Original Article

The value of incentives to defer the UK state pension

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ABSTRACT The UK state pension system is confronted by the pressures of adverse demographics and the possibility of growing retirement income security. This article evaluates one public policy response to these pressures: measures to incentivise deferral of statutory retirement. It appraises the financial benefits of deferral options under assumptions concerning life expectancy, tax rates, real terms pension growth and length of deferral period. The results show an incentive to defer, particularly where the pension enhancement option is selected over the lump sum payment. Overall, the analysis suggests that the measures to encourage the take-up of existing first pillar deferral options would be beneficial.

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INTRODUCTION

Along with other OECD countries, the UK retirement system is faced with several challenges. How the public authority in this national jurisdiction faces up to these challenges will determine its ability to finance retirement-income-protection in the future, as well as

influencing the economic well-being of future generations of retirees.

Le Garrec¹ argues that an actuarially fair pay-as-you-go (PAYG) pension system can both reduce lifetime income inequality and enhance economic growth. However, the challenge of demographic ageing places growing demands on the resources that are available to finance the UK's PAYG pension arrangements, particularly the first pillar social insurance scheme, the Basic State Pension (BSP). The old age dependency ratio, or the number of retirees relative to the

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size of the working age population, is expected to grow substantially, increasing the costs of financing the BSP. Inevitably, these pressures will be reinforced when benefits are indexed to average earnings rather than inflation. At the same time, it is clear that the UK's retirement system as a whole is less able to facilitate retirement income security, which may be defined in terms of the predictability of retirement income futures.² For a variety of reasons, many employers are increasingly unwilling to sponsor defined benefit (DB) pension provision for their workers which, by determining benefits as a fraction of final salary, provided the best protection against poverty during retirement. Increasingly, employers are relying on defined contribution (DC) provision, which transfers the risk of inadequate benefit entitlements to the affiliated individual. These developments in the second pillar are likely to reinforce the risk of poverty in retirement, and highlight the importance of reforming the first pillar as a means of facilitating retirement income security. But a reliance on means-tested income transfers is unsatisfactory for a variety of reasons, not least because they deter retirement saving. The focus of policy reform should be the first pillar social insurance arrangement, the BSP.

The challenge for the public authority, then, is to reduce the costs of financing the BSP while minimising the risk of poverty in retirement. This could be approached through a variety of policy measures, but we are concerned principally with existing provision to incentivise the voluntary deferral of entitlements under the BSP: in return for forgoing the SP (state pension) for a period of time, a person can receive a higher pension at a later age or alternatively, draw a tax efficient lump sum. This addresses the challenges outlined above first by reducing the immediate impact of adverse demographics on PAYG financing, and second by giving workers the opportunity and incentive to remain economically active, and thereby accumulate more entitlements from their first and second pillar pensions before they cease their employment.

This concern with voluntary action is consistent with the liberal premise that the nature

of the good life, including the appropriate balance between work and leisure, is a matter of individual choice, not public action.³ This requires adherence to the principle of 'institutional neutrality', where statutory laws and public institutions are designed so as to facilitate individual sovereignty, not supplant it. Following insights from the field of behavioural finance, it seems reasonable to suggest that people's capacity for rational action is circumscribed by third-party effects, myopia and 'self-control problems'.⁴ If this note of caution is accepted, it means that the public authority should seek to influence individual choice in ways that augment well-being, but without compulsion. The statutory measures at the centre of the analysis that is articulated in this article seek only to encourage people to defer their retirement, which means, *ceteris paribus*, that the balance between work and leisure continues to be a matter of individual choice.^{5,6}

How then are workers likely to respond to the opportunities that are presented by retirement deferral provisions? Our analysis is approached in two ways. First, we contextualise our concerns by presenting an overview of the UK's first pillar social insurance pension and in particular, statutory measures to incentivise the deferral of entitlements under the BSP. This is followed by a discussion of our evaluation of individual choice under these deferral options, including an explanation of the core assumptions and parameters that informed our analysis. Drawing upon a quantitative model of individual decision making when confronted with a range of options, we address two specific questions: first, under what conditions is there a positive financial value associated with the decision to defer; and second, following the period of deferral, under what conditions is each of the alternative rewards preferable? Our analysis suggests that government measures to encourage the take-up of existing first pillar deferral options would be beneficial.

