Thinking the unthought

Donald Rumsfeld was 13th and 21st US Secretary of Defense, the youngest and second oldest person to have served in that position. A Princeton graduate and a former naval pilot, his brain power, agility and candour, coupled with that wide span of years covering the same beat, gave him unique insights. He will be remembered best for his offhand “known unknowns” remark to journalists in 2002 while discussing Iraq and weapons of mass destruction.

His words were: “Reports that say that something hasn’t happened are always interesting to me, because as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns – the ones we don’t know we don’t know. And if one looks throughout the history of our country and other free countries, it is the latter category that tends to be the difficult one.”

This issue of Review of Financial Markets spans some of those unknowns – and unthought thoughts – in the world of finance. On this page, Professor Moorad Choudhry, Chartered FCSI, considers some of the deep thinking that senior managers and directors – executive and non-executive alike – including most senior and aspiring CISI members in the UK, will have to bring to play when the Senior Managers and Certification Regime takes force next year.

Next, Con Keating and his estimable team bring their formidable brainpower to the issue of defined benefit pension schemes. They are apparently dead in the water, but is a Dunkirk-style redemption and rescue just over the horizon?

Finally, and with some similarly big numbers involved, Gregor Botlik, a CISI member and corporate finance expert at the National Audit Office, thinks some unthought and disturbing thoughts on what our political masters have signed us up for on Hinckley Point C, Britain's first nuclear power station since 1995.

We hope you enjoy this thought-provoking issue. Comments as ever welcome.

George Littlejohn MCSI, senior adviser, CISI
Editor, Review of Financial Markets, george.littlejohn@cisi.org
Speaking truth to power on pensions

The recent UK Government Green Paper¹ on defined benefit pension schemes, launched in February 2017, has not attracted the rigorous academic analysis this important topic deserves. Until now. Con Keating, chairman of the Bond Commission of the European Federation of Financial Analysts Societies (of which CFI is a member) has worked with lain Clacher of Leeds University Business School and Andrew Slater of RisCura to develop the fascinating thoughts on the coming pages, part of the exciting Long Finance project run by Alderman Professor Michael Mainelli, Chartered FCSI, of Z/Yen.

In the best tradition of speaking truth unto power, the authors respond forthrightly to the questions posed in this Green Paper consultation. From fundamental first principles, they analyse, review and discuss the paper’s narrative framework, which supports and gives rise to the paper’s questions. They conclude that a major public policy debate over member security has never taken place, and should. They also conclude that it is possible and highly desirable to reinvigorate the provision of occupational defined benefit (DB) pensions – to this end, they make 13 principal recommendations.

Here, Clacher, Keating and Slater outline some of the basic principles by way of preamble.

Retirement risk is insurable

A risk is simply a future event that is uncertain to occur. Sometimes the event’s magnitude, suitably measured, is also uncertain. The risk that pensions seek to mitigate is retirement or, more specifically, the event of a person living past the age at which he is able to sustain himself financially through labour. Usually in insurance, risks are unpleasant, even catastrophic. Events. Not so here. This person receives a pension to replace his labour income until he eventually expires.

Retirement is a quantifiable risk. Future lifespan distributions can be estimated from public data on births and deaths. Estimates can also be made of the future incomes required by people who live past working age, based on estimates of future inflation rates from historical data. Or they can simply be defined in advance, as is done under the defined benefit scheme. But these estimates are the work of actuaries, and we won’t dwell on them here. The point is that the probability and loss associated with retirement are quantifiable, which gives us a basis for insuring or otherwise collectivising the risk.

Defined contribution prohibits insurance

The move towards defined contribution (DC) schemes is a move towards ‘self-insurance’ – or, more truthfully, non-insurance – of retirement risk. In the DC setup, an individual pays a fraction of her labour income into a pot of money with only her name on it (and possibly those of her beneficiaries, should she die young). The pot is handed over to a financial professional, to be invested in risky assets. The hope is that, by the time the individual’s income, based on estimates of future inflation rates from historical data, can simply be defined in advance, as is done under the defined benefit scheme. But these estimates are the work of actuaries, and we won’t dwell on them here. The point is that the probability and loss associated with retirement are quantifiable, which gives us a basis for insuring or otherwise collectivising the risk.

Defined benefit allows risk to be collectivised

In the DB setup, future replacement incomes are defined at the outset. Defined benefit allows risk to be collectivised. In the DB setup, future replacement incomes are defined at the outset. Defined benefit allows risk to be collectivised.

Prior to annuitisation, the reservation of pension contributions for the benefit of the individual who made them renders DC a fundamentally non-cooperative method of pension provision. Theory tells us, therefore, that DC must be more expensive than other schemes in which individuals cooperate – through insurance or other types of collectivisation, including general taxation – to provide income in old age. This is because uninsured individuals suffer from larger relative fluctuations than those whose risks are insured or collectivised. With pensions this happens in two ways: individual investments can have large fluctuations because they lack the scale to be diversified well; and individual contributions can fluctuate due to illness and unemployment.

These fluctuations create a population of winners and losers. In the DC setup, there are two types of winner. The first is the retiree who gets lucky with his investments and retires with a large pot providing an income exceeding his needs. The second ‘winner’ is the contributor who does not reach retirement and whose funds, therefore, are not needed to cover the insured risk. He ‘wins’ because he declined to insure an event that did not occur. In both cases, the individuals or their beneficiaries receive funds surplus to the intended requirements of the scheme, i.e., to provide a replacement for labour income. In a cooperative setup, these funds could have been used to fund the incomes of other participants, reducing costs for everyone involved.

The losers belong to the majority who have realised the volatility drag and retire with insufficient pots. Since the taxpayer implicitly underwrites a minimum standard of living for citizens, the maintenance of these retirees is collectivised, albeit in an uncosted and uncontrolled manner.

In theoretical terms, the DC approach by construction prohibits cooperation and leaves individuals largely uninsured with respect to their retirement risk. This is expensive because it increases wealth-depleting fluctuations and fails to allocate efficiently funds that could be shared to reduce overall costs.

