

**ADDENDUM: PUBLIC SECTOR PENSIONS – HALF MEASURES WILL NOT DO**

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## **PUBLIC SECTOR PENSIONS: HALF MEASURES WILL NOT WORK**

### **ADDENDUM TO Q&A RESPONSE BY JON MOYNIHAN**

The UK's Public Sector Final Salary pension schemes are an immoral bet on a risky future. The immorality of the bet stems primarily from three facts:

- That the ultimate amount that this bet will cost us is unknown, and could be enormous – potentially ending up as significantly greater even than the trillion-pound estimates made recently by such as BNAC and Watson Wyatt;
- That the outcome will become known, and will be paid for, only long after those committing the country's future resources to the bet are gone from power (in most cases carrying with them their own gold-plated pensions);
- That the cost will be borne not by those benefitting, but by their children and grandchildren who will be impoverished thereby.

The immorality would be venal were it not for the unconscionably large size of the bet that is being taken (enough – see appendix D – potentially to destroy the UK's economic future), based on a variety of unknowables whose future outcomes are quite impossible to predict accurately. What each pensioner's final salary will be; what the rate of inflation will have been up till then, and what it will be thereafter; whether the retiree will be married or widowed (plus many other such secondary issues); in the case of funded schemes what the performance of any equity or bond investments will have been, both before and after that retirement; and above all, that looming colossus, the ever-increasing lifespan of the beneficiaries: all these combine to form a level of speculation (currently planned to be paid for with other people's money), which if continued can (appendix D) confidently be expected to bankrupt the country.

These issues make it important for Public Sector organisations to:

- Avoid, step away from, and in general minimize wherever possible any future obligations that would be created by continuation of Public Sector Final Salary schemes. Ideally, close them all now, and replace them with DC schemes that (as in the Private Sector) include a significant contribution from the employee
- Do whatever can legally and responsibly be done to minimise the cost of already-accrued DB obligations.

The most compelling reason for doing this, as already stated, is that in recent years (a century or more after these schemes were originally created, and the original laws regulating or amending them were passed), an enormous potential new liability has come into view – that already, pensioners will live many more years, indeed decades, beyond the original expectations that were in existence when the pension schemes were set up, and while they were (in those few Public Sector organisations where they were) being funded; in addition the potential exists for further scientific advances that would result in pensioners living many decades longer than even now. The potential for this 'long longevity' event to bankrupt the UK economy (both because we may not be able to afford the current promised pension payments, and in any event would certainly not be able to afford further payments arising from additional longevity) means that any responsible government needs to put legislation into effect, now, to deal with the (most likely already unaffordable) level of payments already committed to, and to deal with the expectation that even current changes in longevity will, at some unknown point in the future, be dwarfed by even greater future

improvements in longevity. To put off dealing with this issue would be extremely dangerous. The longer we wait to deal with it, the larger will be the consequent economic and personal disruption in the UK.

What are the mechanics and implications of a Final Salary (“Defined Benefit”) pension scheme? In such an arrangement, individuals are promised certain payments, linked to their final salary, from retirement until the end of their lives – whenever that may occur. In a minority of Public Sector schemes, an estimate has been made of the expected future cost of those promises, and some – apparently (see for example *The Economist*, July 9, 2009) insufficient-funds (invested in equities, bonds or other assets) have been set aside for that cost. In most Public Sector schemes, nothing has been set aside, and the cost of the annual pension payments is met out of the UK’s annual tax incomings, or borrowing. The unconscionable risk, as well as the already very high cost, of these promises must be acknowledged from even a cursory look at the size and number of the salaries involved; the danger of inflation; the existing advances in longevity; and the ongoing rapid advances in biological sciences over the past couple of decades. The last of these means that although not at all certain, there has to be a possibility that further greater, possibly massive increases in lifespan will be achieved by scientific breakthroughs, at some point well before those currently in receipt of final salary rights die. Such levels of increase have not been, in any sense, funded in any final salary scheme that I know of – and from the extreme volatility that has been seen in markets and world economies, particularly in the past two years, no-one can forecast with certainty what might happen to the value of almost any financial investment, whether equities, corporate bonds or even government gilts. The immorality of having such a scheme comes, as stated, from the fact that the considerable gamble being taken by these final salary schemes is being made *by* this generation, *for* this generation – but is to be *paid for* by the *next* generation . . . . and, indeed, the generations after that.

Final Salary Schemes were introduced at a time when the expectation was that pensioners would live only a very few (initially, and from today’s perspective incredibly, some 3 or 4) years after their retirement at age 65. These original Final Salary schemes were therefore not that risky, and benefited in addition from a lack of volatility in the debt markets, and constrained downside in equity markets, over many decades. The situation we face now –and indeed have faced for at least the last decade– is entirely different. For a start, government regulation in the UK has massively increased the cost of any and all final salary schemes. Both Conservative and Labour governments have added to the cost, initially through such devices as requiring schemes to be index-linked; adding widow’s benefits, among other legal requirements; and later, in particular for the Private Sector, through the creation of significantly diminished future assets through the imposition of taxation on dividends, and of significantly increased required funding of schemes to ensure more certainty of payment of pensions (this last point is discussed in more detail in appendix A). Adding massively to the future obligations, of course, has been the rapid increase in longevity seen over the past few decades. A man of 60 now retiring can hope to live some 25 or more years – far greater than the original very short average lifespan after retirement that was the norm when such schemes were originally set up. (Recently, the *Lancet* asserted that a child born today in the UK could expect to live to the age of 103.)

In the Private Sector, the problem created by the recent tremendous increase in liabilities – both from government actions and from increases in longevity – was somewhat masked during the 1990s by the rapid growth in the value of shares in the stock market. However, when the stock market crashed in 2001, it was immediately apparent that there were gaping holes in the vast majority of funded Defined Benefit pension plans, made worse by the pension fund holidays that many Private Sector schemes had taken during the times when significant surpluses had existed. In a short period of time, the UK’s Private Sector Defined Benefit plans plunged from being, in the estimation of many, the best-funded in Western Europe, to having very significant deficits. This situation was exacerbated when the actuarial profession as a whole, reacting to criticism that they had failed to anticipate these (in fact, largely exogenous and therefore unpredictable) events, proceeded to impose far more conservative assumptions regarding the future than they had done in the 1990s. (It is very little understood by the public how many pronouncements from the actuarial profession, reported in the press and elsewhere, now contain such significant conservatism that

those estimates of “deficits” are, rather than unbiased forecasts of the future, instead significantly pessimistic regarding that future. Such a bias may be considered good by some, but not by all. In any event the existence of that conservatism is not well understood, and its distorting effect therefore bedevils discussion of the real size of the pension fund hole facing the UK. See appendix A.)

Of particular interest in Private Sector schemes is the position of those schemes that have been taken on by special corporate vehicles, or by Pension Insurance companies. This includes all single-life annuities, and the like. It is perhaps not necessarily appreciated that if there were dramatic scientific breakthroughs that led to significant increases in longevity, then at a certain level of increase *all these corporate vehicles and insurance/pension companies would necessarily go bust*, meaning that all the beneficiaries receiving current or future pension from those entities would cease receiving pension, at least at the level expected. The resultant societal dislocation could potentially lead to impossible-to-predict, but quite possibly dramatic, outcomes.

Public Sector Final Salary pension funds have all the problems facing Private Sector schemes and more. In particular, the majority of Public Sector pension schemes (excluding local government and MP schemes) are unfunded<sup>1</sup>. While Private Sector Defined Benefit pension schemes are, in essence, enforceable contracts between the shareholders and the employees of those companies, and thus at least have an asset – the ‘covenant’ of the company – to back up that contract<sup>2</sup>, Public Sector pensions are contracts between the public servants of today and the future generations of tax payers of tomorrow – 50, 70 or even (if longevity were to increase dramatically) 100 years into the future, when vast payments of unknown size will be visited upon those generations, to pay for the commitments being made today.

Many reports have been written, and proposals have been made, on what to do about the enormous (albeit ultimately unquantifiable) promises that are being made as a result of these final salary schemes. Very few such analyses expose the problem in full<sup>3</sup>, yet alone propose solutions as to how those

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<sup>1</sup> *Public Sector Pensions: The UK's Second National Debt*, by Neil Record and James McKenzie Smith, edited by Lawrence Kay, Policy Exchange June 2009. See also “*The need for transparency in public sector pensions*”, BNAC (Chair: Neil Record), June 2009, estimating (possibly using as a basis inappropriately conservative actuarial assumptions, but of these not including assumptions of major future advances in longevity) the size of the Public Sector's unfunded deficit to be in excess of £1 trillion.

<sup>2</sup> On occasion (recently, with increasing frequency), the financial resources of the sponsoring company will be insufficient to meet its obligations, and some of all of the would-be pensioners will be out of luck. The most spectacular recent near-miss of such an event was that of General Motors in the US, whose Final Salary and healthcare-for-life commitments bankrupted it. Had a less labour-friendly administration been in power in the US at the time of that bankruptcy, it is possible that General Motors pensioners would not have received their full pensions, post-bankruptcy. The situation has in the past been worse in UK, where if a firm with a final salary pension scheme went bankrupt, existing pensioners were given what funds were there in the pension scheme to pay amounts up to 100% of their full pensions. If all commitments to existing pensioners were met, any surplus funds were made available pro-rata to any members who had not yet reached retirement age. On the other hand, if meeting obligations to existing pensioners exhausted the funds available, then those not yet of pensionable age – even a 59 year old, with many years of contributions into that scheme and one year short of retirement – got zip out of the scheme. With the recent establishment of the Pension Protection Fund, which will address much of this problem, nonetheless – as I understand it -- then when such circumstances pertain now, existing pensioners still take first cut of available funds, and those not yet in receipt of pension receive a diminished amount from the PPF. While the PPF in the short-term addresses several important problems, whether or not it will prove a long-term success is as yet uncertain; its creation leads to increased moral hazard. It has been stated that the equivalent institution in the US, the PBGC, which has been around longer, currently carries a deficit in the tens of billions of dollars.

<sup>3</sup> See, for example, *The Economist*, July 9<sup>th</sup> 2009, comparing the UK's Public Sector Pension Plans to a Ponzi Scheme. To take just one example, some Public Sector schemes – I believe the majority, although it is extraordinarily difficult to get information on such matters from the public web pages of individual Public Sector pension schemes – offer an increase of some 10% in pension per annum, usually for each of up to 5 years or more, to those who will delay taking their pension for one or more years. (In Finland, the amount offered is some 4-5% less than half the amount. Yet even 4% can be said to be too high, when one considers the moral hazard point which leads to adverse selection (I will delay taking my pension if I sense that my robust health means I will benefit from the increase for many years; conversely, if I feel I am a sickly oldie I will take my pension immediately so as to get it for those fewer years that I sense I will survive.) In other words, in such a scheme, UK public sector pensioners who delay retirement from age 60 to age 65 could see an increase of some 50-60% in the annual pension they then receive each year for the rest of their lives. Not surprisingly, many public sector pensioners take advantage of this extraordinarily generous (and fraught with moral hazard) offer. Yet, I have not seen in the publicly available literature a single estimate of what this one provision adds to the future expected cost of pensions (in particular, using an estimate of the impact of moral hazard on this number – something which would be absolutely necessary to get the calculation right), and it is likely therefore the case that in the multiple calculations of the liabilities of Public Sector pensions, the true (large) cost of this single proviso has not been added in. And yet, this proviso is just one of several such that may be generously offered in a given Public Sector Final

commitments will be met (or mitigated). (One major reason for the failure to expose the problem is, as discussed later, the insistence on using single-point estimates of the future, rather than expressing it in probabilistic/stochastic terms.)

The immorality of the promise to pay Public Sector Final Salary pensions, for however long is required, is compounded by the fact that the payments are quite likely already, and certainly if and as longevity increases, unaffordable. While it is already bad enough to place this enormous burden upon our Private Sector workforce<sup>4</sup>, which is already shrinking relative to the Public Sector, and relative to the growing number of pensioners that will have to be supported, the larger issue is that sooner or later politicians will have to admit that the payments are unaffordable and must therefore be diminished or stopped. While it will be difficult to take the decision to close, or alter the terms of, these schemes when there are so many pension-receiving and pension-expecting voters (especially since similar problems extend, to the general State Pension, not just to Public Sector pensions), the inevitable day of reckoning may, at some point in the future, be hurried forward if the strain on the economy proves such that the amount of tax paid to the Exchequer drops significantly from the effects of expatriate flight and a generally diminished economy, each brought about by the very cost of these payments. In any event, at some stage drastic steps will need to be taken. The longer successive governments put off addressing the issue, the more drastic the steps will be that will need to be taken in the end.

We need these real problems of the Public Sector pension fund dilemma to be clearly articulated, and solutions to be found that are affordable for the British public, and implementable. The following two sections:

- I. Review four crucial issues bedevilling the resolution of this problem
- II. Propose seven solutions to help make our Public Sector obligations affordable.