THE UK FIRST PILLAR PENSION

The UK's first pillar pension arrangement, the BSP, was established in its present form in 1948 under the auspices of the National Insurance

Scheme (NIS), which provides for a range of statutory occupational benefits. It is based on the social insurance principle of risk sharing for all participants, provides retirement benefits irrespective of individual means, and is financed in accordance with the contributory principle, which means that entitlements at the point of retirement reflect the contributions of the affiliated individual. Those who have met the necessary contribution conditions receive the full or partial basic flat rate pension, according to their contribution record (and other social security benefits).

The National Insurance Fund⁷ (NIF) acts as the funds for the NIS. Employers and employees pay NICs into the fund. The National Insurance Contributions (NICs) are hypothecated to pay both contributory benefits and the National Health Service. The fund pays out a range of benefits, but state pension payments (and earnings-related additions to it) account for around five-sixths of NIS benefits. The NIF is administered on a PAYG basis, with the current income from contributors paying for current benefit expenditure.⁸ The scheme is in effect an intergenerational PAYG contract. The NIS is an unfunded scheme in that there is no specific reserve.⁹ Contributions are not considered as taxes, as they are not made available for general government expenditure.

The UK Parliament has recently enacted a range of pension reforms transforming pension provision from 2010. Consequently, by 2050, it is estimated that 95 per cent of both male and female pensioners should be on a full BSP.¹⁰ These pension reforms cover a number of areas, including equalising and raising the state pension age (SPA), reducing the number of qualifying years for the BSP and restoring the earning link to the BSP. The Pensions Act, 1995¹¹ raises the SPA for women from 60 to 65 in a phased way between 2010 and 2020 to equalise it with men. The Pension Act, 2007¹² enables the SPA to increase for both men and women from 65 to 68 between 2024 and 2046.¹³

As we have suggested, the UK's retirement system is confronted by at least two salient challenges. The first is adverse demographics,

which make it difficult to resource the first pillar social insurance pension, the BSP. In one sense, the United Kingdom is more fortunate in comparison to other similar nations in that it has a well-established multi-tier pension system where much of the pension burden has been shifted from public to private. In comparison to other OECD nations, the gross replacement rate of the UK state pension is low, at 31 per cent. Therefore, private pension provision is a more important element in ensuring a satisfactory income in retirement.¹⁰ Consequently, the discrepancy between state pension income and expenditure is relatively low presently, but given changes to demographics and life expectancy, this circumstance may not persist into the future.

Revisions to life expectancy are inherently highly uncertain.¹⁴ In the most recent 2008-based principal projection, UK women reaching age 65 in 2050 would have an average future life expectancy of 27.7 years, with a 65-year-old man having 25.2 years of life remaining.¹⁵ Both these figures have been revised up significantly from 25.5 and 23.4 respectively in the year 2006.¹⁶ Such predictions indicate that the proportion of life spent in retirement could still rise further, if retirement ages are not proportionally adjusted.¹⁷ They also illustrate the difficulties in projecting age-specific mortality into the very long term. If rising life expectancy was the sole pressure on the state pension system, then proportionate rises to the retirement age could be instituted without any need for changes to contributions and tax rates or pension expenditure. Raising the pension age in line with life expectancy would provide a level of fairness between generations.¹⁸ The pensioner population as a proportion of the population of working age has risen from 19 per cent in 1950 to 27 per cent as at 2006 and predicted to reach 47 per cent by 2050.¹⁹

Second is the challenge of retirement income security. It would be fair to suggest that UK governments have achieved a degree of success in ameliorating retiree poverty in recent years.²⁰ Much of this reduction can be attributed to improvements in means-tested social assistance,

but this particular approach to retirement income protection is highly unsatisfactory. Means-testing is a stigmatising process, and gives rise to perverse incentives, that is, it diminishes the incentive to save, since benefits are paid regardless of prior contributions. Furthermore, the emphasis on means-testing has meant that governments have failed to address developments and issues elsewhere in the retirement system, which have accentuated the possibility that benefit entitlements for retirees may be insufficient in the future. It is generally acknowledged that employer-sponsored schemes provide the best protection against poverty in retirement, reflecting two of their salient characteristics: income guarantees – a contractual entitlement to a particular benefit if contribution and years-of-service conditions are satisfied; and the earnings-related principle – contributions and earnings are graduated according to earnings from employment.²¹

