrowing in the market – the rate of return on both is the STPR and this should therefore be the SCAPE rate.

On the face of it, the UK government is currently very far from this optimum: the STPR is set at 3.5% above RPI and the government can borrow in the indexed gilts market at less than 1% above RPI. Does this mean that the government should

abandon the path of fiscal consolidation and increase its borrowing? It does not. The government has explicitly argued that if it increased borrowing above the currently planned level, the bond market would exact a heavy price.

One interpretation of this is simply that increased borrowing would quickly drive up the gilts rate; equivalently, would quickly drive down the price of gilts. The government believes that it faces a steeply downward sloping demand curve for gilts: the marginal revenue from the sale of gilts is well below the price of gilts; equivalently, the marginal cost of borrowing is well above the market rate of interest on gilts. One cannot be sure that the level of government borrowing is optimised – the optimal rate of fiscal consolidation is a judgement not a calculation – but the best estimate of the marginal cost of borrowing is the STPR since at the optimal level of borrowing the two would be equal. In this case too, both the marginal return on public investment and the marginal cost of public borrowing are equal to the STPR, so the SCAPE rate should be set equal to the STPR.

Another interpretation of fiscal constraint, however, might be that the government faces a quantity constraint in the bond market – it may borrow up to a certain level, but any borrowing beyond this point would precipitate a crisis of confidence.

The crucial question in this case is whether the quantity constraint on borrowing includes pension obligations or not. In reality, the bond market seems to focus only on explicit government debt in considering fiscal solvency, in which case the government would face a limit to its borrowing in the gilt market which is independent of pension funding. In the situation where the STPR exceeds the government's cost of borrowing, an increase in public pension contributions allows the government to increase public consumption or investment – the rate of return on the pension savings is the STPR, and once again the SCAPE rate should be set equal to the STPR.

The logically appealing but implausible case where the bond market imposes a borrowing limit on government which encompasses pension debt as well as explicit financial debt *is* different. Now an inflow of pension contributions represents an increase in government debt and will require a reduction in other government borrowing. It does not permit an increase in investment or consumption. The government borrows from the pension scheme instead of borrowing in the bond market at the gilts rate, so the rate of return on pension savings is the gilts rate (or the marginal cost of borrowing, higher than the gilts rate, if the demand curve for gilts is downward sloping). This is the case already discussed under option (b) above; recall that it is argued there that if this were the state of the world, there would be a compelling case for an immediate switch to funding of public pensions.

With the exception of this implausible case, the conclusion is clear: **the STPR is the best measure of the rate of return to unfunded pension contributions** and if one wants the valuation of public pension funds fairly to reflect true costs, the SCAPE rate should continue to be set equal to the STPR.

There is then a separate issue of whether the STPR is currently set at the right

level. That raises wider and deeper issues about government policy that go far beyond the scope of this consultation. Nevertheless, it is worth commenting briefly on the level of STPR. When the SCAPE rate was initially set, the level of STPR was not very different from the return on gilts, but the widening gap between the two rates makes it more important to have confidence that STPR is set at the correct level.

The building blocks of the STPR are described in paragraph 2.10 of the consultation document: 1.0% for catastrophe risk – essentially the risk that the citizens for whose benefit public investments are currently being made will not be able to enjoy these benefits because of a catastrophe such as a nuclear war which wipes out the citizens and/or the investments; 0.5% for pure time preference; and 2.0% to reflect the growth of per capita consumption: because future citizens are expected to be richer than current citizens, less value is attached to the marginal consumption of future citizens than to the marginal consumption of current citizens. Each of these elements embodies difficult and subtle judgements.

The Stern report on climate change [6] made considerable use of the STPR, but made a judgemental case that 1.5% is too high an allowance for discounting and catastrophe risk together. Stern takes the 'moral' view that the possibility of population extinction is the only case for weighting the interests of future generations differently from current generations; and one can argue that the end of the cold war has significantly reduced the risk of catastrophe or extinction. On the other hand, other commentators take the 'realistic' view that the decision-making of democratic governments necessarily gives more weight to the interests of current voters than to the interests of their descendants and this would argue for a higher rate of pure discounting. Partha Dasgupta [1] and others argue that the judgement about the relative value attached to the consumption of future generations embodied in the use of the 2% growth rate of per capita consumption in the STPR formula is insufficiently egalitarian and that this growth rate might be more appropriately multiplied by 2 or 3.