Defined benefit allows risk to be collectivised

In the DB setup, future replacement incomes are defined at the outset. This makes the retirement risk easy to quantify, since it depends only on the well-researched lifespan distribution. A DB scheme manager simply calculates the cost to insure the retirement risk and then requests the proportionate share of this cost from the scheme’s participants. The greater the number of participants, the closer this cost can approach the minimum expected-value price. This is because the effect of fluctuations disappears as the number of cooperators grows.

Indeed, a well-run DB scheme may not even require the annuitisation step. If sufficiently large, it could collectivise all of its retirement and longevity risk to operate on an ongoing basis, with participants joining as they enter employment and leaving on death. Indeed, since annuity rates are contingent on the uncertain health of the pensioner at retirement age, removing this step would have the additional benefit of collectivising this health risk. For a DB scheme so constituted, the only residual risk would be the bankruptcy of the scheme or its sponsor. There seems no reason why this default risk could not be insured in the re-insurance market.

Framing this in terms of economic theory, the DB approach allows the cost-effective possibilities of insurance and cooperation by defining only the deliverables of the scheme. It is agnostic to the contribution levels and the way in which retirement risk is managed. In other words, it does not prescribe how the deliverables are delivered. This is the opposite of DC, where the contributions are defined and effective risk management is hamstrung by the partitioning of funds into personal pots. By allowing risk to be spread, DB can reduce the cost of pension provision to providers, participants, and the taxpayer, who underwrites income in old age.

ABSTRACT

“It is difficult and probably wrong to caricature Government thinking on regulation. However, if we did, it would be that successive administrations have been cautious, prescriptive, fearful of EU infraction, and possessive of implementation. As a result, in many instances we have become slaves to the process of regulation and lost sight of the outcomes we have been trying to achieve…”

Independent Farming Regulation Task Force, May 2011

INTRODUCTION

Occupational defined benefit (DB) pensions are, in our view, highly efficient, and substantially superior to other institutional forms of pension provision, such as individual defined contributions (DC). This superiority arises from the risk-sharing and risk-pooling structures that are inherent in the design of DB pension schemes. Subject to being properly designed, managed, and regulated, we think that occupational DB pensions are both sustainable and secure.

This view has not been the direction of travel for a long time, amongst sponsors, regulators and the schemes themselves. Underlying this is the rationale that occupational DB pensions are too expensive and that if history were to be rerun with ‘what we know now’, then this would not have been the path followed. Consequently, the job now is one of running off these schemes by securing member benefits. To achieve this, there has been widespread de-risking, with a goal, whether explicit or implicit, of getting the scheme into a position of self-sufficiency or buyout. Moreover, where the sponsor cannot meet their obligation, the pension fund is there to provide security to members for their benefits. Second, the pension fund is there to offset or fully defease the obligation of the sponsor to pay pensions. However, given the current state of pensions and the various grand challenges that face government, it is our hope that we will have an honest and forthright debate about the issues set out in the Green Paper. Ideally, we would like to see substantive change, but in the near-term this is unlikely to occur. That said, having a debate on the major issues presented in the Green Paper should get us some way along the road to a better understanding of the relative costs and benefits of the DB structure. To date, there has not been anywhere near enough debate and discussion of the DB pension as an organisational form. Debate is more often than not hijacked by a small number of high-profile failures extrapolated to all DB pensions or by issues of measurement, rather than the secure and sustainable pensions that the DB structure affords us.

OUR VISION

The analysis of UK pension arrangements often slips into the polarised debate of individual DC versus collective DB. There is however, a multitude of possible arrangements between these two extremes of the distribution. Ultimately, this distribution reflects variations in the risk-sharing and risk-pooling arrangements. Defined ambition and collective DC are examples of intermediate arrangements.

In looking at the current approach to DB pension regulation and management, the solvency-based approach is not appropriate. The balance sheet test in insolvency has proved contentious since its introduction over 100 years ago, and has been roundly criticised, with the recent Supreme Court judgment that Lord Neuberger’s “point of no return” test “should not pass into common usage as a paraphrase of the effect of section 123(2)” being a case in point.

Crucial to this are the different perspectives on risk and uncertainty as understood by the insolvency courts and The Pensions Regulator. In the judgment referred to above, liabilities, some of which had terms of 30 years, were subject to “imponderable” factors, such as interest rates, currency movements, and the state of markets. As such, the court “should proceed with the greatest caution in deciding that the company is in a state of balance-sheet insolvency”. This test differs in another regard, as the court must be satisfied, on the balance of probability.

In contrast, pension regulation refers to the level of technical provisions, and in practice to even more excessively conservative valuations, such as buyout. Underpinning this is the idea that the valuation is correct and that none of the aforementioned “imponderables” are uncertain. As such, the treatment is wholly different and leads to perverse outcomes.

The multitude of resultant issues that arise from the existing regulation and practice, if this were in the realm of physical sciences, would result in a wholesale rethink of the basis on which we operated, as it would be taken as evidence of an incorrect model. As such, we have taken such an approach and started from first principles to consider the purpose of the scheme and its fund in the provision of occupational pensions to former employees.

In looking at the underlying drivers and rationales that we see in current pension legislation and regulation, the core of The Pension Regulator’s modus operandi is that the scheme and its fund exist to pay pensions in all circumstances, including after the insolvency or cessation of business of the sponsor employer. However, in returning to first principles and asking what is the purpose of the pension fund as initially conceived, we see the purpose of the scheme and its fund as being twofold. First, the pension fund is there to provide security to members for their benefits. Second, the pension fund is there to offset or fully defease the obligation of the sponsor to pay pensions.

As such, it should be managed in ways that reflect these two purposes. A consequence of this perspective is that pension scheme management becomes analogous in many regards to cash flow based insolvency. The difference between the two views of purpose is not trivial. This shift in perspective results in a major issue of public policy. We would note, however, that schemes pursuing either of these different objectives could co-exist in the pension marketplace.