Taken together, these features give confidence that benefits have been earned, and certainty regarding the retirement income that can be expected once the affiliated individual ceases their employment. The UK's DB pensions, which have been regarded as one of the most robust among the countries of the OECD, have been undermined substantially by two particular developments. The first is where DB schemes have failed to deliver the substance of the affiliated individual's contractual rights, that is, their accumulated benefit entitlements. This applies with particular force to those 'exceptional cases' where the sponsoring employer becomes insolvent, leaving behind a DB scheme that does not have sufficient assets to meet its liabilities. The second is where healthy DB schemes have been frozen, which means their closure to new employees and the cessation of accruals for existing members. Increasingly, UK employers are substituting workplace DC for DB provision, resulting in a diminution of benefit entitlements for workers. DC schemes eliminate the employer's obligation to rectify shortfalls in funding arising from demographic and investment risk, typically require a lower employer contribution, and

involve higher administration charges, which siphon resources away from the affiliated individual's retirement assets. Taken together, these developments suggest that retirement income insecurity is, *ceteris paribus*, likely to become more intense in the future. Inevitably, this puts pressure on the first pillar pension arrangement, where benefit adequacy is likely to become a more salient issue.

The government of the United Kingdom, as elsewhere, has addressed these pressures in several distinctive ways. First, it has improved entitlements under the first pillar social insurance arrangement, the BSP, by indexing benefits to average earnings rather than inflation, thereby augmenting retirement income security. In particular, this approach reduces the probability that those who have saved for their retirement will be forced into dependence on means-tested income transfers when they cease their employment. Second, it has increased social insurance contributions to put the BSP on a more sustainable financial footing. Third, it has increased the SPA in order to reduce claims on the resources that are available to finance benefits-in-payment under the BSP. Van de Coevering *et al*²² have estimated the economic impact of a staged raising of the SPA to age 68 by 2044. By this time, they suggest, there will be an additional 300 000 to 1.6 million people in the labour force, which means fewer people dependent on the BSP. Fourth and most importantly, as far as the focus of this article is concerned, the government has maintained existing provisions for voluntarily deferring statutory retirement, first in order to increase the resources that are available to finance benefits-in-payment under the BSP in the immediate term, and second to give people the opportunity to augment their benefit entitlements by working longer. The evidence suggests that the incidence of employment among people above the SPA has increased steadily since the 1990s,^{23,24} but to what extent should this and any future growth in economic activity be attributed to the existence of statutory voluntary deferral provisions? It is to this issue that we now turn.

INCENTIVISING STATE PENSION DEFERRAL

The opportunity for individuals to defer their state pension was built into the NIS at its inception in 1948 in order to incentivise people to continue to work beyond the SPA. Up to 1975, the incentive was great enough to encourage deferment, but below the full actuarial value of the pension foregone as the increment remained fixed in monetary terms, and did not rise with the level of pension. From 1975 retirement increments were uprated to 7.4 per cent of the weekly rate for each full year deferred. This was associated with a higher take up of the SP deferral option, with The Pensions Commission²⁵ estimating that by the 1990s, some 20 000 individuals in Great Britain²⁶ were deferring their state pension for an average of 2 years.

More recently, The Pensions Act 2004²⁷ heralded a number of changes to the SP deferral rules aimed at encouraging wider uptake of the deferral provisions, particularly among lower earners, and longer deferral periods. Specifically, the Act's provisions involved the lifting of the previous 5-year limit to pension deferral, an uprating of retirement increments to 10.4 per cent for each year with effect from 2010, and, importantly, the choice of either drawing an enhanced state pension for life or a taxable lump sum payment. In order to ensure that no individuals would be brought into tax or move up a tax band as a consequence of claiming the lump sum payment, the payment is taxed at the marginal rate applied to the taxpayer's other income in the year that they claim it. It is also possible to delay drawing it until the following tax year, when the individual's marginal tax rate may be lower. The lump sum comprises of the pension that is foregone during deferment with interest added and compounded weekly. The interest rate is guaranteed to accrue at a rate of not less than 2 per cent above the Bank of England base rate.