## **I. FOUR CRUCIAL ISSUES IN BEDEVILLING RESOLUTION OF THE PUBLIC SECTOR PENSIONS PROBLEM**

As previewed in the above discussion, the true problems, creating a crisis of considerable magnitude, can be enumerated as follows:

1. **That the size and full implications of these problems are not being articulated to sufficient detail.** They need to be articulated, in great detail, both in the public accounts and in all debates and analyses of the issue.
2. **That the *nature* of the risks, and the need for this generation to take its share of those risks, is not understood.** A language needs to be developed in which these risks can be discussed and reviewed.
3. **That each specific future risk needs to be much better understood** – in particular that of potentially massively increased longevity.
4. **That the entire purpose, value of, need for, and desired benefits of Public Sector Defined Benefit pension schemes need to be re-evaluated and reconsidered.** This is because economic necessity dictates a change, as well as because such a debate would invigorate

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Salary scheme, the costs of which might equally not be included in the majority of estimations of the overall Public Sector pension fund liability. Even were no other reforms to be made to Public Sector pensions, such overgenerous loopholes surely should speedily be closed.

<sup>4</sup> Income taxes “paid” by Public Sector employees are, of course, essentially, a wash, being monies “originating” from the government, and returning to the government. The only true sources of tax to pay for these pensions are from the Private Sector, and from non-income taxes.

attempts to solve the problems reviewed here.

I elaborate on each of these four points below.

### **1. The full implications are not being articulated, in sufficiently stark detail, about the future problems being piled up by existing Public Sector Defined Benefit pension plans.**

It has been asserted that numbers are being fudged; insufficient data is being gathered (see the earlier footnote 3 for an example of this), and insufficient analysis is being done – particularly on a probabilistic basis (ie a basis that gives not just the expected outcome, but also the potential upside and downside) – along with insufficient analyses of the potential future consequences on the public purse<sup>5</sup>.

‘Telling the truth’ would necessarily include proper full accounting in the Public Accounts for these future liabilities; they are just as real liabilities as any government debt. The lack of accounting discipline in this area is as bad as anything that the European Union has allowed in its fabled non-accounts, and further compromises the former tradition of probity, already hit by PFI off-balance sheet funding, in the UK’s Public Accounts<sup>6</sup>. While steps to surface this debt via the Whole Government Accounting project are praiseworthy, WGA has not been brought to fruition as yet so the calculations involved have yet to be scrutinised, meaning that it is too early to say that this problem has been solved.

In particular, and as discussed further in appendix D, we need a clear articulation of:

- The likely impact of those future payments on national debt as a percentage of GDP
- The likely percentage of tax income that these payments, plus interest on debt, will represent.

The lack of a productive dialogue regarding Public Sector pensions seems to be bedevilled by the ongoing lack of a meeting of minds between on the one hand, apologists for final salary schemes in the Public Sector, and on the other those who believe such schemes are unaffordable and dangerous for the future of the economy. This may be a function of Jung’s famous differentiation between the psychology of people who are so-called ‘**Feelers**’ (those who base their arguments on feelings, or values – what ‘feels right’ when determining the proper approach to take), versus that of ‘**Thinkers**’ (those who use logic, and mathematical analysis, when deciding what the appropriate approach and decision should be). Feelers focus on the importance of ‘fairness’ to the hardworking public servants who have worked for the public good all their life and who, it would seem, deserve a comfortable retirement, with a similar standard of living to what they enjoyed while they were working. Thinkers, on the other hand, point to the uncertainty and likely impossibility of being able to fund future payments, as well as to the illogic (and indeed the perceived unfairness) of picking out a particular sector of society (the Public Sector) for having such a cushioned retirement, when the larger sector of society, the Private Sector, will be unable to afford or enjoy such an outcome. For example, when this author discussed the issue with a leading academic, and posited that if an individual receiving a Public Sector Final Salary pension happened to live longer than expected, then they might perhaps be asked to take a 10 or 20% cut in pension in order to keep the public

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<sup>5</sup> For example, the paper mentioned in footnote 1 proposes, essentially, to “surface the truth” by funding all such schemes with index-linked gilts. While I acknowledge that such a step would, at least (but only until such time as Whole Government Accounting is in place), dramatically showcase the currently believed size of the problem, respectfully disagree that such a step would do anything else to solve the problem. Indeed, I believe I show in appendix B that, over and above the failure of such a step to address the longevity issue, this ‘solution’ would have no concrete impact while at the same time, funding with gilts, as opposed to any other instrument (equities, corporate bonds), would make Public Sector pensions way more expensive for the country to pay for, as well as perpetuating the current burden on the public finances created by these schemes. See appendix B for a full elaboration of this point.

<sup>6</sup> Calculating, and regularly publishing, the overall size of the Public Sector pension liabilities is, of course, while a different matter, one that is a highly praiseworthy objective in itself. It is claimed by many that similar regular publications of Private Sector pension liabilities has been the major factor that has led to the closure of most such schemes.

funding of such schemes within reasonable limits, the reply was: “*but that’s exactly the time of life when they will be needing their pension, to the full amount, more than ever*”. In this way, in the ‘Feeler’ approach, need is implicitly perceived to trump affordability. Given that the world seems to be, as Jung posited, divided approximately 50-50 between the two psychological types, and given that each type usually has great difficulty in accepting the point of view of the other type, it often appears as if the two sides are talking across an unbridgeable divide. This author acknowledges that his personality lies on the Thinker end of the spectrum. He does not wish to overly minimise the importance of a compassionate and values-driven approach to this issue, but urges that the Feeler approach, which can in the extreme be described as a Peronist approach, has not shown itself as conducive to creating successful societies when applied excessively in other countries, such as Argentina.

Of particular concern must be the fact that, in the author’s experience, a majority of leading politicians, as measured under such psychometric tests such as the Myers-Briggs personality test, come up as reasonably strong ‘Feelers’. This can be seen as a foreseeable finding, since the electorate will, except in exceptional circumstances, tend to want to elect people who are emotionally concerned for their electorate and whose values are such as to make them strongly motivated to seek beneficial outcomes for that electorate. Thus, when offered a stark choice between preserving benefits, and/or creating additional future benefits for the electorate, versus putting the public’s finances in order, it may be difficult to assemble a collective will among government to address this issue as forensically as a ‘Thinker’ approach might suggest is necessary. (It thus becomes even more important to articulate the full implications of the situation as forcefully as possible.)

## **2. The nature of the risk created by final salary schemes is not understood. A language needs to be developed in which that risk can be discussed and controlled.**

Politicians, the press and the public seek certainty, and opt for soundbites in which short punchy ideas are put over with an air of that certainty. Thus, public discussion of any issue of this sort, when quantified, almost always focuses on the articulation of a single number, in an apparently conclusive way. If we were able to calculate with certainty the single number that represents our future Public Sector pension fund obligations, we would have resolved half the problem. And yet, by the very nature of this problem, there is no one number that sums up the risk. Actuaries tell us “a” number, representing the perceived total liability of the scheme, having utilised a series of assumptions regarding the future – for example, how long those for whom we are accumulating pension obligations will live – in order to arrive at “that” number. Yet the uncertainty about future longevity – as well about many other variables – makes it impossible to know whether that calculated number is correct or not.

In recent decades it has become usual, in other areas of commerce, for financial analyses of this sort to be described in terms of probability distributions. Such ‘stochastic’ analyses in the banking sector have come under attack in recent years, due to some organisations’ over-reliance on the language of probability distribution (Nassim Taleb’s *“The Black Swan: The Impact of the Highly Improbable”* is an example of such attacks), but nonetheless probability-based analyses, used well (as they were by banks that escaped the worst excesses of the recent financial meltdown) are considerably superior to, and create better policy options and evaluation than, single-point estimates of the future. In the Defined Benefit pension world, pension fund surpluses or deficits are almost always announced as a single number in annual reports, press releases, or journalistic comments – with implied certainty expressed about that single number. However, within the calculations used to arrive at that number lie a bewildering amount of assumptions, each of which is most unlikely to turn out to have been accurate when the future actually happens – which means that the single number stated as “the” surplus or deficit will in its turn not, when the time comes, be what the actual outcome is. Worse: this single stated number can also be calculated on any one of many different valuation bases. A pension fund could, for example, have its surplus or deficit calculated on an ‘FRS17’, ‘Scheme Funding’, ‘Ongoing’, ‘Closed Fund’, ‘Self Sufficiency’, ‘Buy Out’ basis – and many pension scheme rules also reference specific target liabilities. See appendix A for a more detailed

discussion of this point.

The single stated outcome, whichever of the various bases it is calculated on, is almost invariably presented as “the” pension fund surplus or deficit. Yet, in that same pension fund, the outcome of choosing one or another of these bases could range from the pension fund showing, say, anywhere from a 20% surplus to a 50% deficit. Despite this, media reports of surpluses or deficits rarely state even what basis of calculation, from among the many possible, has been used – let alone portraying the outcome as a range, or probability distribution.

(Yet worse, steps are being taken to introduce even more unreality into the reporting of liabilities. For example, the ASB [reported most recently on 20 November 2009 in IPE] have argued in favour of using “risk-free” [by which they mean gilt] rates to value pension liabilities in company accounts, potentially increasing the stated size of the liability to a similar size to liabilities under buyout.)

The complexity only begins there. Beyond that, actuaries creating such a liability analysis will have made decisions on a multiplicity of assumptions, ranging from what returns they expect from equity and different bond markets in the long term future, to how long they expect current and future pensioners to live, to what percent will die married. . . will seek commutation of their pensions. . . and on and on. Appendix A discusses this further. As described there, most actuaries nowadays take multiple conservative cuts on such assumptions, so as to avoid, as best they can, any future accusation of not being sufficiently conservative. And these conservative assumptions will themselves then be layered into the calculation more conservatively. For example, it used to be that a ‘Closed Fund’ basis would have been considered a conservative measure in itself and therefore calculated as *“what we [50% likelihood] expect the surplus or deficit to be if the fund is closed, using the various (not always conservative) assumptions on each of the individual items mentioned above”*. More recently, this moved to *“what we expect to be (say) 60% likely to be the case”* – using in addition multiple further layers of conservatism by making it better than evens chance that a conservative approach of Closed Fund would be funded. And even in the past year or so many actuaries (in some cases arguing that they are made to do this by the regulator) have been increasing the (say) 60% likelihood to 65% or even further – in other words, *“if you fund the deficit we are stating here, we can expect that there will be only a 35% likelihood, even if all the multiple downside assumptions that we have used in our analysis turn out to be what happens, that your fund will not have enough money to pay its pensioners their future pensions”*. This is in fact the same as saying: *“There is a 65% likelihood, even all the other conservative assumptions we have made turns out to be correct, that the scheme’s liability has been overcalculated – even if the fund were closed, which it hasn’t been.”*

One excuse sometimes offered for this conservatism is that it provides a ‘rough justice’ hedge against significant improvements in longevity. This is a category error: the two sets of issues (longevity risk, and all other risks) are entirely separate; are mostly uncorrelated; and can be expected to have different order-of-magnitude impact, particularly when one considers the individual differences between ‘young’ schemes, ‘old’ schemes and closed schemes. Dealing with the two sets of issues requires, I submit, separate approaches and techniques. In particular, longevity risk (as discussed later), if it is to be properly underwritten, can (I submit) only be successfully dealt with by risk-sharing between sponsor and beneficiary.

One of many problems with these attempts to grapple with the necessity (or not) for conservatism is that those changes in calculation will not have been fully understood by those who just see the single number at the end of that analysis. Those viewers of the end result will not know that the number arrived at is most likely (apart, possibly, from longevity risk) deliberately over-exaggerated. Actuaries, politicians and pension regulators either believe that it is okay to pile conservative assumption (or have simply not understood the extent to which this happens) upon conservative assumption, and that there will be no cost to doing so. Such assumptions are naïve. The greater the conservatism of the assumptions, the more capital has to be put into the pension fund. That capital is diverted from other, potentially more productive, uses within the

scheme sponsor's organisation (or, in the Public Sector's case, the government). Worse: in the Private Sector, companies have on occasion been forced to declare bankruptcy because of their inability to fill the 'hole' created by the increasingly large reported deficit. For such companies, their pensioners have, in the past, not all received what they have been promised in pensions, and many would-be pensioners received nothing, or almost nothing, at all<sup>7</sup>. Thus, an excessive focus on risk by the actuary feasibly resulted in the impoverishment of the very pensioners that the actuary was supposed to be protecting. And finally, the majority of companies all over the UK, who once had flourishing Defined Benefit plans, are one by one closing them down as the onerous, and potentially massively overconservative, estimates of liability become unaffordable for them to fund.

This conservative flight from risk, created by the lack of a sophisticated discussion on that risk's nature, has led to a current fad for funding pension funds with index-linked gilts. Gilts do not in any sense fully cover the risks in a defined benefit pension scheme; in particular, they fail to cover longevity risk (when the last gilt in your fund pays out, what do you do about the fact that people are by then living 20 years longer than you expected, but there is nothing left in the fund to pay their pensions?), and they do not cover sovereign risk (what happens if the country defaults on its debt, that you have used to fund your pension scheme? What indeed happens if, to meet the demand for index-linked gilts, the government issues enormous quantities of them, following which, as the currency is seen as increasingly debauched and the funding need unfundable, interest rates rocket, and hyperinflation consequently takes hold in that country? The resultant payments obligations on the government would lead to an irresolvable whirlpool of risk in which the government was forced to default on its obligations in order to break that vicious cycle<sup>8</sup>). See appendix B for a further discussion on the problems with funding Public Sector pension funds with index-linked gilts, and appendix C for a review of why funding (in some other way) is, nonetheless, important and much to be desired.