1. This section of the Insolvency Act 1986 is otherwise known as the balance sheet test.
If the approach of the current pension legislation were to be accepted and followed, whereby members’ pension benefits are paid after the sponsor has ceased to exist, the involvement of some independent continuing third party is necessary. If this were to be the fund for example, then this would have to be capitalised prior to sponsor closure, as if the fund were an independent insurance company. This is both individually expensive for sponsors and collectively a clear folly, with significant consequences for long-run corporate investment in the real economy.

The obvious alternative is for the sponsor employer to contract with an independent insurance company. Here the contract would insure against employer solvency and where insolvency occurs, the insurer would step in and pay the members’ benefits in full. This class of insurance business is known as pension indemnity assurance and is, we believe, the first best solution to many of the perceived issues around the risks and affordability of DB pensions. We make a series of further recommendations:

RECOMMENDATIONS

1. The precise role of DB pension schemes, and their funds, to be debated and determined, and,
   a. if it is deemed socially desirable for these to function as institutions capable of providing previously promised pensions after the demise of their sponsor, explicitly write this into UK pensions law
   b. accompany this with prudential regulation for schemes which is similar to that applicable for insurance and assurance companies.
2. A Royal Commission to be established to investigate and report on the operations, accountability and role of The Pensions Regulator.
3. Remove The Pensions Regulator’s statutory duty of reducing the risk of pension schemes ending up in the PPF.
4. Add a new statutory objective for The Pensions Regulator: to promote the provision of high-quality occupational pensions.
5. Require the PPF to pay the full pensions entitlements of scheme members.
6. End the monopoly of the PPF, at the same time as requiring compulsory pension indemnity insurance for occupational scheme sponsors.
7. Require schemes to hold pension indemnity insurance/assurance.
8. Privatise the PPF.
9. Limit corporate liability for scheme funding to performance of the contract created by the pension award.
10. Eliminate the section 75 valuation and its applications, while introducing a statutorily overriding negative pledge which requires the company not to offer security or priority in status to other debt obligations without offering equivalent to the scheme trustees.
11. Eliminate the section 179 valuation. If the desire for change is limited at this time, there are a number of technical improvements to valuation and security estimation procedures which may be made.
12. Encourage a diversity of liability valuation viewpoints.
13. Introduce legislation enabling defined ambition and collective defined contribution scheme structures.

Other context specific recommendations are made in the responses to the consultation questions.

We are concerned that the tax concessions enjoyed by DB schemes are excessively expensive under current arrangements. Funding a scheme at anything higher than best estimate under the employer contract terms really does not merit favourable tax treatment, such as deductibility.

FINAL THOUGHTS

We welcome the publication of the Green Paper as the UK pension sector finds itself at an interesting junction. There is a multitude of perspectives that prevail on the current state of DB pensions, as well as what the best routes forward may be. However, over the past 25 years and more, we have witnessed the destruction and degradation of what we believe to be the most efficient institutional form for providing good incomes in retirement for the majority of people. We hope that the Green Paper will lead to a full, frank, and honest debate about the way forward. Since 2004, there has been little meaningful discussion and a series of well intentioned, albeit incremental and short-sighted decisions has resulted in the current system. If this is the system that we want to have tomorrow, then that should be decided in an open and transparent way. If the current system is not what we want tomorrow, then it is our hope that the Green Paper creates a platform for a thoughtful and robust debate on how to structure retirement savings in the UK to the benefit of both the economy and millions of pension savers.

The rewards to getting this right are enormous. Less than 20% of current DB regulation and guidance would be needed, bringing vastly greater simplicity and clarity. Costs would decline to around half of those currently perceived and incurred, and with that greater member security. The management incentives of both trustees and employer sponsors would be well aligned. Scheme investment policy would pursue their economically and financially optimal long-term allocations and lead to greater societal well-being and wealth. But the greatest gain would be its legacy for future generations, continuation of sustainable and secure occupational DB pension provision.

We are indebted to numerous people for helpful comments on earlier drafts of this document. Specific thanks are due to: Alex Adamou, Ole Peters, Anna Tilba, Derek Scott, Mark Tennant, Robin Ellison, Jon Spain, and Thomas Aubrey.

FUNDAMENTAL PENSIONS REFORM IN THE UK

This section considers and responds to three of six specific questions posed in the Green Paper. Extracts from the Green Paper are in italic, with responses in normal text; and, as there are two frameworks informing our responses, we show those applicable under our vision in white boxes.

QUESTION 1

Are the current valuation measures the right ones for the purposes for which they are used?

No. Both measures are prospective, meaning that they bring the projected future values of benefits accrued to the present by discounting, and this discounted present value is then compared with the market value of assets to estimate the solvency position of the scheme. This is inappropriate for liabilities which have already been incurred, but would be appropriate if we were pricing the acquisition of new liabilities today. In other words, the prospective approach is suitable for an insurance-type institution such as the Pension Protection Fund (PPF), when pricing new business. However, even for such institutions, it is inappropriate to value the accumulated book of business in this manner.

There are also issues associated with the solvency approach. The measures being used for assets and liabilities differ. Using different measures constitutes a fundamental measurement error. It introduces
the possibility of bias and error into the resultant solvency estimation. It is clear that this has been substantial in recent years. The discussions among European regulators over the ultimate forward rate applicable to insurers is a reflection of this, though the 'solution' of that issue is a compromise which addresses symptoms rather than cause.

Basing cash equivalent transfer values on valuations derived in this way introduces a real cost to the scheme. In essence, the member has been awarded an option (for free) on the long-term performance of discount rates, with a lesser, and regulatorily discouraged dependency upon the accumulated value of the scheme asset portfolio, and this is extremely costly to the scheme. Not the least aspect of this is the extent to which it will shorten the investment time horizon of the fund.