Given that there is no bar to earning while drawing an SP, it would be plausible to infer that an individual will choose to defer only if they are likely to live long enough to make receiving the

enhanced amount worthwhile. In addition, SP deferral is often linked to working beyond SPA because of the potential tax advantages.²⁸ When the SP is drawn, it is taxed at the appropriate rate for the individual in the year in which it is received. A tax saving can be achieved, for instance, if an individual's tax rate was higher in employment and subsequently lower in retirement. A deferred pension or lump sum will then attract tax at a lower rate. Historically, the pension deferral option has not been widely publicised.²⁹ Indeed, in more recent times the number of state pensioners receiving the enhanced pension has reduced from 1 211 000 in 2006 to only 1 176 000 in 2009.³⁰ Some of this decline is attributable to the introduction of the lump sum option, with some 40 000 per annum who choose a deferred pension electing to take the lump sum.

Little work has been published on the value of UK SP deferral, both to the individual and/or the state, other than studies by the PPI,²⁹ Disney and Tanner,³¹ and Disney and Smith.³² The PPI calculated the breakeven survival age at which deferring the state pension then drawing the enhanced pension became more attractive than drawing the pension at SPA and investing the money in a deposit account. Their analysis shows that with the pension increase of 10.4 per cent, an individual deferring for 5 years would need to survive for a further 16 years for this deferral incentive to be worthwhile. The probability of achieving this post-deferral survival period would depend on age and gender. The PPI concluded that for a basic rate taxpayer, the benefit from deferral was modest. However, in cases where a lower marginal tax rate applied when drawing the state pension, the breakeven survival age was slightly reduced.

Earlier studies by Disney and Tanner³¹ and Disney and Smith³² examined the effect in the United Kingdom of the abolition of the 'earnings rule'³³ in 1989 and its effect on participation in employment among workers beyond SPA and their deferral of the SP. In their study, Disney and Tanner modelled retirement and SP deferral decisions using a simple two-period model, applying a general

utility function which accounted for income, leisure time and the probability of survivorship. Disney and Tanner concluded that accruing a 7.5 per cent increment for each year of deferral would be actuarially fair for an average woman but not for an average man, given their respective life expectancies at the time when the earnings test was operating.

The uptake of state pension deferral options is dependent not only on the value of the financial incentives. A study carried out by BMRB Social Research on behalf of the DWP³⁴ examined the characteristics, motivations and levels of awareness of persons both approaching and beyond the SPA with respect to pension deferral. Awareness of SP deferral was limited: only two-thirds of those approaching SPA were aware of SP deferral as an option, although this proportion did rise among those beyond the SPA. Interestingly, only 36 per cent of 'accidental' deferrers were aware of this policy. Current deliberate deferrers were largely aware of the two options, but one in three were unaware of the lump sum option. There was no evidence that the option of deferring the SP had any impact on the decision to continue in employment beyond SPA, nor the length of time people might continue working.

The respondents expressed a marginal preference for the increment over the lump sum payment. The increment was preferred by those who regarded it as delivering greater financial security and potentially a superior long-term profit than the lump sum. Additionally, the tax paid on the lump sum was not attractive to those who deferred their SP principally to avoid paying tax on their income while in employment. The deliberate deferrers often were expecting to defer for some time before they claimed one of the pension options, with 29 per cent indicating that it would be at least 5 years beyond the SPA.

THE VALUE OF STATE PENSION DEFERRAL OPTIONS

Ex ante, the deferral decision will make economic sense either if the value of the eventual lump sum payment is greater than the amount that

would have accumulated from claiming and investing the pension payments over the same period, or if the present value of the enhanced pension payment stream is greater than the present value of the payments foregone over the deferral period.

Provided the deferral period is at least 1 year, the lump sum payment will be based on the amount of state pension that would have been received if it had been claimed at the time of entitlement, plus interest which will be at least two percentage points above the Bank of England base rate.³⁵ The normal state pension will also be paid at the non-enhanced rate once this is claimed after the end of deferral.

Assuming for ease of presentation that the pension payment inflow is a continuous stream rather than discrete weekly amounts, the value before tax of a deferred pension payment arising at time t , P_t , will be

$$P_t = P_0 e^{g_d t}$$

where P_0 = the pension payment falling due at the start of the deferral period, before tax; g_d = the real terms rate of growth of deferred pension payments over the deferral period.

Assuming that interest is compounded continually, the value at the end of the deferral period of a deferred pension payment arising at time t will be

$$P_t e^{i_d(n_d - t)},$$

where i_d = the real terms rate of interest applied to the deferred payments; n_d = the number of time periods of deferral; t_l = the marginal tax rate at the time of claiming the lump sum.