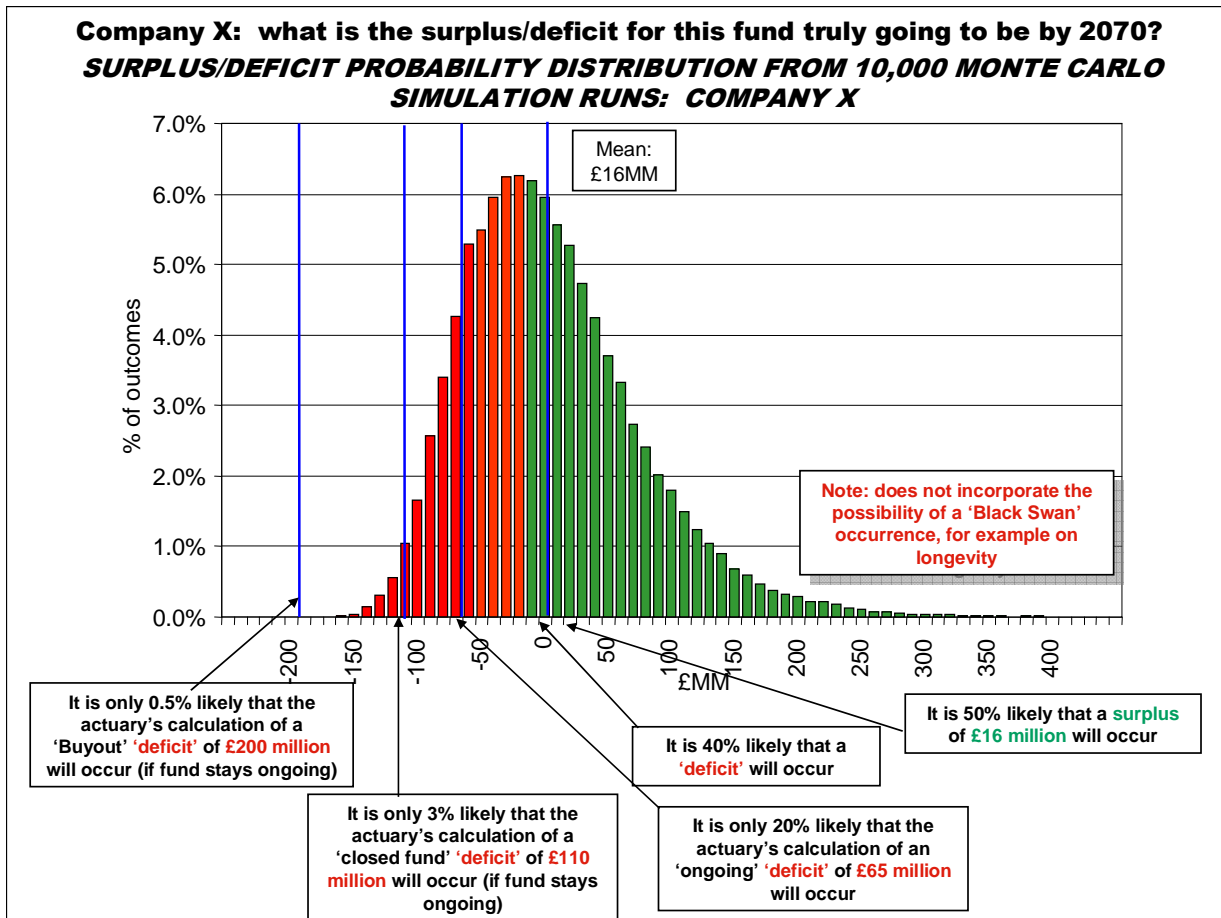
For a start, then, what is needed is an appropriate language in which to talk about (a) the risk in a pension fund, and (b) the level of surplus or deficit that may or may not exist in that pension fund, relative to an unknown future. Chart I, below, while disguised, is taken from a real example in a large UK company. If adopted as a required way of portraying and reviewing all DB schemes, it would be a new way of showing pensioners and Pension Fund Trustees the actual level of risk existing in the current level of funding in their Pension Fund. It uses approaches – Monte Carlo simulation and graphical representation – used successfully by many analysts when talking about financial risk. It certainly has its defects (in particular with respect to the issue of whether the distribution shown in the chart should or should not be fat-tailed), but utilising such a chart would represent an enormous advance on current modes of discussion regarding pension fund liabilities:

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<sup>7</sup> The creation of the Pension Protection Fund has, for now, partly obviated such problems. However, it came too late for many would-be pensioners in the recent past, who still lost their pension. Furthermore, the moral hazard created by the PPF (where companies funding their schemes soundly have to subsidise companies that aren't) inevitably threatens to create further problems down the road.

<sup>8</sup> The fundamental problem with the Public Sector's Defined Benefit schemes, as currently constituted, is that they are simply unaffordable. Any attempt to get around that problem, as well as (in the Private Sector) the fad for index-linked Gilts, merely puts a further strain on the system, which will eventually lead to a further, larger problem, which will eventually overwhelm the attempts to shore up the system – see Argentina during the 20<sup>th</sup> Century, or potentially Greece and other countries in the 21<sup>st</sup>, for a history of what then occurs.

Chart I



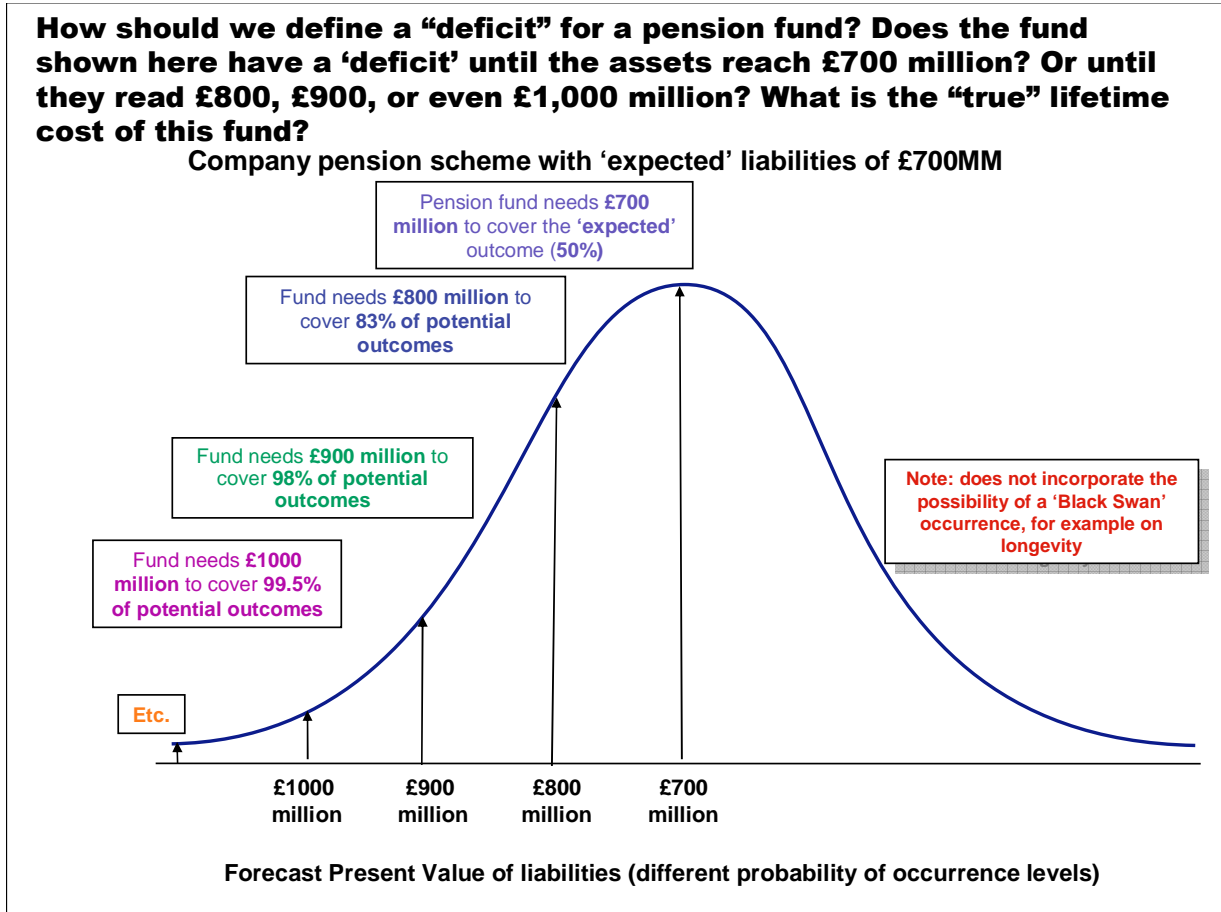
Note this chart's ability to illustrate multiple aspects of the issue at the same time. For example one can see that in this case, the 'expected' outcome is of a surplus of £16 million. This is what, using the best available data to date, one expects to have occurred at the end of the life of the last pensioner in the scheme (that outcome value discounted, of course back to the present). At the same time, one can see the 'ongoing' and 'closed fund' deficits, that had been calculated by the actuary, expressed as a percentage likelihood of occurrence. (Certainly, most people would be surprised to be told that the alleged Closed Fund 'Deficit' had, in fact, only a 3% estimated likelihood of occurring, over the fund's future life, as was properly calculated to be the case in this chart<sup>9</sup>).

As soon as one were to start looking at the obligations of any pension fund in this way, and in particular if Public Sector pension funding analyses were presented in this way, one would be able to start thinking about one's attitude to the various risks depicted in the chart, and to start thinking about how to share those risks between the Public Sector pensioner, and the future generation who will be responsible for fulfilling the obligation. For example, while one might find, say, that with a given level of funding, there is a 70% likelihood that all the pension requirements will be met, that number more or less means that there is a 30% likelihood that it *will not* be met. How, as a society, do we feel about that? Is that sufficient? Do we believe that a Public Sector pensioner should be asked to consider that

<sup>9</sup> It should be noted that whilst this methodology is still dependent upon assumptions, it clearly demonstrates the risks being taken in a way that a single number could never do. Care still needs to be taken to ensure the layers of conservatism are not re-introduced into the assumptions underlying these models.

sufficient? Should we ask the pensioner to share the risk with the general public beyond that point? Or do we want to set that bar at 80% or 90%, or 99%? – Chart II below, explores this point visually.

Chart II



Because, we must all understand that however well-funded a pension fund is, there is always a possibility, whether large or vanishingly small, that those funds will not be sufficient to pay out all future pension obligations. ***Even ignoring the longevity issue, it is impossible to fund any Defined Benefit scheme with absolute certainty, and to get anywhere near to 100% certainty is impossibly expensive***<sup>10</sup>. (The power of the latter part of that point can be seen by the fact that if one is prepared to take some risk, caused by market volatility, by investing in the stock exchange, one can, at least using historical data, expect to earn some 5-7% per year long-term, on a (long-term) reasonably inflation-protected basis. If on the other hand one buys an index-linked gilt, one can earn only around 1% on that gilt. In other words, to fund the pension fund with the additional certainty that is afforded by index-linked gilts – **a certainty that most likely was never envisaged by those who originally created defined benefit pension schemes** – one may have to fund the scheme with around five times as much money as would be required had one decided to go into equities<sup>11</sup>. (One key point to understand is that while equity returns are more volatile, the long-term nature of the

<sup>10</sup> It would appear that very few people *do* understand that 100% certainty of payout from a DB Pension Fund promise is impossible to achieve, and that 99% (or even somewhat lower) certainty is impossibly expensive to achieve. A level of risk must always be accepted, yet this point seems never to be discussed – indeed it seems in recent times to have been avoided by Actuaries and Regulators.

<sup>11</sup> The mathematics in that statement is considerably simplified, but is directionally correct.

pension fund obligations means that much of volatility is dissipated away over the decades of investment.)

In other words, it is not unreasonable – indeed it is the only rational approach, given the dramatic and drastic change in the economics of defined benefit pension schemes, created by massively increased longevity, major market uncertainty, and enormously heightened desire for greater certainty of pension on the part of the pensioner – for the Public Sector pensioner to be asked to accept the need to share, with the sponsor of the fund (who, to emphasise, is the future generations of taxpayers) in some part – and by no means to anywhere near the point of impoverishment– the risk in the fund. Later in this addendum, I will revert to this point and suggest how such risk-sharing could be created.

### **3. Each specific risk, and in particular that of massively increased longevity, needs to be much better understood.**

Longevity risk offers a huge challenge to anyone seeking to offer a defined benefit scheme. People are living, on average, around one year longer as each decade passes. In recent years, that statistic has increased, and some claim that it has grown to people living *two* years longer per new decade. This acceleration has led many to believe that a kind of ‘Moore’s law of longevity’ pertains, with such advances in longevity expected to increase, or even accelerate, as time goes on.

In order to understand how real that risk (a risk that is delightful for those of us who, because of this possibility, hope to live longer, but not so for the public purse) might be, it’s important to understand what has led to these decreases in mortality. Mostly, they have resulted from a large number of improvements in medical science, that have diminished the impact of causes of death across the entire spectrum of people’s lives. From infant mortality, to fewer teenagers dying in accidents or violence, all the way through to fewer people having heart attacks, strokes or fatal cancer, people are living longer.