Both methods are time inconsistent. This introduces material costs into the management. Portfolios of assets and liabilities are acquired over time on terms which remain largely fixed; these are intrinsically smooth processes, with only marginal changes arising from actions at points in time. However, it should be recognised that the aggregated change(s) may be substantial. But the smoothness is a symptom, or feature, rather than cause, and for this reason we do not support the use of smoothed discount rates in valuation.

There are alternate measures and approaches. For example, we may estimate the required rate of return on scheme assets necessary to achieve payment of the benefits projected. This is a form of solvency measure.

Another method would be cash flow based and rely not on today's market prices, but on the adequacy of the asset portfolio (and any other contracted contributions) to generate sufficient cash to pay benefits as they fall due. This was in fact the standard actuarial method prior to the millennium. From around 2000 until 2006, there was an ever-increasing move towards the FRS17 'market consistent' approach. The Inland Revenue excessive surplus requirements still smoothed the assets until March 2006, and market consistent became obligatory from the end of 2006. It should be recognised that corporate cash flow projections are inherently an order of magnitude more stable (and therefore simpler) than market return projections. Indeed, cash flows and cash flow projections are the most powerful predictor (factor) of listed equity returns.

Let us emphasise this point: the existing methods are appropriate for pricing new business. This means that they are suitable for pricing new awards, though very few schemes remain open to further accrual. However, as contributions are usually fixed for long periods of time, this is largely academic. The value of the discount rate used is also material. When this is based upon gilts or similar bonds it can result in grossly exaggerated apparent costs to new awards.

The framework in use is implicitly one of scheme primacy, with the sponsor a remote adjunct. As these are occupational schemes, this is a strange and significant transposition of responsibility.

In the case of a security, say, a secured ten-year zero coupon bond issued five years previously at a 5% compound yield, the calculation is the sum of the amount originally advanced plus the accrued five years of compound interest (£61.39 plus £16.96) and the total security required would be £78.35. Note that this valuation process is time consistent. If the company continues to perform as required in this manner then the bond will be fully discharged at maturity. It is worth noting that similar maturity proceeds will, if they were issued on differing terms, have different values today. If the ten-year bond above had been issued yielding 10%, then its value (and security) at year five would be £62.09 – (£38.54 plus £25.53). This would constitute the distribution available in a voluntary liquidation of the enterprise and the admitted claim in insolvency. It would also be the basis of taxation by HMRC as to income and capital gains.

Section 75 of the Pensions Act 1995 (section 75, PA 1995), Employer Debt, is profoundly problematic in this regard.

The methods specified in pensions legislation do not recognise these differences. The contractual accrual rate for a DB pension award should be no different. The contribution and the projected benefits determine a unique rate of accrual. The scheme is simply the accumulated aggregate of these awards. The rate is time consistent. It is the rate of return on investment promised to the employee on their voluntary contributions. It is the gross cost of the award and scheme to the sponsor employer; the income of the fund simply serves to defray or defease this gross cost.

It is this gross cost which is the prime determinant of the cost of the scheme, and with that the sustainability of the scheme and employer.

In our opinion, many of those who complain that pensions used to be provided on a "best endeavours" basis are reflecting in part, and somewhat inchoately, this shift from performance due to performance expected.

\[ \text{a) Are the flexibilities in setting the Statutory Funding Objective discount rate being used appropriately?} \]

Under our vision, no.

And this question would not arise in our contractual accrual rate view.

- If not, why, and in which way are they not being used appropriately?

The bond discount rate basis is still being widely used even though these rates are extrinsic random variables. Somehow, but inexplicably, the myth persists that these represent the use of a 'risk-free' discount rate.

The expected return on assets is in all too many cases based upon a 'gilts plus' vision of the future world. This apparently relies upon a discredited academic hypothesis. To quote Hyun Shin of the Bank for International Settlements (BIS): "Long-dated yields may be overrated as a forward indicator of economic conditions. Far from being a window on the future that reveals insights that no individual market participant has, low yields may, instead, reflect very ordinary motives of individual investors that have only a limited bearing on forecasts of the distant future." This is hardly new: in 1983, Bob Shiller, John Campbell and Kim Schoenholtz noted: "The simple expectations theory, in combination with the hypothesis of rational expectations, has been rejected many times in careful econometric studies. But the theory seems to reappear perennially in policy discussions as if nothing had happened to it ..."
We are reminded of Tom and Jerry cartoons that precede feature films at movie theatres. The villain, Tom the cat, may be buried under a ton of boulders, blasted through a brick wall (leaving a cat-shaped hole), or flattened by a steamroller. Yet seconds later he is up again plotting his evil deeds. It reappears yet again in UK pension valuation.

Until recently The Pensions Regulator promoted gilt type approaches, presumably in support of its objective of protecting the PPF. In addition, the use of similar bond-based approaches in accounting standards may weigh on particular trustee choices.

- What evidence is there to support this view?

The most obvious is the prevalence of liability-driven investment. Invariably this involves the hedging of interest rates, when these discount rates are irrelevant to the risks of a scheme. This is a case of hedging the measure, not the substance. Obviously hedging may be effected by use of either derivatives or bonds—the increase in bond holdings by pension funds is well known.

It is intrinsically short-term in nature. The consequence has been a marked decline in the income and return performances of funds. Indeed, the activity has been sufficiently great that index-linked gilts now offer RPI minus 1.85% when they are owned as to more than 80% by UK pension funds.

- How could sponsors and trustees be better encouraged to use them?

We believe that it is necessary to first remove The Pensions Regulator's statutory obligation to protect the PPF. The flexibilities are quite limited. If a scheme is invested in gilts, it will have only the expected return of gilts as a basis for its discount rate.

We wonder as to the extent that accounting standards and the company position are driving this lack of take-up. We recommend that a research survey be conducted to resolve this question.

These flexibilities are irrelevant in our vision.

b) Should we consider shorter valuation cycles for high-risk schemes, and longer cycles for those that present a lower risk?

- What should constitute a high or low risk?