There are respectable arguments therefore that the STPR should be lower than the current level of 3.5%, but equally respectable arguments that it should be higher.

Question 4: Are there further approaches to setting the SCAPE discount rate that the Government could consider? If so, what are their advantages and disadvantages?

I have no further approaches to offer.

Question 5: Which approach to setting the SCAPE discount rate do you recommend, and why? Following your preferred approach, what actual discount rate do you consider would be appropriate?

Taking into consideration all the arguments presented in this submission, I recommend that **the SCAPE rate continue to be set equal to the STPR**. The STPR itself, however, needs to be regularly reviewed; and the Government needs to take a view on the factors which determine the actual value of the STPR, issues which I believe are beyond the scope of the current consultation exercise.

Further, if the STPR differs significantly from the rates of return typically used to value funded pension schemes, and if both of these rates differ significantly from the rate of return on government bonds, the reasons for the differentials need to be interrogated on a regular basis.

Question 6: Do you consider that there should be a regular review of the SCAPE discount rate? If so, how often this should take place?

It is desirable that practice in the public sector should mirror good private sector practice as much as possible, and it would be appropriate to review the SCAPE discount rate as frequently as funded pension schemes conduct actuarial reviews.

Appendix:
The economics of funding unfunded pensions

Introduction

The interim report of Lord Hutton's Independent Public Service Pensions Commission (IPSPC) [3] had a brief discussion (paras 4.67-4.75) of the possibility of moving public service pensions on to a funded basis, but dismissed this as impractical, not least on the grounds that it would require some cohorts of public sector employees to pay twice – paying taxes or borrowing to cover the unfunded pensions of their predecessors while at the same time paying contributions into their pension fund.

It is understandable that the report should dismiss a shift to funding of public service pensions at this stage: it would not be feasible to adopt such a far-reaching reform on the time-scale within which Lord Hutton was asked to make recommendations, nor would a shift from unfunded to funded pensions address the central issue for the IPSPC – the fact that public sector employees are currently making contributions which cover a relatively small fraction of the likely cost of their pensions.

But a shift to funded pensions would have significant advantages in preventing a recurrence of the problem which the IPSPC is addressing. Public sector employers would be making cash contributions to actual pension funds rather than notional contributions to the Treasury's SCAPE fund, and public sector employees too would be making cash contributions, so the division of contributions between employer and employee would be transparent, and the issue of the adequacy of their joint contributions would be addressed in regular actuarial valuations of the pension schemes.

It is therefore worth considering whether the next *post*-Hutton step in the reform of public service pensions should be a shift to funding. This note looks at the basic economics of such a change.

How to switch the funding basis of public service pensions

It is sometimes said that unfunded, or pay-as-you-go, pension schemes are characterised by having the consumption of the retired paid for by the incomes of the working generations. But that's a fact of economic life, not a feature of an unfunded pension scheme: the consumption of the retired inevitably comes out of the production of the working generations. What characterises an unfunded pension scheme is the special nature of the financial arrangements which give the pensioners their claim on retirement consumption.

The invisible assets of an unfunded pension scheme are the obligations of the Treasury to pay (inflation-proofed) pensions. The pension scheme can be swit-

ched overnight (on 'day zero') to a funded basis if the government simply prints up index-linked bonds whose value and maturity structure correspond to the expected pattern of existing pension obligations. The bonds are handed over to pension fund managers, who also from this point on receive and invest employer and employee contributions and pay pensions. The value of the new bonds would be an eye-watering sum, of the order of £1000 billion, but their creation would be an essentially costless operation, apart from the costs of administrative and legal change and the printing costs of the new government bonds. Implicit government bonds are turned into formal bonds. The nominal stock of government debt will, of course, have nominally increased very considerably, by an amount of the order of £1000 billion, roughly the same as the current level of UK government net financial debt, so the reported 2010 ratio of debt to GDP would rise from 62% to something like 125%.