Will these advances in longevity, especially as relates to the people over 60 continue? That is the trillion-dollar question – a question whose lineaments are very little understood.

One point of view that holds against such trends continuing is that as the various causes of premature death are gradually being overcome, people end up living up to what might be termed their ‘natural lifespan’. They are then are ‘dying of old age’ – a situation where the body just seems to give up, apparently due to multicellular and thence multi-organ failure.

This ‘dying of old age’ will, it would seem, come to each of us who is lucky enough to avoid some other, more premature, death. It will come to each of us at a different specific age. Depending upon how well we have kept ourselves; what our diet has been over our lives; whether our genes are such as to provide us with a robust or a fragile constitution: all of these will drive the specific age at which our own bodies, if we are lucky enough to survive until that point, fall apart. But, until and unless a solution is found to this ‘dying of old age’ phenomenon, people will die ‘naturally’. (Almost certainly, such a solution ultimately will be found, more likely in some future century – but quite possibly in this one.) It would seem, from current data, that this will happen to many of us in our late 80s. While some will live far longer than that, and others will ‘die of old age’ at a considerably earlier age, there does, from a cursory review of mortality statistics, seem to be some kind of grouping around the late 80s as being the time when the body simply packs up.<sup>12</sup>

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<sup>12</sup> Fantastically, ‘dying of old age’, now that it is becoming ever-more prevalent, has apparently been banned in the UK (last year) from death certificates as the stated cause of death. Banning the phrase, however, doesn’t make the fact of it disappear.

A divergent point of view from this, which focuses on a “Moore’s Law” perspective, extrapolates the accelerating rates of longevity and assumes that people already, or near to, taking pension will live much longer. Thus the Daily Mail, April 23<sup>rd</sup>, 2010, “*100, and still going strong*”, asserts that a new study (which it fails to give a reference for) says that 1 in 8 of current 50-year-olds will live to age 100. This expectation considerably exceeds anything to be found in existing mainstream actuarial models.

Few existing actuarial models of longevity incorporate the concept of a large concentration of people ‘dying of old age’ in their late 80s (or even their early 90s). From that point of view, therefore, some longevity models may currently exaggerate the likely cost of longevity to the existing DB schemes. If the “Accelerating Moore’s Law” proponents are right, however, then those same models are insufficiently optimistic (pessimistic from the funding view) as to how long we will on average live – which means that pension funds already need vastly more money than even current calculations claim.

From the (necessarily, and in this case literally) morbid point of view of the actuary, the greatest danger has to be that this phenomenon of massive and systemic corporeal collapse, leading to the person ‘dying of old age’, will prove susceptible, at a time when a large number of people currently enrolled in Public Sector Final Salary schemes are still alive, to scientific solution. Should that happen, it is perfectly possible that people could live for decades longer than they currently do. It seems to be the scientific consensus that coming up with such a solution will be enormously difficult, but advances in genetic engineering, and advances in computing<sup>13</sup>, could dramatically accelerate the pace of scientific discovery in this, one of the ultimate scientific frontiers. And of course, since *some* people already don’t ‘die of old age’ until they are 100 or more, there are, right now, a very large number of people currently in Defined Benefit pension schemes, aged, say, 30 or 40 right now, who we can expect to still be around in 50, 60 or even 70 years’ time. What will happen to the funding of these schemes if, in the intervening period, lifespans are further augmented by several decades? Given the promises implicit in current Public Sector schemes, the impact to be expected on the public purse would be absolutely appalling, representing a cost that could not possibly be borne by the tax base at the time<sup>14,15,16</sup>.

This potential for massive increase in longevity is a classic example of a ‘fat tail’, or as it has sometimes more recently been called, a ‘Black Swan’. Its statistical expression can of course be portrayed in ways other than as the fat tail of a probability distribution – for example, the possibility can be examined through scenario planning, or the like<sup>17</sup>. But this risk (and any other major future risk) must be properly understood, and must be subjected to appropriate scientific analysis. For example, a model urgently needs to be built that can scientifically, and accurately, account for the recent increases in longevity. Statisticians (not actuaries, but those involved in the medical sciences) should be employed, whether by insurance companies or the government, to create a truly-in depth model of mortality, looking very closely at death statistics over the past few decades, and modelling carefully what impact medical sciences have had on increases in longevity – thus being able to predict whether those increases, given the actuality of and the potential or otherwise for, new scientific breakthroughs,

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<sup>13</sup> As envisaged by Ray Kurzweil’s ‘*The Singularity is Near*’ and others of books of his; Jeff Hawkins’ ‘*On Thinking*’; and other such literature.

<sup>14</sup> Even though the individuals who benefit from such scientific breakthroughs will of course be enormously blessed – they may not receive the pensions they expect, but they’ll be alive not dead.

<sup>15</sup> The author points out that were such an eventuality to come to pass earlier rather than later, he modestly albeit perhaps unrealistically would hope to be lucky enough to be part of that future vast, if possibly ancient and enfeebled, army.

<sup>16</sup> It is also crucial to note that at the same time that such a scenario plays out, just about all the Pension Fund and insurance companies; all the firms that have recently been paying up pension obligations; and many of the private companies with large DB pension obligations, will all have gone bust as well, with enormous societal dislocation and further burden on the state – just at a time that it can least afford it.

<sup>17</sup> Indeed, I would argue that is precisely what should be done for the case of potential increases in longevity, when deciding public policy for Public Sector DB schemes.

are going to continue to increase length of life dramatically in the UK, or whether instead, absent a breakthrough on 'dying of old age', the rate of increase in lifespan is about to tail off.

**4. The entire purpose, value, need for and desired benefits of Public Sector Defined Benefit pension schemes, should be reevaluated and reconsidered.**

The primary purpose of an old-age pension scheme is, or should be, to ensure that individuals do not live out their final years in destitution or hard want. In former times, when people retired only a very few years before their death, such schemes were easy to set up, and not overly expensive. Since then, however, longevity has increased by an enormous factor, as have individual wealth and standards of living. Defined Benefit pension schemes now go way beyond the prevention of destitution, and are designed to ensure as much as possible that individuals can keep up more or less with the standard of living (now that they have paid off their mortgage and, say, got their children through university) that they enjoyed when they were at work. The 'Silver Generation' has become accustomed to living rather well, and it is very unlikely that they will be willing to give up that decent standard of living without a fight. However, apart from the obvious benefits to political parties of bribing the electorate, is it truly necessary that such a high guaranteed standard of living should be available to every single public servant? The answer to the equivalent question has already been resolved in the Private Sector, with the large majority of Private Sector companies having been forced, due to the inexorable negative economics of Final Salary Schemes, to exit such schemes. Most 30-something-year-olds who are, and stay, in the Private Sector will therefore receive no final salary pension payment when they retire, and most will, on retirement, probably see a major reduction in their standard of living – unless they continue working at least well into their seventies. The fact that the question has already been answered in this way in the Private Sector (a sector without any ability to be funded from the public purse) of course raises major questions as to the further morality of allowing the Public Sector, enjoying as it already does similar or even larger salaries than the private sector, to expect anything different from that.

A just society will always wish to have a safety net under its most needy population. Accordingly, it would seem likely that a minimum floor should be placed on pensions – but how far above the normal state pension should that floor be? And, particularly for the higher-salaried individuals in the Public Sector (ranging, according to choice of definition, anywhere from 20% to 80% of public sector employees), how much is too much? At what point does the original requirement, to avoid indigence in old age, transmute into a bribing of the Public Sector voter to vote for the party that does most to protect their pensions – at enormous cost to the rest of the economy and to future generations? And why would this safety net not be part of the State Pension system, and thus available to all in need, rather than just to the Public Sector?

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To sum up, then, four major problems created by our Public Sector Final Salary Pension Plans are:

1. That the full size and implications of these problems are not being articulated in sufficient detail. They need to be articulated, in great detail, both in the public accounts and in all debates and analyses of the issue.
2. That the *nature* of the risks, and the need for this generation to take its share of those risks, is not understood. A language needs to be developed in which these risks can be discussed and

reviewed.

3. That each specific future risk needs to be much better understood -- in particular that of potentially massively increased longevity.
4. That the entire purpose, value of, need for, and desired benefits of Public Sector Defined Benefit pension schemes need to be re-evaluated and reconsidered. This is because economic necessity dictates a change, as well as because such a debate would invigorate attempts to solve the problems reviewed here.

Part of the problem of coming up with a rational, coherent public dialogue on the topic of Public Sector DB Schemes is the fact that, as can be seen from the preceding discussion, the arguments point in two contradictory directions. The truths revealed both by uncovering the ultra conservatism of actuaries, and by expressing future outcomes in probabilistic terms, imply that the pensions problem may not be as large as some think. On the other hand, the 'Black Swan' potential implicit in longevity risk, or the possibility of a stock, bond or gilt market collapse, implies the opposite. Thus, solutions to these problems have to be carefully crafted and not unidirectional.

In the following section, I propose seven possible such solutions.

## **II. SEVEN POTENTIAL SOLUTIONS THAT WOULD GIVE THE UK A CHANCE TO AVOID A FUTURE SOCIETAL ECONOMIC ROADCRASH, ARISING FROM OUR PUBLIC SECTOR DEFINED BENEFIT PENSION OBLIGATIONS**

The first problem articulated in the previous section was the lack of transparency in understanding and discussing Public Sector reserves. Thus, I offer:

**Proposed solution i:** Create a separate, independent statistical institution to estimate the true size of the obligations created by defined benefit public sector liabilities. Make it a legal requirement to incorporate those obligations, as directed by this independent commission, into the national accounts. The institution should work its way through an analysis of every single Public Sector scheme, starting with the largest, and should clarify the cost and impact of every feature of every scheme, including disability as well as pension.

It would be important for this analysis to allow the information to be cut and segmented in various ways. For example, what proportion of the future liability is contained in annual pensions of relatively small ('safety net') amounts (less than £10,000 per annum; or between £10 and 20,000 per annum; etc) versus how much for larger ('lifestyle') pensions?

This institution should both clarify the role of conservatism versus 'expected' outcomes, and should focus on the potential impact of different outcomes in longevity.

Moving to the second problem discussed above in the previous section -- the need to understand the nature of the risk involved, and to create a language in which that risk can be discussed, so that that risk can start to be shared among the generations:

**Proposed solution ii: Adopt the language of probability distribution. Require, when reviewing Public Sector<sup>18</sup> Defined Benefit pension schemes, that actuaries show the outcomes of their calculations of surpluses or deficits in terms of probabilities, rather than as single-point 'certainties'.**

Only if this is done can a dialogue begin to be developed about what is the appropriate level of risk to share between generations. This in turn will indicate answers to a key further question: to what level of probability should pension funds be required to fund their obligations?

The new institution proposed in solution i should be required to adopt such a probabilistic approach. Charts I and II, shown earlier, illustrated the kind of communication that should become prevalent in scheme calculations.

A further step is needed in order to dramatise the importance of the issue, and bring home to individuals that we are indeed serious about this problem:

**Proposed solution iii: Abolish Politicians' Defined Benefit schemes, first for Cabinet Members, next for Members of Parliament, and finally for all other elected officials in the land.**

Unless elected politicians walk away from what are seen by the public as the 'gold-plated gravy train' of their excessively generous Final Salary schemes, they will lack the moral authority to ask any other section of society to accept the necessary belt-tightening and sacrifices that will be required to address these major issues. Note that in this author's opinion, it will not be enough for Politicians merely to reduce the size of these pensions to perhaps silver- or even tin-plating. They must (as most of the Private Sector has had to) walk away entirely from the whole idea of Final Salary pensions, and the security that these give – if only to acknowledge what the actions of politicians to date have forced almost all of the Private Sector to do.

David Cameron has already stated that he plans to scrap the generous Final Salary scheme for MPs, and has indicated that he is in favour of eventually abolishing all Public Sector schemes. The first of these would be a valuable precursor to being able to do the second with appropriate moral authority.

It was reported in The Times, in August 2009, that the Communities Secretary, John Denham, was drawing up plans to strip millions of local government workers of a portion of their expected benefit from their current Final Salary schemes. If correct to do for them, surely therefore also for all or the Public Sector?

Turning to the third problem discussed in the previous section – the need to better understand the specific risks of longevity and market risk:

**Proposed solution iv: Fund and build a publicly accessible model of longevity, perhaps on a Wiki basis (but heavily invigilated by the independent statistical institution created by solution i), that will better explain recent increases in longevity, and afford insights into future potential increases in longevity.**

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<sup>18</sup> And indeed Private Sector

It is remarkable that even with such enormous amounts at stake, our scientific understanding of the causes of increased longevity is so low. As a matter of urgency, the government should fund studies in longevity, and in particular understand whether longevity can be expected to continue to grow, or even accelerate, or whether recent advances in longevity are not expected, at least in the medium term, to be replicated and extended. At the same time, in building a model of longevity (that should be made accessible to all), modellers should be used who have the knowledge to be closely in touch with medical advances, so as to understand whether breakthroughs in longevity are imminent, and in particular whether solutions to the phenomenon of multi-cellular and multi-organ breakdown, known as 'dying of old age', are expected to be uncovered in the near future. Because, by the time the issue of 'dying of old age' is solved, it is likely to be too late to do anything about the resultant increase in Defined Benefit pension obligations, short of the government reneging on those obligations.