- Or should a risk based reporting and monitoring regime be considered?

We do not believe that there is evidence to support any change to the valuation cycle. We note that many schemes in fact operate systems which extrapolate earlier results between valuations.

Moving to a shorter cycle will tend to exacerbate problems of short-termism. We do not believe there is any reliable method of identifying the riskiness of company or scheme. We would also be greatly concerned that this is then subject to the 'Minority Report' critique. Would it really be possible for regulatory interventions to be based upon probabilistic assessments, and indeed, where wrong, if that ever becomes evident, without liability?

Risk based regulation brings with it further concerns. To quote Professor Roger King: ‘While at the level of abstract general principles it is hard to cavil with a regulatory approach that seeks to be selective, focused, and proportionate, and which promises to relieve a number of institutions of unnecessary central control and bureaucratic impositions, risk based regulation can be a risky business, not least for the regulators. Risk based regulation principles are set to provide major operational challenges … Nor is it clear that the principles … sit easily with established democratic beliefs of equality before the law and associated ideas of fair treatment and accountability, based on bureaucratic impersonality, the application of the same rules and processes to all’.

As risk simply means that more things may happen than will, we are much exercised by the possibility that trustee concern with prudence will result in expensive and unnecessary ‘risk’ interventions. There would doubtless be an army of advisers recommending just this.

We do not believe that any part of this question should be pursued.

Risk concerns are self-evidently a prospective view. In our vision, such concerns would arise only if the sponsor was delinquent, that is to say that scheme funding was below best estimate. It is a matter of fact, not guesswork, no matter how sophisticated that guesswork is. The only significant source of uncertainty here is variability of the asset portfolio. Deficits tend to become smaller and are more foreseeable.

c) Should the time available to complete valuations be reduced from 15 months?

- What would be an appropriate length of time to allow?

We have no experience of the 15-month term being problematic. Where we have seen timescales challenged, it has been because of the complexity of the situation combined with a need to investigate options and approaches to resolution fully. We are not convinced that there is an issue in general.

In our view, the valuation process is far simpler. The (contractual accrual rate) discount rate and liability valuations are matters of fact. Trustee debate reduces to consideration of the required degree of prudence to be exhibited in technical provisions.

We believe that a range of approaches, of different viewpoints, would serve to break the tyranny of the current mixed attribute prospective solvency regime. Accordingly, we would like to see additional techniques utilised. These would include:

1. Cash flow projection for both assets and liabilities – this would, among other things, deliver a time to failure metric, for those schemes in deficit.

2. The required rate of return on assets – the likelihood of this return being achieved may also be estimated.

3. A solvency approach using the contractual accrual rate – this may be reported to scheme members as the rate of return on their investments.

4. Publication of the best estimate of scheme liabilities.

We are not convinced that stochastic modelling of assets and liabilities would add to our comprehension. Stochastic modelling is complex and usually expensive, and very difficult to do well. For example, with the prices of assets and liabilities modelled as log-normal processes, their ratio, the surplus or deficit, would be Cauchy distributed, a process which lacks even a defined mean. A further issue with many such models is that,
as iterations are increased in number, the results merely converge to the properties of the original assumptions.

The further risk with stochastic modelling (indeed, for any complex model) is that it throws out results which are not likely to happen in the real world, and may even be impossible. This is especially true at the tails of a distribution, which is the very area of most interest. It is the tails of a distribution which are information-rich. A major issue for such models is that they are not adaptive, in the sense that they tend not to recognise that the authorities and other market participants will change their behaviour, and with that, the observed behaviour of market processes in extreme circumstances.

One can be misled into thinking the problems of the scheme are greater than they really are; becoming fixated with risk and losing sight of the fact that more things may occur than will. One can end up managing the problematic output of a model, rather than managing real world problems of the scheme. The use of stochastic modelling should neither be mandated nor encouraged.

The contractual accrual approach requires, as an input, the contribution histories of members. This may be difficult and expensive, or even impossible to extract from poor prior records. In the one instance, where we have conducted the exercise, a scheme with reasonable records, albeit in paper form prior to 1973, and with just 3,700 members, the one-off cost was approximately £250,000. However, there are approximations which may be applied that obviate the need for prior records to be compiled, and have trivial costs.

**QUESTION 2**

**Do members need to understand the funding position of their scheme, and if so what information would be helpful?**

**a) Should schemes do more to keep their members informed about the funding position of their schemes?**

With the advent of widespread defined contribution (DC), a tendency has developed to believe that investment performance (together with cost and fee disclosure) is a prime and relevant concern, when defined benefit (DB) scheme members actually have fixed claims.

Members should understand that:

a) As long as their employer remains solvent, their benefits will be paid in full.

b) In the event of their employer’s insolvency, their benefits may be reduced to PPF levels and this is not, for the majority of members, a disaster.

The contractual accrual rate of contributions made to the scheme should be quoted to members. This is a value for money statistic, and its publication would allow comparison with DC and other investment opportunities.

In our view, there are two possible scenarios. If we adopt the view that the protection of members should not be different from that of a secured creditor or DC investor, then it should be made clear to members that all they will receive is the value accrued to the date of sponsor insolvency, and that this may or may not be sufficient to purchase equivalent benefits at that time. It should also be pointed out to them that this was due to performance by the sponsor of the promise made. In the second scenario, where the PPF or private sector insurers step in and pay full benefits, there is no need for any caution over sponsor insolvency.

**b) Do we need government communications to provide information to the wider public and media about the degree of certainty and risk in the regime?**

**What difference could this make?**

We do not believe there is a role for government here. Such communications would run the risk of creating a liability for government, in much the same way as trustee statements that lead to or encourage particular expectations may lead to the trustees being held by members to delivery of those expectations.