The implications of this change depend on what are the investment rules for the public pension funds.

Regime 1: investment only in non-tradable SCAPE bonds

The simplest interpretation arises if the bonds which the government creates for the public pension funds are not tradable – call them SCAPE bonds. Apart from their non-tradability, there would be one other feature of these bonds that would distinguish them from indexed gilts – they would be have to be indexed to CPI not RPI.

The pension fund 'managers' have no management to do apart from ensuring that the maturity profile of the SCAPE bonds created by the government matches the expected profile of future pension payments. There is a non-trivial and important accountancy task to be undertaken: valuing the SCAPE bonds and ensuring that the inflows of employee and employer contributions are sufficient to cover the costs of the additional SCAPE bonds which the fund would now buy from the Treasury. In the event that actuarial reviews of the pension schemes revealed that the schemes was underfunded, then there would be a pension deficit, which would be the liability of the government as guaranteeing employer.

New contributions would be invested in SCAPE bonds; and pensions would be funded from the interest payments on the bonds and the proceeds of bond redemptions.

It should be clear that the changes described above are *entirely* a matter of accountancy. There are no changes to public sector cash flows – pension contributions flow into the Treasury as before, and pension payments come from the Treasury. Importantly, there is no change in the indebtedness of the UK government – all that has happened is that debt which is currently implicit in the operation of SCAPE is made explicit as a stock of SCAPE bonds, plus possibly in due course reported funding deficits or surpluses. An adverse reaction by financial markets or

the bond rating agencies to the creation of a pile of SCAPE bonds valued initially at around £1000 billion would happen only if markets were subject to accountancy illusion; or had failed previously to realise that public pension obligations are government debt. In short, an adverse market reaction to an accounting change would raise serious questions about the role of rating agencies and bond traders whose understanding of public debt would be revealed as going no deeper than newspaper headlines.

Regime 2: investment only in gilts

Now go one step further and suppose that instead of supplying the public pension funds with non-tradable SCAPE bonds, the government issues them with indexed gilts. (If all indexed gilts remain linked to RPI while pension obligations are indexed to CPI, then the bond issue would have to be of whatever mix of RPI-indexed gilts and non-indexed gilts best matched the CPI-indexed pension obligations; but the essential argument remains unchanged.) If the pension fund managers are not permitted to trade in the financial markets, the position is essentially the same as in regime 1. The initial stock of £1000 billion of extra gilts is created at no cost, pension contributions flow into the pension fund which is obliged to buy gilts, so this cash flows into the Treasury as before, pensions are paid from interest earnings on and redemptions from the fund's stock of gilts, and this cash flows from the Treasury as before.

The only difference between this regime and regime 1 is that the pension fund is invested in gilts of the same type as are sold in the open market. They are tradable but not actually traded. Instead of the outstanding stock of gilts and bills valued at a little over £1000 billion (sitting alongside an implicit or explicit SCAPE debt of around £1000 billion) the value of the outstanding stock of debt would be in the region of £2000 billion.

The difference between this regime and regime 1 is partly a matter of accountancy, partly a matter of credibility. The debt which is currently implicit in the operation of SCAPE is made explicit not as a stock of SCAPE bonds, but as an addition to the stock of outstanding gilts. An adverse reaction to the gilt stock more than doubling overnight might be more likely than an adverse reaction to the creation on an explicit SCAPE fund, but it would on the face of it equally irrational.

However, the creation of a large stock of tradable bonds even if they are not traded does raise legitimate questions in investors' minds about possible changes in investment policy. The financial markets might react on the basis of a belief that the funds would be allowed in future to invest in a wider range of instruments, and it is to this possibility that I now turn.

Liberalising public pension fund investment

If the public pension fund managers were given freedom to invest, interesting economic questions arise: how the financial markets respond to the new situation, how the costs of government borrowing might change in consequence, and whether public sector pension provision might be changed as a result. A conventional actuarial valuation of public pension funds in regime 2 would in current circumstances result in high estimates of the cost of pension promises, and therefore high contribution rates to keep the fund out of deficit.