Longevity will, in any case, likely continue to increase, to one degree or another. The cost of Public Sector Defined Benefit schemes, already unaffordable, will increase even more. Thus:

**Proposed solution v: Pass legislation that creates risk-sharing between pensioner and sponsor if and as longevity increases. Investigate further delay in the age of retirement in Public Sector pension funds as soon as possible to 68, and then on to 70. Keep that age of retirement under review, depending upon further increases in longevity. Allow earlier retirement, but only on diminished pensions. Pay significantly less than current for pension deferral.**

The second part of this recommendation (postpone age of retirement) is of course not new, and has been expressed by many as absolutely necessary in order to eliminate some of the largest unfunded obligations. Its political unpopularity will make it difficult to push through, but such a solution will be easier if solutions i-iii, above, have been implemented. However, it is important to investigate thoroughly the practicability of this proposal (perhaps through a Royal Commission or the like). What percentage of 65 to 70 year olds will be *able-bodied* enough to work a full day's work, in their existing jobs? What percentage will be *able-minded* enough to do so? What will the practical consequences be of asking all people to work into their late 60s? What impacts will there be on efficiency and productivity? Which implementation of this proposal would have significant beneficial economic impact, it is by no means clear to this author that this particular proposal has been investigated carefully enough to be of assured practicability.

Finally, and this is by far the most difficult of our four problems: how can we alter public perception of what the purpose of a defined benefit pension scheme should be? Clearly, much of it will depend on our ability to articulate the problem, and, as in the previous recommendation, tell the truth about this issue in such a way that people truly grasp and understand it, to such an extent that they are prepared to lay aside (to a degree) their own needs and interests, and recognise that they cannot expect future generations to pick up this open-ended, blank-cheque obligation. To the extent that this can be accomplished, and even if it can't, we have two final proposed solutions:

**Proposed solution vi: Maintain a Defined Benefit approach in Public Sector schemes (for future liabilities only, since existing liabilities are legally protected) only for the most minimal levels. Ideally, whatever number is chosen should be made part of the State Pension, rather than being preferentially given to Public Sector workers only. For all other levels of benefit, close all Final Salary schemes' accrual of future liabilities, now. For already accrual liabilities, seek legal ways to lower or minimise them.**

While some may assert that this proposal is too drastic to stand any chance of being implemented, it is arguable that any such belief can only derive from a complete lack of understanding of the seriousness

of the dangers the current obligations pose to the UK's future (see appendix D). Indeed, while in this author's opinion solution vi is essential, it is nevertheless, if taken only for incurrence of future liabilities, unlikely to be sufficient to resolve the problem fully (the institute proposed in solution i should be asked to evaluate the potential impacts of this solution).

So finally, as an adjunct to this:

**Proposed solution vii: To the extent that any residual Defined Benefit obligations remain that are above very minimum levels, significantly increase required contributions from employees. In addition, ensure that an automatic rebalancing mechanism is in place, so that if and as longevity increases, retirement ages go up and/or and pension payments go down.**

As has been repeatedly argued in this paper, it is unconscionable –inasmuch as it is impossibly expensive, and arguably immoral– for all of the risk created by defined benefit schemes to be placed on future generations. Even if that argument were ignored, it is highly likely that future generations won't accept this obligation, and will vote either with their feet (by leaving the country), or with the ballot box (by voting in politicians who will pass laws that renege on Public Sector pension obligations), to eliminate their part in these obligations. It will always be better and less painful to the country as a whole to address this issue earlier than later. The only question is: what is the appropriate balance of risk-share between the current and the future generations?

To answer that question, a rebalancing mechanism could be initiated which would, for example, take any additional cost created by people living longer, and pay for it with reduced pensions.

A variation of this final recommendation is for any defined benefit obligation to be expressed as variable, depending on outcomes. That is to say, for example: a Defined Benefit pension scheme would eventually be funded, with 50% probability. (In other words, the funded amount should be large enough that, using realistic rather than conservative assumptions, there is a 50% probability that those funds would be sufficient to pay for all future pension obligations.) If the economic outcome in the future is such that we progress beyond that 50% limit, ie a 'deficit' emerges, then for the portion 50 to 75%, say, the sponsor (the government aka the future taxpayer) should be expected to stump up for this additional cost. If, on the other hand, we enter into 75 to 90% territory (ie the deficit having increased even further), then it should be reasonable for the additional cost to be borne, say, 50-50 by pensioner and sponsor. This would require the pensioner to take, say, a 5% cut on their pension, for so long as that deficit exists (which may be for as little as one year). Again for, say, anything north of 90%, the pensioner should take all of the risk, in other words be prepared to cut his or her pension by say a further 11% (or, *in extremis*, more). If pension funds were organised in that way, with the pensioner vulnerable, in any given year, to losing anything up to 16% of his or her pension, (or, worst case, more – but that would imply a major financial catastrophe having already taken place, one that impacted all citizens, not just Public Sector pensioners), then the mathematics is such (see Chart II) that an enormous pressure on pension fund sponsors – whether private or public – would be relieved. It is perfectly credible to argue that, faced with a decision between no Final Salary scheme at all, or a Final Salary scheme of the sort envisaged in this paragraph, Public Sector employees should happily (or otherwise) accept such a probabilistic-based scheme – especially if prior proposals, particularly with respect to 'telling the truth' about these schemes, had been implemented.

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The above recommendations may seem drastic. They are not when compared to the alternative, of allowing unaffordable obligations to grow to even greater size, and a doom loop rapidly developing (as described in appendix D). In the Private Sector, where the luxury of fleecing the future tax-payer to pay for these liabilities is not an option, far more drastic steps have already had to be taken. What is needed is the political will and hard work to implement similar steps for the Public Sector, in order to prevent even more drastic and tragic steps having to be taken.

*The author acknowledges the genesis of this submission as resulting from stimulating discussions with Mr Neil Record.*

## **APPENDIX A: DESCRIPTIONS OF PENSION FUND SURPLUSES OR DEFICITS MUST BE MORE PRECISE, AND BETTER DESCRIBED**

In the main paper (the 'addendum') I call ("proposed solution i") for the establishment of an independent organisation to appropriately calculate and monitor the true liabilities of the Public Sector's Defined Benefit Pension Funds.

This particular appendix, A, talks about something that would be at the heart of what that independent organisation would do, but also more generally calls for a better understanding of the concepts of pension fund liabilities, surpluses, and deficits.

While most Public Sector funds are unfunded, relying on existing taxation to pay out current benefits, other Public Sector funds are indeed funded (to a greater or less degree), and there are calls, not least by individual members of your Commission, to "fully fund" all Public Sector liabilities. Thus it is essential to know what the levels of liability are, that need to be funded.

To achieve better understanding of this issue, it is crucial to understand:

A-1 That different bases are used for calculating liability. To achieve better clarity, the basis used (and why) should always be clearly articulated in any communication of what the liability is estimated to be.

A-2 That different levels of conservatism can be used; again the level of conservatism assumed, and its impact, always needs to be clearly articulated.

### **A-1 DIFFERENT BASES**

The terminology currently used in discussion of defined benefit pension plans, regarding liabilities and assets, is extraordinarily loose; in newspapers and indeed in official reports, the terms 'liabilities', 'surpluses', 'deficits', are mostly used with great inexactitude. Firstly, it has to be understood, and always made clear, that any stated calculation regarding the liabilities of a fund is almost certainly only an *estimate* of those liabilities, using particular (and usually conservative) assumptions. Secondly, within the actuarial profession, and within the detailed reports prepared by actuaries for pension fund boards (and as discussed in the main paper), several different estimates of liability are made. Those that are most commonly calculated (a fuller listing is given in the main addendum) are:

1. **'Ongoing' Liability:** this calculates the liability of the fund if it continues as is, funded by the existing mix of assets. This 'ongoing' approach usually assumes that the assets of the fund are a mix of Equities, Corporate Bonds, perhaps Gilts, and sometimes other types of asset such as Property, Commodities, etc.
2. **'Closed Fund' Liability:** this calculates the liability of the fund based on the assumption that the fund has been closed, and that the assets have all been invested in bonds (usually, corporate bonds).
3. **'Buy Out' Liability:** this assumes that the obligations of the fund have been handed to some pension fund or insurance company, who have taken on the obligation to pay the pensions. The calculated liability is then made under the assumption that the pension fund that acquires this

liability will invest mostly in low-yielding Gilts, and will in addition take a profit. Thus the 'Buy Out' liability is much larger than the previous two.

Because equities are expected to outperform bonds; because corporate bonds are expected to outperform gilts; and because the first two of the above three bases do not incorporate any profit amount, it is a fact that the 'Ongoing' estimate of liability has always been less than the 'Closed Fund' estimate of liability, which in itself is less than the 'Buy Out' estimate of liability. ***And yet, in the vast majority*** (I would estimate 90%, or more) ***of newspaper accounts, and even in many official reports, there is very little distinction made between the three. It is not unknown for the largest estimate of liability that the actuary has produced (ie the Buy Out number) to be used, entirely inappropriately, as the statement of "THE" liability of that particular pension fund.***

In the main addendum, I review the role that risk and volatility play in a pension fund. In appendix B, I assert that a fund with equities and bonds in it can be considered, in many respects, to be no more risky than one based on gilts. In the Private Sector it is perfectly well accepted (for example by the Pensions Regulator) for a pension fund to have investments in equities and corporate bonds, and not just in gilts (which, in Appendix B, I demonstrate are not the riskless assets that they have been claimed to be). Thus, in my first additional recommendation in this appendix, I recommend:

**Proposed solution viii:** Any entity, independent or otherwise, that seeks to talk about the Public Sector pension liability, should do so clearly articulating which basis – for example, Ongoing, Closed Fund, or Buy Out has been used – making it clear that the choice is open to those funding any particular part of the Public Sector Defined Benefit liability to fund in any of the three ways implied by these three bases (with the concomitant implication that it should cost the public a great deal less to fund these obligations using an equity-heavy, 'Ongoing' basis).

## A-2 CONSERVATIVE ASSUMPTIONS

The second, and even more important, point to make about liabilities – something that is, again, almost never made clear in the vast majority of reports of overall liability, surplus, deficit, etc – is that most actuaries have taken to using significantly more conservative assumptions regarding the manifold elements that go into the calculation of pension fund liabilities. A short and incomplete list of the items on which assumptions have to be made might, for example, comprise:

- The future expected rate of return on Equities
- The future expected rate of return on AA Bonds
- The future expected rate of return on AAA Bonds
- The future expected rate of return on non index-linked Gilts
- The future expected rate of return on index-linked Gilts
- The future expected rate of inflation
- The future longevity rate of pensioners (this within itself requires multiple assumptions, for example male death rates in each year; the fate of the so-called 'Golden Cohort'; death rates of women vs men; death rates of widows and widowers vs primary pensioner, etc)
- Percent married/partnered at time of pension
- Percent married/partnered at time of death
- Expected cost of deferment of pension

- Expected percentage deferring
- Expected percentage taking early benefit
- Expected percentage taking early retirement due to ill-health.

The above is, as stated, merely an illustrative list. There are more assumptions to be taken care of than this, but as can be seen even from the above list, the number of assumptions is long, and their intertwined nature bewildering.

The really important thing to understand is that in general, actuaries tend to make conservative assumptions either on all of these, or at the least on the *majority* of them, with the (sometimes unstated) intention of making it less likely that they will underestimate the liability of the pension fund. But, in so doing, the *expectation* must be that they will therefore significantly **overestimate** the liability of the pension fund, and – since they are separately conservative on so many items, taking multiple margins of error – the overestimation is likely to be very large. This fact is almost never alluded to in reports regarding pension fund liabilities, but in my opinion it has already had a pernicious effect upon the fate of Private Sector Defined Benefit funds: ***in part because the liability (and therefore any estimated deficit) was overestimated, many Private Sector companies closed down their funds, most likely at least in part due to the perceived unaffordability of funding this high (overconservative) level of expectation regarding future outcomes.***

The same, or a similar, problem can be seen with Public Sector pensions. Since similarly conservative assumptions are being made for these pension funds (where the conservatism is done in such a way as to assume that each conservative estimate is wholly independent of any other conservative estimate, that is, in the wholly inappropriate statistical assumption that these assumptions have 100% correlation and that if each negative event happened, every other negative event would also happen, so that conservatism is piled high upon conservatism), the Public Sector pensions funding gap, were it ever calculated properly (for which calculation would be required the independent body in ‘proposed solution i’ in the main document) would, using such an approach, be very significantly overestimated. It is not my intention, in stating that from this perspective that the liability will be overestimated, to provide comfort for apologists for Public Sector pension fund programmes. Even if these conservative assumptions were removed, I imagine that the size of the liabilities will be big enough to cause grave concern to any person thinking this through properly – and the uncertainties surrounding longevity give rise to further, even greater, concerns. But, in order to understand the true situation, it is essential that we told when conservative assumptions are being used, and what their impact has been on the calculation of liability. Thus, I offer my second additional recommendation for this appendix:

**Proposed solution ix:** That for each of the bases discussed in proposed solution viii above, two separate calculations be made: one to be the ‘expected outcome’ liability, and the other be ‘using conservative assumptions’ liability.

Best practice for calculating the first of these, the ‘expected outcome’ liability, would be using Monte Carlo simulation derived from the various probability curves describing the various items in my dot point list above, and of any other assumptions that go into the calculation of the liability.