Members receive scheme information but often do not read it. Any campaign targeted at DB members would be open to the criticism that these are the people already best provided for and could easily become a focus of discontent among DC scheme members and the entirely unpensioned.
If on the other hand, Government wishes to resurrect DB pensions from their near-death, and is prepared to undertake the revisions to pensions and accounting regulation necessary, a campaign of communication to employees and their sponsor employers would be appropriate. This would be particularly relevant if defined ambition and collective defined contribution arrangements are to be facilitated.

**QUESTION 3**

Is there any evidence to support the view that current investment choices may be sub-optimal? If yes, what are the main drivers of these behaviours and how could they be changed?

There is overwhelming evidence of the sub-optimality of investment choices and asset allocations. An entire industry has sprung up promoting liability-driven investment and ‘solutions’. Portfolios are heavily driven by the hedging of the so-called ‘risk’ arising from the discount rate measure. This is a direct consequence of the pension and accounting regulation. Pensions ‘freedoms’ and cash equivalent transfer values have added to these pressures. As noted earlier, index-linked gilts, which are owned as to greater than 80% of the outstanding, now offer returns of RPI minus 1.85%.

The performative nature of such large-scale asset allocation shifts has to an extent mitigated the immediate cost of these actions; bonds and interest rate derivatives have performed as well as they have in recent years precisely because of the purchases by pension funds and insurance companies. Such herding typically ends in tears, with a systemic issue. Equivalents of the ‘taper tantrum’ become likely endings.

Not only have falling gilt yields resulted in higher present values of liabilities on all current measures, but the more conservative, less volatile strategies being followed have lowered the volatility of published results. This would imply that technical provisions should now be lower relative to best estimate than previously under equity dominated strategies. But we have in fact seen the reverse of this; technical provisions are larger not smaller.

In addition, portfolios are overwhelmingly invested in highly liquid marketable securities, when the timescales to which they operate and generate liability cash flow payments are far longer and smaller.

The use of a wider range of valuation metrics will moderate this.

---

In our view, the asset allocation followed by a fund would reflect the sponsor employer’s needs and desires for income or cash flow to offset their payment liabilities, in the context of their business capacities and expectations. It seems highly unlikely that, in the absence of the pressures of the current prospective ‘market-consistent’ standard, this would approach that allocation now seen.

**a) Do trustees/funds have adequate and sufficient investment options on offer in the market?**

In general, it is true that trustees have too many rather than too few options choices. We are, though, concerned that the almost universal advice from investment consultants is intrinsically short-term in nature – ‘risk’ hedging and the Beebower, Brinson result, that asset allocation dominates all other return properties. This result derives from the simple fact that in the short-term, returns are dominated by changes in price, while in the long-term, it is income and to a lesser extent changes in income which dominate returns. We are hopeful that the current FCA work on asset management will address this issue.

There are issues in the government bond markets.

- **Is there anything government could do to address any issues?**
  Yes. The Debt Management Office should issue a higher proportion of debt in index-linked form. It should also undertake debt maturity extension operations, retiring issues with five years or less to redemption while issuing actively in the 20 to 50 year range. It may also make sense for the government to issue term annuities, though this may be better organised through NSI for individuals.

It is also currently the case that fund managers may contract around all but the most egregious examples of breach of fiduciary duty in the investment management agreements for segregated mandates. Government could intervene to limit and restrict the possibility of such behaviour.

**b) Do members need to understand the investment decisions that are being made?**

- **If yes, are there any specific decisions that need articulating?**
  No, they do not. The DB pension claim is a fixed claim in the sense that it would not participate in the upside of strong investment returns.

If the PPF coverage is extended to full benefits, the investment aspect of DB is entirely immaterial. In any event, in our view, this is relevant only to the sponsor company. There is value to members in disclosing the contractual accrual rate as this is the return they are being promised on their investments.

**c) Would it be appropriate for the regulator to take a lead in influencing or determining an acceptable overall level of risk for a scheme in a more open and transparent way?**

As long as the regulator has a statutory obligation to protect the Pension Protection Fund, absolutely not. The result would be ‘regulator’s quality’ schemes, and further damage to the use of DB by sponsor employers in recruiting, retaining and rewarding staff.

In our view, if schemes are fully insured, by the PPF or private sector coverage, there is no need for the regulator to intervene in any way. This is a matter of private contract. In general, the question of the overall risk of the scheme is one for the sponsor to assess in the context of their operations and planned development.

**d) Would asset pooling or scheme consolidation help schemes to access better investment opportunities?**

Asset pooling may lower the costs of particular segregated mandates. It may also allow some further economies of scope. However, the case for these advantages is still very far from proven. There is also the potential problem, commonly seen, that large schemes or pools tend to underperform small ones. Schemes already have access to a very wide range of pooled products. It is already feasible but not widely used. It may be that the preferences of sponsors are sufficiently diverse or that other asset allocations are sufficiently scheme specific, that common funds are not an efficient solution.

We see asset pooling as being driven by the capacity and preferences of the scheme sponsor.

We do not see consolidation as being either necessary or desirable.

e) Is regulation (including liability measurement requirements) incentivising overly risk-averse behaviours/decisions that result in sub-optimal investment strategies?

Yes.

• If yes, which regulations and how do they impact on these decisions?

There are numerous examples, but to pick just one: the regulator’s duty to protect the PPF. We would like to see this repealed and an obligation to promote the provision of high quality pensions substituted. Many others, such as the prospective mixed attribute solvency nature of the valuation rules, are discussed elsewhere in this response.

g) Are measures needed to improve trustee decision-making skills, such as enhanced training, more regulator guidance, or the professionalisation of trustees?

No. Our research suggests that trustees are sensible decision-makers. Guidance and professionalisation will merely serve to embed and spread the regulator’s narrative. We should not forget that the risk to any regulator lies in failure of its regime to prevent disaster; it will therefore be conservatively, and expensively, biased.

f) Are you aware of evidence of herding or poor advice from the intermediaries and advisers?