Indexed gilts are at least nominally an expensive way to fund pensions in current circumstances, because the real return on indexed gilts is currently very low – effectively all public pension funds would be invested in assets which are safe but apparently have a low rate of return. If the contribution rates required to fund such pensions were high, there would be pressure on the fund managers to move to a more conventional asset portfolio including equities and corporate bonds as well as indexed gilts. The expectation would be that such a portfolio would earn a higher rate of return, the required contribution rates would be lower, and there would be an element of investment risk, but acceptably low not just because of the pooling of investment risk in a diversified portfolio but also because of the pooling of investment risk between different cohorts of scheme members. Now there would be real changes.

Regime 3 – liberalisation of investment of new contributions

Suppose then that public pension fund managers were obliged to hold on to their inherited stock of government bonds, but were allowed to invest new contributions in other assets. One might expect that they would take advantage of this freedom initially to invest all new contributions in corporate bonds and equities. There would be good reason for financial market responses.

There would be an increased market demand for equities and corporate bonds, and an increased supply of government bonds, as the government lost part of its captive market in the public pension funds and had to borrow more in the open market. Again, absolutely no grounds for alarm – the increased rate of borrowing in the open market by the government would be a switch in government borrowing not a real increase, and there would be no major change in rational solvency calculations (though the rise in government bond yields would be an adverse factor in such calculations).

The interim report of the IPSPC quoted ([3], Table 4.A) an Office of Budget Responsibility forecast that by 2014-15, public service pension payments will exceed £30 billion per year. If the Hutton reforms raise contributions to an actuarially appropriate level, then the net financing needs of the public pension schemes would arise only from demographic imbalances in the schemes. Most public pen-

sion schemes currently have numbers of pensioners which are large relative to the numbers of active contributing members (the NHS being the notable exception) so actuarially determined contributions will fall short of £30 billion. Assuming the public service pension funds were allowed to invest new contributions in non-gilts, there could be an annual flow of a bit less than £30 billion into corporate bonds and equities from the public sector pension funds, and a reduction in the funds' holdings of gilts of a bit over £30 billion. Set alongside the existing levels of net borrowing by the UK government (between £35 billion and £45 billion annually throughout most of the period from 2001 to 2007), the market value of the stock of outstanding UK gilt and Treasury bills of just over £1000 billion, the value of non-government UK-issued bonds in excess of £2000 billion, the flow of public pension contributions would have material effects on relative prices in financial markets, lowering the cost of capital to the private sector and raising the cost of borrowing to the Treasury.

While the loss of a captive market for government debt might be a source of inconvenience to the Debt Management Office and a rise in the cost of government borrowing would be an unwelcome real increase in public expenditure, removing an artificial restriction on the investment of a large slice of the nation's saving would amount to removing a distortion in the capital market, and in principle this is a desirable move. The government should have to compete for funding with the private sector on fair terms.

It is often said that, at present, the yield on indexed gilts is artificially low, because the government does not issue enough of such debt to satisfy the appetite of private pension funds. And since the government is acquiring large volumes of indexed implicit debt in the form of obligations to pay indexed public service pensions and state pensions, a certain reluctance to issue large volumes of indexed gilts is understandable. Removing the government monopoly on bond sales to public service pension funds might help to deal with this alleged distortion.

Regime 4: complete liberalisation of public sector pension fund investment

If the public service pension fund managers were given a completely free hand to rearrange their portfolios and tried to off-load a large fraction of the government debt they were given on day zero, there could well be considerable turbulence in the markets. It would not be in the interest of the pension funds (or the government) if portfolio adjustments took place at a rate which led to large falls in the value of the main assets of the funds. But even if the pension funds were restrained in their use of their investment freedom, the prospect of £1000 billion of UK government debt coming on to the market might cause considerable nervousness. There would be a strong case for using regime 3 to gain experience of greater liberalisation before contemplating any liberalisation towards regime 4.