A further recommendation is implicit in the previous two:

**Proposed solution x:** Any statement regarding liability should be accompanied by a full appendix stating the assumptions used for each variable that has gone into that calculation, whether that be for ‘expected outcome’ or ‘conservative assumption’ bases, and the mathematics of any distribution curves used (with or without fat tails) should be fully explained.

Finally, I submit that to summarise the above points, and to make the impact of the various issues I have raised in the above discussion clear:

**Proposed solution xi: Any statement regarding the liability of any component of, or the overall, Public Sector defined pension set of schemes should show (at least) a level of detail as shown in the below chart (A-I).**

**Chart A-I: Liability of Scheme under different bases and assumptions**

	'Expected Outcome'	'Conservative Assumptions'	Discussion regarding chief causes of difference
'Ongoing' This shows the liability if the fund continues as is, funded by the existing mix of assets. This 'Ongoing' approach usually assumes that the assets of the fund are a mix of equities, corporate bonds, gilts, and sometimes other types of assets such as property, commodities, etc.	£L Billion (100%)	£M Billion (--%)	
'Closed Fund' This calculates the liability of the fund based on the assumption that the fund has been closed, and the assets have all been invested in bonds (usually, corporate).	£N Billion (--%)	£O Billion (--%)	
'Buy-out' This assumes that the obligations of the fund have been handed to some pension fund or insurance company, who have taken on the obligation to pay the pensions. The calculated liability is then made under the assumption that the pension fund that acquires this liability will invest mostly in gilts, and will in addition take a profit.	£P Billion (--%)	£Q Billion (--%)	

The potential explanatory power of this chart cannot be overestimated. The difference between the smallest estimate of liability (the top left hand number, L, in Chart A-I) versus the bottom right hand number (Q, in Chart A-I) might be anything up to 100% – in other words, Q, often the amount reported in the media or official reports, could be anything up to twice as large as the actual expected outcome of liability in a fund, if that fund were appropriately funded with a mix of equities, bonds and the like. (While a doubling from L to Q may be at the extreme of what is usual, the reason it is not impossible is because of such events as Quantitative Easing, which, according to most commentators, and as has been widely reported (eg in the Financial Times, “*Bank of England’s unorthodox approach suppresses bond yields*”, August 12, 2009), and as Toby Nangle in his submission to this Commission also states, significantly drove down the yield of gilts, and therefore led to significant upward increases in the estimation of liabilities in pension funds across the UK.)

## **APPENDIX B: FUNDING THE PUBLIC SECTOR PENSION FUNDS WITH GILTS WOULD BE A NUGATORY EXERCISE**

In recent times (see for example the document cited in footnote 1 of my main submission), a number of organisations and individuals have suggested that Public Sector Defined Benefit/Final Salary schemes should be funded 100% with government securities (gilts). The assertion has been that this is the only way to achieve riskless funding, and that doing so improves on the existing (notionally unfunded, though government backed) situation. The implication is that these pension schemes will then be “funded”, in a way that currently, they are not.

Is this correct? Should the government issue some £1Trillion worth, or more, of gilts, and place those funds into the care of the Trustees of each Public Sector Final Salary pension scheme? I argue here that no benefit – beyond a clarification of the believed size of the overall liability, something that allegedly will soon be done in any event by the Whole Government Accounting project, and that anyway can (and should) be done, separately from any funding proposal – would be achieved by this specific act.

Government currently pays most pensions out of current tax receipts, or borrowing. (Exceptions are MPs' pensions, and some local government schemes.) This is clearly an unsatisfactory state of affairs: each generation receiving pension relies on future generations of taxpayers to stump up the needed money, with potential disastrous consequences should demographic or other issues lead, or force, future generations to decide that the burden of payment is unconscionable and that the schemes therefore should be abrogated<sup>1</sup>. The issue is (of course) not trivial: in some Public Sector organisations, I understand that 40% or more of the organisation's annual budget is already consumed in pension and disability payments, with that percentage amount increasing annually.

So, it has been suggested that funding all pension funds with government securities (usually expressed as ‘gilts’, but as we shall see, the funding would actually need to comprise both gilts, and shorter-term government securities) would at least clarify the existing size of the government obligation to these pension funds, and would in some way assist in moving the obligation away from future generations. (As most readers can probably already begin to see, and as will be spelt out below, such latter thoughts are straightforwardly incorrect.)

This appendix demonstrates that:

- B-1 If perfect information were to exist, funding Public Sector pension fund schemes with government securities would be an essentially meaningless act
- B-2 Absent perfect information, funding with government securities solves nothing further
- B-3 Funding with gilts would be the most expensive way to fund a pension fund scheme
- B-4 While the objective of explicitly funding Public Sector final salary obligations is praiseworthy, this could be done at considerable lower cost by selling a smaller amount of gilts onto the market, purchasing a mixture of corporate bonds, equities and other securities with the proceeds from those sales, and using those amounts to fund the currently ‘unfunded’ Public Sector schemes.

Each of these points is explored below.

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<sup>1</sup> Many commentators, for example Ruth Lea in the Spectator of 24<sup>th</sup> October 2009, have shown how the demography of the UK is leading inexorably, over the coming few decades, to a massive increase in the size of the retired population, as a proportion of the tax paying population.

## **B-1 IF PERFECT INFORMATION WERE TO EXIST, FUNDING PUBLIC SECTOR PENSION FUND OBLIGATIONS WITH GOVERNMENT SECURITIES WOULD BE AN ESSENTIALLY MEANINGLESS ACT**

Let us start with a theoretically perfect world in which we can predict the precise day on which every public servant will retire, and then again the precise date on which each will die (also for their widows and widowers). Let us assume as well, for now, that there is, with certainty, zero inflation.

In this pleasingly simple environment, we can predict exactly when we will need to make what payments to which beneficiaries. The first payments will need to be paid at the end of this month, as some people's pensions fall due to be paid. The amounts to be paid will then swell, month by month, as more people retire. Assuming we don't accrue any additional pension obligations to anyone after today, our payments will reach a peak in, say, 30 or more years' time, and will then start to subside as our pensioners, one by one, and their dependents, die.

If we are going to fund these future payment obligations with government securities, yet avoid the problem of potential inability to pay due to fluctuations in the market value of these securities, it is best that we fund each of the pension schemes within the Public Sector with a ladder of short-and long-term securities that will mature precisely as the various payment obligations eventuate, and for precisely the amount needed. In other words, we will have to be given one security that matures at the end of this month – obviously, a very short-term government security (ie not a gilt) – and then, another security that matures a month later, and so forth. As we go up the ladder in maturity terms, the securities will get longer term, until in a few years' time we enter into gilt territory. The purchase of each of these government securities will have been calculated so that they are of exactly the right size to match the needed pension payment obligations. So, in 70 or whatever years' time, in the month when the last of our pensioners dies, the last of those long-term gilts will mature, and pay out, precisely on the month that the last, longest-living pensioner dies

This is a 'perfect' outcome, and, setting aside for the moment the various unpredictable influences of inflation, changes in longevity, lack of predictability in dates of retirement and death, etc, it is, when we get down to it, what is being recommended by proponents of funding pension funds "with gilts".

When we look at it this way, we can see that we have essentially achieved absolutely nothing by "funding with gilts". The government had an obligation; we were able to calculate it perfectly; we put pieces of paper (or electronic documents) into the pension funds that were essentially IOUs "from the government to the government", and as these IOUs are then, in coming months and years, presented to the government, the government pays out the pension amounts that it would have had to pay out in any event. Where does the government get the money to 'redeem' the gilts? – from current tax receipts and from borrowing – *precisely as it does now*. *Absolutely nothing* has changed in terms of government behaviour with regard to public finances.

The only (nugatory) benefit of any kind that we would get from 'funding with gilts' is that an actual calculation has been made of the future obligation, and this has been expressed as a notional obligation by government printing up these IOUs, placing them in some kind of trust fund, and paying them out (no different from, and for precisely the same amount as, would be the case, with pension payments), once each of these IOUs mature. But this calculation can (and should) be made anyway – entirely independently of the funding decision.

So, it can be seen that precisely nothing has been gained, over and above the benefit of the government calculating the present value of its future pension obligations, and publishing that number somewhere. There has been no benefit beyond that: no addition in security to beneficiaries in these schemes; no additional guarantee that the beneficiaries will receive their pension payments, and no lessening of the

obligation that has been placed onto the shoulders of future generations. ***“Funding with gilts” accomplishes precisely nothing except the chimaera of apparent, but not actual, respectability<sup>2</sup>.***

## **B-2 ABSENT PERFECT INFORMATION, FUNDING WITH GOVERNMENT SECURITIES SOLVES NOTHING FURTHER**

Aha, you might say: but what about when we move from this world of perfect information to one of where information is murky and obscure. Perhaps, “funding with gilts” will then prove helpful?

A moment’s reflection will see that this is not the case. Once we go beyond ‘perfect information’, what virtue there is of “funding with gilts” (ie making public a notional liability number) has ended, and no further benefits are available. Let us review that conclusion, to make it unarguable, by looking at two variables that we would want to introduce: inflation, and longevity.

### **Future inflation is not known**

When we relax the assumption of being able to assume that we know exactly what future inflation is, it becomes clear that when “funding with gilts” we take the risk of (a) being either under-or over-funded, by taking a guess of what future inflation is going to be, and placing the resultant amount of non-index-linked government securities in our funds, or else (b) we fund entirely with index-linked gilts (or as some advocate, purchase inflation swaps, although the market for 70-year inflation swaps is as far as I know more or less nonexistent, so this is a hypothetical but unrealisable solution).

If we adopt solution (a), funding with non index-linked gilts, then since inflation is not predictable, surpluses or deficits will emerge in these schemes – which then, in particular in the case of deficits due to underestimated levels of inflation, the government would then have to step in and do something about that deficit. It had not, in that case, managed to fully fund the schemes. But the argument against ‘funding with gilts’ remains the same.

Solution (b), funding with index-linked gilts, the most straightforward of these solutions, brings us precisely back to where we were in the previous section: the obligation has returned to the government and there is no practical change in the future pattern of its obligations and in the future burden on the next generation. That problem can be resolved by making **all** the paper placed into these schemes (both short-and long-term government securities) inflation-linked. New securities (eg 70-year inflation-linked gilts) will have to be created for this. But why bother? Again, all we are doing is creating notional IOUs “from the government to the government” and nothing practical has been achieved from this ‘funding with gilts’.

Certainly, to the extent that all of the obligations of government pension funds are inflation-indexed, then a conventional calculation of the liabilities of these schemes, when calculated using the current yield on inflation-indexed gilts, results in an enormous number. This calculation is in theory correct, should be accomplished through the WGA project, and can be done whether or not the pension funds in question are stuffed full of these notional government IOU bits of paper. There is, however, one practical issue there, which is that two issues may well have significantly distorted the current yields on such instruments: the

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<sup>2</sup> It could be argued that the objective of “funding with gilts” is, precisely, just that – to ‘surface’ the true size of the pension liability. This however is a separate point and can be done (eg by my proposal in the addendum) regardless of the funding issue. That the proponents of “funding with gilts” intend the proposal to be in the terms I have phrased it here can be seen for example in the Policy Exchange’s (otherwise excellent) paper, *“Public Sector Pensions: the UK’s Second National Debt”*, by Neil Record and James Mackenzie Smith, edited by Laurence Kay, June 2009, where they put the proposition as follows: *“Annual cash pension contributions be used to buy index-linked gilts (which are purchased and issued at market prices) of sufficient value to fully pay for all pension promises made in that year”*.

first is the current government policy of Quantitative Easing, and the second is the recent fad to move many Private Sector pension funds into index-linked gilts: because of these two (necessarily short-term) trends, yields on these index-linked gilt instruments are, according to most commentators, very low, and very large amounts of them are therefore needed to cover future needed/calculated payment streams. (It is important to note that if the government were, tomorrow, to issue £1 Trillion of gilts and place them into the various schemes, there would be no market impact on the 'yields' of these from-government-to-government IOUs, since none of these gilts would be traded but would rather sit within the trust fund until redeemed. No increase in government obligations would have occurred since the gilt payments just 'replace' pension payments, so the capital markets should not respond with any change to the yield in the other gilts that are traded in the market. Thus the yields of these new gilts would presumably be at prevailing market rates<sup>3</sup>. (This shows even more clearly that the idea of "funding with gilts" is a non-real-world solution.)

Regardless, since all we are talking about is an IOU from the government to the government, all such calculations are, within this context, more or less irrelevant –the only substantive issue is how much is owed by the government going forward into the future– the rest of the proposal to 'fund with gilts' really amounts just to window dressing.

### **Longevity is unpredictable**

We now move away from anything truly hedgeable by the government (given the capital markets) and into a further loosening of the 'perfect' information environment, to the stage where we are unable to say when our beneficiaries, and their dependents, are going to die. (Let us roll up into that also our lack of perfect information as to when they are going to retire, although that is a rather less variable issue than the longevity one.)

We know that the dates of death of our beneficiaries are unpredictable, however much the law of large numbers might give us some kind of feel for the overall pattern. And what, of course, an actuary or a funder of these pension funds (ie future generations) must fear most is a dramatic increase in longevity.