Yes. The use of gilts plus under the expected return valuation variant is one example. The use of model portfolios which derive from the Beebower asset allocation result and the promotion of Liability Driven Investment are further examples.
Contract for difference

The Department has agreed that NNBG will receive a ‘strike price’ of £92.50 (in 2012 prices) for each megawatt hour (MWh) produced and this will increase with inflation. The average price of electricity on the wholesale market in Great Britain has been around £45/MWh since 2010. The contract for difference (CFD) will last 35 years from generation starting and thereafter market rates will prevail.

The CFD is the main mechanism supporting the expected returns for investors. This contract also includes additional mechanisms to adjust the risk and reward between investors and consumers/taxpayer if the actual performance on items like construction or operating cost, tax receipts or capital structure differ to what was expected when the deal was agreed.

The government has provided similar contracts to other low-carbon electricity generators like wind or solar, though typically they last for 15 years. The strike prices for these contracts range between £80/MWh and £150/MWh. The costs of fixing the price of electricity that HPC generates through the CFD will ultimately be borne by electricity consumers. In the case of HPC, NNBG will receive top-up payments for the difference between the wholesale price of electricity and the strike price. Conversely, if market prices are above the strike price, NNBG will be required to pay the difference.

Funded Decommissioning Programme

NNBG expects decommissioning and waste management and disposal operations to cost £7.3bn and end by 2151. To meet this future cost, NNBG is required to set up a funded and ring fenced plan – the funded decommissioning programme (FDP). NNBG plans to set aside £4.5bn (in 2016 prices) during the operations, which will be reinvested following an agreed investment strategy to generate a return that will cover the entire cost.

HM Treasury debt guarantee

HM Treasury has agreed an initial guarantee of up to £2bn if NNBG decides to issue bonds to finance construction. NNBG must meet a number of conditions by December 2018 to be able to benefit from the guarantee. Following this, and the bonds must be repaid by the end of 2020. NNBG must meet a number of conditions by December 2018 to be able to benefit from the guarantee. HM Treasury has agreed an initial guarantee of up to £2bn if NNBG decides to issue bonds to finance construction. NNBG must meet a number of conditions by December 2018 to be able to benefit from the guarantee. Following this, and the bonds must be repaid by the end of 2020. NNBG must meet a number of conditions by December 2018 to be able to benefit from the guarantee. Following this, and the bonds must be repaid by the end of 2020. NNBG must meet a number of conditions by December 2018 to be able to benefit from the guarantee. Following this, and the bonds must be repaid by the end of 2020.

5. This equates to £100.38/MWh in 2017 prices. The 2012 strike price would reduce to £89.5 should EDF pursue their proposed nuclear power project at Sizewell C.

6. The government has recourse to the shareholders of NNBG in case of a default. NNBG has paid the government an upfront fee of £10 million for the guarantee and is paying an annual commitment fee of 0.25%. Draw-downs would pay an annual fee of 2.95%. EDF indicated that it will not draw under the initial guarantee.

7. The £30bn estimate is a present value discounted to 2015 in 2015–16 prices. The uses the discount rate (0.7%) that HM Treasury requires departments to use when valuing liabilities in their annual accounts.

8. We have not assessed the feasibility of applying these models for HPC, nor whether they would comply with HM Treasury guidance or receive State Aid clearance. We also have not assessed how changes to the delivery method (scenario) or changes to the investors’ return would impact on the deal’s structure beyond changes in the strike price. The scenarios are based on the financial model the department used to assess the investors’ returns from HPC. As a result, the scenarios do not reflect any changes to the cost or revenue an alternative scenario may entail.

NNBG’s returns and risk allocation

Based on the expected costs and cash flows on the project and the key contracts above, investors expect to achieve a post-tax nominal rate of return of 9% over the 60-year operating life of HPC. Assuming no drawdown or default under the guarantee arrangement, the investor fully bears the construction and financing risk of the project. Operational and some other risks are shared to a certain extent with consumers via the adjustment mechanisms under the CFD. As a result, the tax payer bears no risk, and consumers bear the full cost of the CFD, which at the current expected market price forecast, could amount to £30 billion.

Alternative ways of financing HPC

We have summarised potential alternative financing scenarios in Figure 1, p.61. This is a simplified analysis which calculates the changes in the CFD strike price based on changes to the return for investors. In addition we have illustrated the changes to the risk exposure for consumers and taxpayers different scenarios would entail. This analysis should only be used to give a high-level picture across the different options. We have looked at the following scenarios:

• ‘100% public risk’ assumes all risks are transferred to the public sector. This would see government bear all construction and financing risk, and some other risks are shared to a certain extent with consumers via the adjustment mechanisms under the CFD. As a result, the tax payer bears no risk, and consumers bear the full cost of the CFD, which at the current expected market price forecast, could amount to £30 billion.

5. This equates to £100.38/MWh in 2017 prices. The 2012 strike price would reduce to £89.5 should EDF pursue their proposed nuclear power project at Sizewell C.

6. The government has recourse to the shareholders of NNBG in case of a default. NNBG has paid the government an upfront fee of £10 million for the guarantee and is paying an annual commitment fee of 0.25%. Draw-downs would pay an annual fee of 2.95%. EDF indicated that it will not draw under the initial guarantee.

7. The £30bn estimate is a present value discounted to 2015 in 2015–16 prices. The uses the discount rate (0.7%) that HM Treasury requires departments to use when valuing liabilities in their annual accounts.