The governance and management of public pension funds

There would be important governance issues to consider. What kind of employer covenant would sit behind the public service pension funds? How would the funds be managed? What arrangements would keep fund management costs to an acceptable level, avoiding the scandalous levels of charges which have bedevilled many private sector pensions? Managing the costs of providing funded pensions has been a major policy theme from Adair Turner's Pensions Commission to the recent RSA report by David Pitt-Watson [4]. Freeing public pension savings from the constraint of compulsory investment in government bonds only then to have a high proportion of contributions swallowed up in high costs would not be an increase in economic efficiency.

Funding the state pension

The arguments advanced in this Appendix would mostly apply to the question of switching the state pension to a funded basis. State pension obligations are, however, even larger than public service pension obligations, so the potential for creating financial market turbulence is even greater. Furthermore, National Insurance contributions are now generally regarded as simply a part of the income tax system. The state pension is funded out of taxation not out of contributions and it has universal coverage, so the need to check whether contribution rates are fair and adequate does not apply. The case for changing the funding basis of the state pension is less strong.

Is there a 'pay-twice' problem?

Paragraph 4.73 of the IPSPC interim report [3] stated: "Any change to funded from unfunded status would also involve significant transition costs. The contributions in respect of current employees that are used at present to help finance pensions in payment would have to be diverted to the new pension funds. Those unfunded pensions in payment would then have to be financed through extra government borrowing or taxation. That could cost £20 billion or more a year for many years and the cost would only decline very gradually over the 21st century. That extra financing cost makes it very difficult, particularly at a time of fiscal consolidation, to move unfunded pensions on to a funded basis."

The analysis presented above in this note would modify these arguments. There is no double burden, nor is there a need for extra government borrowing or taxation. Hidden government borrowing would be replaced by explicit government borrowing but if pension fund managers were free to invest in a range of financial assets, there would be significant portfolio re-allocation effects in the financial markets which could raise the cost of government borrowing.

There may indeed be a double burden on current working generations, but it does not arise from the funding basis of public service pensions. Current contribution rates are evidently too low, and there is limited scope to redress this in relation to existing pensioners or workers close to retirement. The government therefore has a net debt (considering bonds and pension obligations together) that is larger than it would have been had past pension contributions been higher. The burden of repaying that debt will fall on current and future working generations, but unless the country runs into a fiscal solvency crisis, we can choose how to distribute the burden between current and future generations. It is not the case that the working generations of some period of transition to full pension funding have to bear the burden of the debt: it can be spread over a number of working generations, independently of the timetable of the pension funding transition.

Should the bond market become anxious about the fiscal solvency of the UK government, it would become necessary to have a fiscal consolidation so as to reduce the overall level of debt – then the burden of debt reduction would fall on a particular generation, who would of course at the same time be making their own pension contributions. But on the assumption that the bond market understands that unfunded pensions are government debt, a change in the funding status of public service pension schemes *should* have no effect on the likelihood of a fiscal crisis, except in the second-order sense that any rise in the government's borrowing rate would alter solvency calculations somewhat.

Citizens of a country with an over-borrowed government do indeed have a 'pay twice' problem – they have to pay for their consumption, public services and pensions while at the same time contributing to paying off past debts. Underfunding of pensions may have made a contribution to the creation of this problem, but the problem is a fiscal problem not a pension problem, and a change in the funding basis of public service pensions would not create, significantly worsen or solve the fiscal problem.

A modest experiment

The IPSPC's agenda for its final report included consideration of a 'hybrid' pension design for higher paid public sector employees, where salaries up to some benchmark level would be eligible to pay contributions to defined benefit pensions; while in respect of salary payments above the benchmark level, contributions could be made to a defined contribution (DC) scheme. If this hybrid model had been pursued by Lord Hutton, then having the DC part of the pension be in a funded scheme could have been regarded as a modest experiment in the funding of public pension provision. Furthermore, the funded, DC, state-sponsored NEST scheme being established as a result of the Turner report would have been an obvious vehicle for the DC part of a public service hybrid pension; not least because this would help achieve economies of scale. In the event, the hybrid option was not pursued in the IPSPC final report.

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