Let us say that happens, and that at some point in the future, let us say some 10 years from now, we discover a considerable increase in longevity to be the case. Suddenly the government's obligation has become much greater. In other words, in 10 years' time, we discover that the gilts (aka IOUs from the government to the government) are way insufficient to pay our future obligations. What we then have to do, again, is stuff the funds with further "IOUs from the government to the government" to reflect our new estimation of what future payments will have to be made. So, the original decision to "fund with gilts" certainly didn't help with that problem – it didn't deal in any way with the issue of potentially increased longevity.

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In other words, whether in a world of perfect information, or a world where information proves to have been imperfect and wrong, "funding with gilts" gets us more or less nowhere.

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<sup>3</sup> It can also be seen that there would be no additional pressure placed on government to recognise the implications and costs of the Public Sector schemes. The gilts would not be 'issued' in any real sense: they would merely be "published", as it were, and placed into some national lockbox until it was time to "redeem" them so as to pay pensions. Thus their existence would, be unlikely to have any impact on market yields or capital market behaviour, so would allow any government, if it chose to, to be just as feckless as now in not funding these pension obligations.

### **B-3 FUNDING WITH GILTS WOULD BE THE MOST EXPENSIVE WAY TO FUND A PENSION SCHEME**

As reviewed in the main addendum, and as I hope to make clear in this appendix, there is no such thing as riskless funding of a Defined Benefit Pension Scheme – particularly if pensions in that scheme are inflation-linked. “Funding with gilts” whether in the Public or Private Sector, cannot do much for issues around longevity. Indeed, there is a fundamental problem with government securities, whether for Private or Public Sector pensions, a problem that has recently begun to be seen more clearly in focus: that is that if longevity increased significantly the government might at any time default on its obligations, leaving the holders of gilts out of pocket, and potential beneficiaries of the pension fund possibly ruined. It must be presumed that advocates of “funding with gilts” are not intending that once the gilts have been placed into those schemes so as to ‘fund’ them, a future government defaulting on its debt can walk away from its Public Sector obligations.

Worse than this, “funding with gilts” is an inappropriately expensive way of funding a scheme. As Toby Nangle illustrates clearly in his admirable addendum to his submission to this Commission, and as mentioned earlier in this submission, yields on gilts have recently dropped dramatically, whether because of Quantitative Easing, because of a current fad among Private Sector pensions for gilts, or for any other reason. Thus, we have Nangle’s illustration of yields on annuities for a single man retiring dropping from 15% to 5%. (Or, put another way: to get the same level of annuity, you have to pay three times as much as used to be the case).

Risk can be found in *any* approach to funding pension schemes – whether with gilts, with equities, or whatever – so, why would it be appropriate to fund a pension scheme with the most expensive of these (variously) risky methods of funding?

Thus, apart from the lack of any real value or substance in the idea of “funding with gilts”, this concept would be extremely expensive. A better way is possible, which I now review:

### **B-4 WHILE THE OBJECTIVE OF EXPLICITLY FUNDING PUBLIC SECTOR FINAL SALARY OBLIGATIONS IS PRAISEWORTHY, THIS COULD BE DONE AT CONSIDERABLE LOWER COSTS BY: SELLING A SMALLER AMOUNT OF GILTS ONTO THE MARKET, PURCHASING A MIXTURE OF CORPORATE BONDS, EQUITIES AND OTHER SECURITIES WITH THE PROCEEDS FROM THOSE SALES, AND USING THOSE AMOUNTS TO FUND THE PUBLIC SECTOR SCHEMES.**

***Note: this proposal is essentially a variant on the appealing proposal made by Toby Nangle in his addendum to his submission to this Commission. To be clear, I support Nangle’s proposal (while offering a slightly different version here).***

Traditionally, pension funds have been funded with a mix of equities and corporate bonds. The thinking behind doing so was as follows:

- A mix of equities and corporate bonds offers the best mix of reasonably high returns, to fund future payments, with risk minimisation<sup>4</sup>.
- The return (interest and principal) from corporate bonds is sometimes argued as best used for funding shorter-term payment obligations.

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<sup>4</sup> Some persuasive analysis by actuaries results in the claim that there is a “sweet spot” of around 60-65% equities, 35-40% bonds, which most minimises risk while maximising return.

- The return (dividends and capital gains) from equities is sometimes argued as best used for funding longer-term payment obligations, and in providing some hedge against inflation.
- It is recognised that the returns from equity are more volatile than those from corporate bonds, and the volatility of return from corporate bonds is seen as greater than that of government bonds (gilts); however, the expectation of volatility is dampened down by the very long-term nature of the pension obligations, and the benefit of the higher expected returns is seen as significantly outweighing the risk involved in any such increase in volatility.
- As a backstop, the 'covenant' of the sponsoring entity (which, in bankruptcy law, essentially is in the Private Sector equal to the value of the equity of the company) is seen as the primary way of dealing with any adverse consequences of any increased risk created by investing in equities and corporate bonds rather than government bonds.
- Finally –and this is something that is very rarely stated these days– it has always been accepted that there is a degree of risk on both the sponsor's and the beneficiaries' side, in a pension fund, and understood that that risk can never be entirely eradicated.

If the acknowledged way of dealing with any adverse consequence from risk in Private Sector Define Benefit pension schemes is, first of all, to rely upon the covenant of the sponsoring company, why would not that be an appropriate approach to take for the institution that, as many would argue, has the best covenant of all – the government?

So, my suggestion would be (as with Nangle):

**Proposed solution xii: calculate the expected liability of each Public Sector scheme (as per proposed solution i in the main document), using an 'Ongoing' basis of funding, 60% with equities, 40% Single 'A' bonds. Issue gilts monthly over the next 10 years (1/120<sup>th</sup> per month) so that after 10 years, this liability is covered, and each month, immediately sell those gilts into the market, purchasing equities and corporate debt with the proceeds. Recalculate liabilities every 3 years, using a 10-year funding schedule to meet any emerging deficit (as with most Private Sector pension schemes). The gilts sold should be constructed so as to form a ladder roughly equal in maturity to the liability profile of the pension obligations.**

What would the impact of such a step be? For a start, it would give a considerable shot in the arm to the Private Sector's capital markets, potentially reversing the negative impact of the recent 'flight to gilts' of many Private Sector pension funds, and the distortion placed on capital markets created by large purchases of government securities (Quantitative Easing) in recent months. Recent government macroeconomic strategies have been in the direction of coddling borrowers and their banking lenders: savers and investors have been hurt by steps that have lowered interest rates to very low levels. By issuing significantly more government debt, and releasing that debt into the market by selling it, and using the proceeds to purchase Private Sector securities (equity plus debt), the returns from government debt will rise, thus making that debt more attractive to savers. Admittedly, the cost of private equity capital would possibly fall in the short-term, but this would allow the Private Sector investor to gain on any recently made investments. Private Sector investment would be encouraged, and capital would flow from the government into the UK's Private Sector. Admittedly, the cost of government funding would likely rise in the short term, but it would be in a controlled way – and the market's perception, that the Public Sector liabilities were being dealt with in a thoughtful way, could well push the longer term cost of borrowing down. The potential for a 'doom loop' in later years could well be avoided by taking this step.

At the same time, the overall cost of funding existing Public Sector pension liabilities – liabilities that, on almost any reckoning, it would be inappropriate to seek to abrogate – should be massively reduced.

This proposal replaces one of nugatory impact (“funding with gilts”) and, apart from forcing onto the current generation the economic impact of the current generation’s Public Sector schemes, would add security to Public Sector pensioners by funding their schemes with real-world securities of diversified source.

The following appendix demonstrates that these obligations do need to be funded; the above proposal is, I (and, with variations, Nangle) submit, the best way to do that.

## **APPENDIX C: PUBLIC SECTOR PENSIONS SHOULD INDEED BE FUNDED; THEY SHOULD NOT CONTINUE TO BE PAID OUT OF CURRENT INCOME OR BORROWINGS**

Appendix B showed that “funding with gilts” would have nugatory effect. The proposed alternative – of selling, over a 10-year period a (rather smaller) amount of government securities into the market, to purchase equities and corporate bonds so as to fund thereby the pension obligations – is clearly extremely expensive and might, from one point of view, expose the government to severe immediate scrutiny by the capital markets, possibly raising its cost of capital and increasing the possibility of difficulties in funding that country’s debt issuance<sup>1</sup>.

Therefore, the average reader (or politician) might say to themselves: why should we bother with funding these schemes? Why rock the boat? Why not just continue to pay pension payments out of the current account?

There are three arguments that clearly demonstrate why some form of funding is the preferable option:

### **1. “Sooner, smaller” is better than “larger, later”**

A politician deciding on whether to stick with the current system, of paying out of current receipts so as to avoid potential undesirable increases in the cost of funding in the capital markets, is merely putting off the evil day when, if such increases are going to occur, they will. And, however attractive putting off the evil day might seem, there is to be placed against that the significant longer-term saving that could be achieved by issuing a smaller amount of gilts now (using them to purchase equities and corporate bonds) to fully fund these pension schemes, thus obviating the need for future, larger payments in the capital account. (Of course, payments on the issued gilts will replace part of those forgone payments.) (In the end, therefore, the decision to fully fund these schemes is more of a moral one – that is, the question becomes as to whether the cost and implications of these schemes should be faced up to now, and paid for, by the existing generation, or whether a larger cost, and thus a larger potential for catastrophe, should be can-kicked as far down the road as possible, to be paid for by future generations.)

### **2. Funding with Equities and Bonds should make the overall cost lower**

The previous appendix showed that if Public Sector pension schemes were funded with equities and corporate bonds, the purchase of those equities and bonds could be funded with an issuance of gilts that should be significantly less than the notional amounts required for “funding with gilts”. Since “funding with gilts” produces a payment schedule that would in theory be identical to what would be paid out under the current account (as it is case now), this means that a considerable saving to the public purse should be accomplished, if we fund with equities and bonds. Thus, there is a compelling argument to take fund now (with equities and corporate bonds).

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<sup>1</sup> The opposing point of view would say that the capital markets already understand the size of the (currently unfunded) liability, and would be unperturbed by the clarifying effect of this funding exercise. Such a view assumes no liquidity impact of a large issuance of gilts, which could result in higher yields being demanded on the newly-issued securities. It is true that any liquidity impact would be modified by the drawn-out nature of the issuance, and it must be remembered that over the 10-year period, considerable government expenditure would, anyway, be required to pay out the otherwise unfunded pension obligations.

### **3. Volatility of returns in equities is mitigated by the long-term nature of the investment fund**

The chief argument against funding with equities is the volatile nature of their value, including a susceptibility to short-term declines in value if inflation increases.

The reason why equities are well suited to financing pensions is because their inherent volatility can be expected to be mostly smoothed away over the many decades that the pension obligation will last – particularly if, as proposed, the purchase of the equities is ‘averaged in’ over a period of 120 months.

Thus it can convincingly be asserted that, as has been the case in the past, long-term equities can be expected to significantly outperform gilts in the future long-term. And, with the government’s covenant standing behind this strategy, it becomes a sensible one to adopt, thus both supporting industry and lowering the overall cost to the government of funding the pensions.

### **Summary**

Looked at this way, the arguments for funding these schemes, in the way proposed, are that:

- Doing so will bring home, to the generation that is incurring these liabilities, the full size and implications of those liabilities
- Doing so will, by making us face up to the situation now, potentially prevent a much greater problem later
- By choosing to fund with equities and bonds, the government should expect to pay considerably less than if we let the existing method of payment, through the current account, continue, or (which comes to the same thing), if it decides to “fund with gilts”
- Additional risk mitigation will be achieved by:
  - ‘Averaging in’ the cost of purchases of bonds and equities over 120 months, lowering the volatility of equity returns through the many-decade term of these investments
  - Seeing the government’s covenant (as now) as the ultimate backstop to any residual long-term volatility risk.

As a matter of urgency, the institute recommended in my proposal should, as a first step, calculate what the decrease in funding might be from adopting this approach (which has strong similarities to the formation of a Sovereign Wealth Fund – although care should be taken to prevent any trace of political influence from the selection of investments in this fund, apart possibly from ensuring a UK bias in selection of equities and bonds).

**APPENDIX D: THE IMPLICATIONS OF THE UNFUNDED PORTION OF THE UK'S PUBLIC SECTOR PENSION SCHEMES ARE SUFFICIENTLY SEVERE AS TO DEMAND/REQUIRE IMMEDIATE ACTION**

This appendix argues that it is clear that the size of the unfunded Defined Benefit pensions in the Public Sector in the UK is such that drastic and immediate steps have to be taken.

How do we arrive at this conclusion?

There have been quite a few estimates of the overall size of the Public Sector liabilities, and a goodly number of those estimates have been documented in the various submissions that have already been made to your Commission. The BNAC (Neil Record's) document claims over £1 Trillion. The CBI says the same. The IOD's Corin Taylor shows four estimates (even in 2007/8): £650 Billion from The Treasury, £915 Billion from the CBI; £960 Billion from Watson Wyatt, and £1071 Billion from the IEA.

I hope it is clear from the points made in my addendum, and in particular my points in appendix A, that all such numbers have to be treated gingerly. The assumptions used need to be carefully examined, and the extreme susceptibility of these numbers to future events need to be understood and taken into account. I believe, however, that we can be relatively confident that the government's numbers are low.