8. We have not assessed the feasibility of applying these models for HPC, nor whether they would comply with HM Treasury guidance or receive State Aid clearance. We also have not assessed how changes to the delivery method (scenario) or changes to the investors’ return would impact on the deal’s structure beyond changes in the strike price. The scenarios are based on the financial model the department used to assess the investors’ returns from HPC. As a result, the scenarios do not reflect any changes to the cost or revenue an alternative scenario may entail.
Figure 1– Summary table: alternative financing options and implications

<table>
<thead>
<tr>
<th>HPC deal-type structure</th>
<th>Case</th>
<th>Investor’s return (post-tax nominal)</th>
<th>Cost to taxpayers during construction</th>
<th>Risk sharing</th>
<th>Strike price (£/MWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Construction</td>
<td>Operational</td>
</tr>
<tr>
<td>100% private risk</td>
<td>12%</td>
<td>£0</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>HPC</td>
<td>9%</td>
<td>£0</td>
<td>No</td>
<td>Shared</td>
<td>No</td>
</tr>
<tr>
<td>100% public risk</td>
<td>2%</td>
<td>£13.1bn</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Public-Private partnership</th>
<th>Partnership return (WACC)</th>
<th>Government equity share</th>
<th>Cost to taxpayers during construction</th>
<th>Construction</th>
<th>Operational</th>
<th>Financial</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.25%</td>
<td>25%</td>
<td>£4.3bn</td>
<td>Shared</td>
<td>Shared</td>
<td>Shared</td>
<td>69.50</td>
<td>76.00</td>
<td></td>
</tr>
<tr>
<td>5.50%</td>
<td>50%</td>
<td>£8.8bn</td>
<td>Shared</td>
<td>Shared</td>
<td>Shared</td>
<td>48.50</td>
<td>59.50</td>
<td></td>
</tr>
<tr>
<td>3.75%</td>
<td>75%</td>
<td>£13.1bn</td>
<td>Shared</td>
<td>Shared</td>
<td>Shared</td>
<td>25.00</td>
<td>44.00</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hybrid regulated asset base model</th>
<th>Government return</th>
<th>Private investor return</th>
<th>Cost to consumers during construction</th>
<th>Construction</th>
<th>Operational</th>
<th>Financial</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Engine, procure &amp; construct (EPC or ‘turnkey’)</th>
<th>Government return</th>
<th>Developer return</th>
<th>Cost to government in 2025</th>
<th>Strike price (£/MWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTES
1. The returns shown are post tax nominal. The options presented assume government’s return is 2%, which is a proxy for its long-term borrowing rate. More detailed assumptions for each scenario can be found in Figures 2–5.
2. Strike price is the price for the electricity for the CFD period (2025 to 2060). We kept this period constant to make it as comparable to the actual HPC case as possible. The market price for electricity is assumed to converge with the CFD price in 2060 and continue to grow with inflation thereafter. The range depends on different electricity market forecasts. The low end reflects wholesale price projects in the HPC financial model and the high end BEIS projections as per March 2016. The negative strike price in the ‘HPC deal-type structure – 100% public risk’ is an anomaly and a theoretical price – see Figure 3 for additional explanations.
3. Strike price sensitivity to investors’ return and total consumers’ contributions during construction.

Source: NAO analysis

Figure 2: HPC deal-type structure. Sensitivity of strike price to investor’s return

Figure 3: Public private partnership

per MWh depending on the electricity price forecasts. The negative strike price is an anomaly as a result of a combination of low discount rate and the high future electricity prices expected in the HPC model. It makes the present value of the cash flows post CFD so high that it compensates for the negative strike price during the CFD period. Such strike price is a theoretical price and not commercially viable.

Figure 3 represents the strike price depending on different levels of equity participation by the government. In addition, it differentiates between the government’s current long-term cost of funding (2%) and nominal social time preference rate (6%). The government would be exposed to all types of risks in the project proportional to its share of the overall investment. The strike price would decrease when the government’s share increases, but risks for the taxpayer would increase with the government’s investment. The reduction in strike price is as a result of the lower cost of capital of the government relative to the private sector.

Taking the mid case of 50% government participation as an example, taxpayers would have to assume £8.8bn of investments. At the same time, it would reduce the strike price to a range of £48.50 to £59.50 per MWh assuming the government’s current cost of funding.

Figure 4 (overleaf): Hybrid regulated asset base model.

Strike price sensitivity to investors’ return and total consumers’ contributions during construction.

Providing investors with a return during the construction phase would decrease the strike price by at least £20/MWh.
The chart shows how the strike price would vary according to the investors’ cost of capital and whether government’s cost of capital is assumed to be 2% or 6%.

If we assume an investor return of 15% and a single lump-sum payment at completion (2025) the government would need to pay £36.5 billion to the developer, assuming government’s cost of capital of 2%. In this case, the strike price would need to be between £15 and £47 per MWh during the first 35 years of generation.

**WHY HAVEN’T ALTERNATIVES BEEN CONSIDERED?**

There are good reasons for the Department not taking an alternative financing approach for HPC, beyond adhering to the prevailing energy policy:

- Alternative financing models would expose taxpayers to additional construction and operational risk and require further investment if the project is delayed or costs overrun. There are many high-profile examples in other sectors where taxpayers have been exposed to government projects overspending. In this case the risks of overspending could be high: the HPC reactor technology has been subject to significant problems, causing costs to overrun in other projects. But our analysis shows that, under most scenarios, the construction cost could overrun significantly before the costs to consumers would equate to the current HPC deal. For example, if we assume the government financed the project and required a 2% return, construction costs could overrun by between 400% and 600% to equate to the total cost of the HPC deal.

- Taking a greater stake in the project could have obliged the government to account for HPC as a public asset, bringing it onto the government’s balance sheet. This would require trade-offs against other government spending priorities if the government were to stay within its fiscal constraints. If the project were on the government’s balance sheet and costs overran then further rebalancing would be required to prevent additional costs to taxpayers.

**CONCLUSION**

In summary, alternative ways of the government providing support for HPC could have resulted in lower costs to consumers over the life of the project. The government contributing to the project’s financing could have reduced financing costs because the government’s cost of borrowing is lower than for private investors. The investors’ required rate of return could also have been lower if consumers or taxpayers had shared some of the construction risks. Alternative funding models would have exposed consumers and/or taxpayers to additional risks, like the project running over budget. In addition it may have resulted in the project needing to be on the government’s balance sheet.

Gregor Botlik and colleagues will discuss this paper at a CISI seminar at the National Audit Office in London on 20 September 2017. See cisilab.org/events for details.