It has also been shown that and over and above the deficits of the unfunded schemes, many so-called 'funded' schemes do, also most likely, have significant levels of unfunded liabilities in them. For example, The Economist, July 9<sup>th</sup> 2009, reported that Watson Wyatt estimated that the funding level of British Local Authority schemes were only some 50-60% of what was needed.

On the other hand, were the approach proposed in appendices B and C to be adopted, this would significantly lessen the funding requirement.

In addition, the main addendum, and appendix A, show that conservative actuarial assumptions may have led, to some degree, to an overestimation of liabilities (so long as we assume no major further improvements in longevity).

So, there are arguments in both directions as to how big the size of the unfunded liability is, and there are a number of complicated issues (such as the future strategy for how these liabilities will be paid and funded) that have to be resolved before a number can be agreed by all. This points up the importance of the first of my proposals in the addendum – the creation of an independent institute, better to calculate and estimate the true size of the liabilities, and to figure out the best way to fund them.

However, in the main we can all probably agree that PSDB liabilities are, at the very least, £700 Billion (some 50% of GDP), and that they are probably significantly higher than that – although how much higher is not necessarily easy to compute. Treasury reported this month that the national debt (excluding these numbers, and I believe excluding PFI), was £890 Billion (62% of GDP). Thus, the Public Sector pension liability is about equal to (maybe somewhat more, maybe somewhat less) the national debt.

What are the implications of a deficit of that size?

The practical consequences of high levels of liability in a country's pension accounts can be looked at in one of two ways:

1. Assessing national debt as a percentage of GDP, and figuring out what happens as this rises.
2. Assessing future expected outgoing payments from existing obligations (interest on debt, plus pensions on disability payments) as a percentage of current account tax incomings.

The second of these is the 'flow' number of the 'state' number presented by the first of these. Each of them offers us an indication of what lies ahead.

### **1. Debt as percentage of GDP**

The reason why there might be 'no return' once 90% is reached is that the debt burden becomes too great for the economy to bear. Tax rates soon reach the inflexion point of the Laffer curve, where the total tax take declines as taxes are increased; the capital markets run shy of funding the increased deficit so that interest rates rise thus increasing the deficit even further; a doom loop is reached which eventually leads to the country being unable to finance its debt, and default becomes necessary.

The Treasury's forecast estimates that debt as a percentage of GDP will rise to some 75% by 2014. Add in PFI; unfunded Public Sector pensions liability at a 'low' estimate of £700 Billion; disability payments; and the deficits in local government DB schemes, and you have increased the debt to at least 150% of GDP. (The State Pension is, of course, also unfunded; I have seen it asserted that this now amounts to a liability of around £1 Trillion; if so it would dwarf even Public Sector pensions as a liability. I cannot speak with any authority on this point so leave it out from any further analysis, but assume that your Commission will at least want to refer to the State Pension when forming its conclusions.)

So, at least 150%; some commentators, as you know, argue that National Debt will in fact go well north of 200%.

Only recently has attention begun turning to what the impact is likely to be on advanced economies of having such high debt levels. The situation is further obscured by the fact that a goodly number of other advanced economies also have significant hidden Public Sector pension fund liabilities, yet until recently these countries have seen no impact on their access to the capital markets. However, the recent travails of Greece have brought this situation into greater focus; in addition, ground breaking work by Reinhart and Rogoff has begun to focus attention to what happens as countries increase their debt as a percentage of GDP. The following two papers are examples of Reinhart and Rogoff's work<sup>1</sup>:

<http://www.aeaweb.org/aea/conference/program/retrieve.php?pdfid=460>

[http://budget.senate.gov/democratic/testimony/2010/SBC\\_Reinhart\\_February\\_9.pdf](http://budget.senate.gov/democratic/testimony/2010/SBC_Reinhart_February_9.pdf)

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<sup>1</sup> Reinhart and Rogoff's work is summarised in their recently-published book, "*This Time is Different: Eight Centuries of Financial Folly*", Princeton University Press.

The work by Reinhart and Rogoff seems to indicate (although, of course, it by no means conclusively proves) that when a country has debt exceeding 90% of GDP, it may have stepped beyond that critical point of no return after which it is difficult to restore the nation to a stable level of finance. One consequence of overstepping this level may be slow or no economic growth for many years (a la Japan<sup>2</sup>); a frequent (and worse) consequence can be financial default – although there is, predictably, disagreement among economists of Left and Right as to whether this applies to major, developed economies such as the US and the UK<sup>3</sup>. Of course, Reinhart and Rogoff's work mostly seeks to shed light on the potential impact of current Keynesian/stimulus deficit spending by large governments such as our own, and does not explicitly address the pension side of debt: however, as this document has I hope made clear, and of course as your Commission understands, sooner or later the bare facts of these obligations become clear to the capital markets, who have in any case to be approached to fund them<sup>4</sup>. Thus, Reinhart and Rogoff's work is entirely germane to the issue of seeking to understand at what point the UK will have passed the point of no return in its finances.

At 75% of GDP (an estimate from the Treasury that may be optimistic, and of course excludes PFI, Public Sector pensions, and Local Authority deficits), the UK is already perilously close to Reinhart and Rogoff's 90% trigger point. Since, as discussed above, the mechanics of the 90% trigger are driven by the affordability or otherwise of the payments schedule (whether as debt interest or repayment, or as payment of obligations such as PFI-related, or pensions), it may well be –although, of course, at this level of analysis it is impossible to say –that the UK is already past that 90% threshold.

If the UK has not yet passed that point of no return, it must surely be very close to it: thus, if we are to avoid complete breakdown in the country's finances, and to avoid ultimate default in the capital markets, it is urgent to address the Public Sector Defined Benefit pension scheme liabilities now, rather than waiting and hoping (without any good reason) that things will get better in the future.

## **2. Expenditure on interest, pensions (and disability) as a percentage of current incomings**

When one examines the issue from this perspective, one starts talking about what percentage (of all the incomings that the government has) will be needed, as year follows year, to cover outgoings of interest on debt, PFI and pensions (in which we should include disability payments and Local Authority deficits). At a certain stage, these outgoings get so large that taxes, however high, cannot cover them, and more and more must be borrowed – thus increasing further the cost of interest until an irreversible stage of the doom loop is reached.

Various attempts have been made to calculate what this percentage is and will be. However, those analyses have focused either on the impact of stimulus spending in the past couple of years, or on pensions. I have seen no attempt to combine their joint impact, and therefore I do not know how bad this number is, or is supposed to get. However, at some point it is clear that these pension payments, along with rapidly rising levels of interest payments, will, absent ruinous borrowing, be crowding out all ability to maintain the existing welfare state as we know it. Again, it is essential that the independent institute called for in the first recommendation of my addendum be put to work to

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<sup>2</sup> Japan's debt level, approaching 200% of GDP, would appear at first sight to contradict any assertion that such levels inevitably lead to default. However, its FX reserves bring the 'net' debt down to some 90% of GDP, thus placing Japan 'on the brink' rather than 'over the edge'.

<sup>3</sup> See eg "*Our Giant Banking Crisis – What to Expect*" by Paul Krugman and Robin Wells, NYRB, May 13, 2010, for a more left-wing/Keynesian response to Reinhart and Rogoff.

<sup>4</sup> Ruth Lea, in the Spectator 24 October, 2009, asserts that AAA status of sovereign debt is threatened once national debt exceeds 70%. Various of the ratings agencies have indicated that the UK's AAA status is already under threat.

attempt to figure out what the likely outcome would be. All commentaries that I have seen lead one to conclude that, certainly by say 2020, these payments are likely to have risen to such a level that, in order to keep the welfare state going, greater and greater borrowing will be necessary, thus creating a vicious doom loop – the ‘flow’ corollary of the ‘state’ of Reinhart and Rogoff’s analysis, that indicates that the UK will have entered into an unsustainable situation that can only result, sooner or later, in default in the capital markets.

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In conclusion, it seems highly unlikely that the current path is sustainable, and feasible that a point of no return has already been reached. Achieving consensus on that will be extraordinarily difficult, since there are so many vested interests to argue the other side of the case. Accordingly, it is essential that some kind of irreproachable analytic institute, as stated in my first recommendation in this addendum, be set up as soon as possible, to estimate both the size of the problem, and, within the context of the analysis outlined above, articulate its likely implications and repercussions.

## **APPENDIX E: SUMMARY OF PROPOSED SOLUTIONS**

The following, brought together for convenience, is the list of proposed solutions put forward in the addendum and various of the appendices.

**Proposed solution i:** Create a separate, independent statistical institution to estimate the true size of the obligations created by defined benefit public sector liabilities. Make it a legal requirement to incorporate those obligations, as directed by this independent commission, into the national accounts. The institution should work its way through an analysis of every single Public Sector scheme, starting with the largest, and should clarify the cost and impact of every feature of every scheme, including disability as well as pension.

**Proposed solution ii:** Adopt the language of probability distribution. Require, when reviewing Public Sector<sup>1</sup> Defined Benefit pension schemes, that actuaries show the outcomes of their calculations of surpluses or deficits in terms of probabilities, rather than as single-point 'certainties'.

**Proposed solution iii:** Abolish Politicians' Defined Benefit schemes, first for Cabinet Members, next for Members of Parliament, and finally for all other elected officials in the land.

**Proposed solution iv:** Fund and build a publicly accessible model of longevity, perhaps on a Wiki basis (but heavily invigilated by the independent statistical institution created by solution i), that will better explain recent increases in longevity, and afford insights into future potential increases in longevity.

**Proposed solution v:** Pass legislation that creates risk-sharing between pensioner and sponsor if and as longevity increases. Investigate further delay in the age of retirement in Public Sector pension funds as soon as possible to 68, and then on to 70. Keep that age of retirement under review, depending upon further increases in longevity. Allow earlier retirement, but only on diminished pensions. Pay significantly less than current for pension deferral.

**Proposed solution vi:** Maintain a Defined Benefit approach in Public Sector schemes (for future liabilities only, since existing liabilities are legally protected) only for the most minimal levels. Ideally, whatever number is chosen should be made part of the State Pension, rather than being preferentially given to Public Sector workers only. For all other levels of benefit, close all Final Salary schemes' accrual of future liabilities, now. For already accrual liabilities, seek legal ways to lower or minimise them.

**Proposed solution vii:** To the extent that any residual Defined Benefit obligations remain that are above very minimum levels, significantly increase required contributions from employees. In addition, ensure that an automatic rebalancing mechanism is in place, so that if and as longevity increases, retirement ages go up and/or and pension payments go down.

**Proposed solution viii:** Any entity, independent or otherwise, that seeks to talk about the Public Sector pension liability, should do so clearly articulating which basis – for

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<sup>1</sup> And indeed Private Sector

example, Ongoing, Closed Fund, or Buy Out has been used – making it clear that the choice is open to those funding any particular part of the Public Sector Defined Benefit liability to fund in any of the three ways implied by these three bases (with the concomitant implication that it should cost the public a great deal less to fund these obligations using an equity-heavy, ‘Ongoing’ basis).

**Proposed solution ix:** That for each of the bases discussed in proposed solution viii above, two separate calculations be made: one to be the ‘expected outcome’ liability, and the other be ‘using conservative assumptions’ liability.

**Proposed solution x:** Any statement regarding liability should be accompanied by a full appendix stating the assumptions used for each variable that has gone into that calculation, whether that be for ‘expected outcome’ or ‘conservative assumption’ bases, and the mathematics of any distribution curves used (with or without fat tails) should be fully explained.

**Proposed solution xi:** Any statement regarding the liability of any component of, or the overall, Public Sector defined pension set of schemes should show (at least) a level of detail as shown in the below chart (A-I).

	‘Expected Outcome’	‘Conservative Assumptions’	Discussion regarding chief causes of difference
<b>‘Ongoing’</b> This shows the liability if the fund continues as is, funded by the existing mix of assets. This ‘Ongoing’ approach usually assumes that the assets of the fund are a mix of equities, corporate bonds, gilts, and sometimes other types of assets such as property, commodities, etc.	<b>£L Billion</b> <b>(100%)</b>	<b>£M Billion</b> <b>(--%)</b>	
<b>‘Closed Fund’</b> This calculates the liability of the fund based on the assumption that the fund has been closed, and the assets have all been invested in bonds (usually, corporate).	<b>£N Billion</b> <b>(--%)</b>	<b>£O Billion</b> <b>(--%)</b>	
<b>‘Buy-out’</b> This assumes that the obligations of the fund have been handed to some pension fund or insurance company, who have taken on the obligation to pay the pensions. The calculated liability is then made under the assumption that the pension fund that acquires this liability will invest mostly in gilts, and will in addition take a profit.	<b>£P Billion</b> <b>(--%)</b>	<b>£Q Billion</b> <b>(--%)</b>	

**Proposed solution xii:** calculate the expected liability of each Public Sector scheme (as per proposed solution i in the main document), using an ‘Ongoing’ basis of funding, 60% with equities, 40% Single ‘A’ bonds. Issue gilts monthly over the next 10 years (1/120<sup>th</sup> per month) so that after 10 years, this liability is covered, and each month, immediately sell those gilts into the market, purchasing equities and corporate debt with the proceeds. Recalculate liabilities every 3 years, using a 10-year funding schedule to meet any emerging deficit (as with most Private Sector pension schemes). The gilts sold should be constructed so as to form a ladder roughly equal in maturity to the liability profile of the pension obligations.