It is assumed that i_d and g_d are constant and $i_d \neq g_d$. i_d can be assumed to be represented by the Bank of England base rate plus the relevant premium, as set by government, appropriately deflated to a real terms measure.

Since

$$P_t e^{i_d(n_d - t)} = P_0 e^{i_d n_d} e^{(g_d - i_d)t},$$

the total value of the lump sum before tax is:

$$P_0 e^{i_d n_d} \int_0^{n_d} e^{(g_d - i_d)t} dt$$

$$= P_0 e^{i_d n_d} (e^{(g_d - i_d)n_d} - 1) / (g_d - i_d)$$

Given that tax paid on the lump sum will be at the marginal rate t_l charged on other taxable income in the year the sum is claimed, the value after tax of the lump sum at the end of the deferral period, V_L , is:

$$V_L = P_0 e^{i_d n_d} (e^{(g_d - i_d)n_d} - 1)(1 - t_l) / (g_d - i_d) \quad (1)$$

For comparison purposes, the value V_F at the end of the deferral period of the foregone pension payments can be calculated. It is assumed that these payments, if claimed, could have been invested at the rate i_c in, for example, individual savings accounts (ISAs). Hence, tax on the savings interest is assumed to be zero. Following the same approach used to calculate the lump sum value,

$$V_F = P_0 e^{i_d n_d} (e^{(g_d - i_c)n_d} - 1)(1 - t_d) / (g_d - i_c) \quad (2)$$

where t_d = the personal tax rate during the deferral period.

THE VALUE OF AN ENHANCED PENSION PAYMENT STREAM

The alternative to the lump sum is an enhanced pension. The enhancements to the normal state pension constitute a series of cash flows that start at the point where deferral stops and finish at the point where the claimant dies. The amount of the enhancement is calculated as a percentage of the normal state pension payment for every time period of deferral. Over time the normal pension payment will grow in line with either inflation or average wages, dependent upon government policy. From April 2011 a 'triple lock' system will ensure that SPs will rise by a minimum of 2.5 per cent per annum or in line with earnings or prices, whichever is greater.³⁶ Hence, the value of the enhancement element will grow also

at the same rate. In real terms, growth will either be zero (reflecting a link with the Retail Price Index) or greater than zero, reflecting a restored link with the earnings index, if this index exceeds the inflation rate.

At the end of the deferral period, the value of the 'normal' pension receipt will be $P_0 e^{g_d n_d}$ and hence the value of the enhancement element will be $m_d P_0 e^{g_d n_d}$, where r is the applied rate of enhancement.

For consistency with the earlier analysis of the self-investing strategy, it is assumed that i_c is an appropriate measure of the time value of money. Denoting the growth rate during the period of claiming the enhanced pension as g_c , the present value (at the end of the deferral period) of a future enhanced pension receipt arising at time t is:

$$r n_d P_0 e^{g_d n_d} e^{(g_c - i_c)t}$$

Again using similar logic to the derivation of V_L and V_F , the value V_E of the total enhanced pension stream after tax (assuming i_c and g_c are constant and $i_c \neq g_c$) is:

$$V_E = r n_d P_0 e^{g_d n_d} (e^{(g_c - i_c)n_c} - 1)(1 - t_c) / (g_c - i_c) \quad (3)$$

where n_c = the number of years of survival after the end of the deferral period; t_c = the personal tax rate over the pension claiming period.

The *ex ante* decision to defer taking the state pension will be worthwhile if the present value of either V_E or V_L is greater than the present value of V_F . Following a period of deferral, an enhanced pension will be preferable if $V_E > V_L$ and the lump sum if $V_E < V_L$.

For illustrative purposes we assume the real terms pension growth may be zero, reflecting a link to the Retail Price Index; or a rate of 1 per cent or 2 per cent per annum. This assumption is similar to that used in GAD's latest Quinquennial Review of the NIF.³⁷ The growth rate is assumed to be constant throughout the deferral period and thereafter. Possible deferral periods of 3, 6 and 9 years beginning at the age of 65 years are assumed for both males and females.³⁸ Representative tax rates of zero,

20 per cent or 40 per cent on marginal pension income are assumed to apply during the deferral period, and also apply to the lump sum payment at the end of the deferral period and the enhanced pension stream.^{39,40} Cohort life expectancy projections (principal, high and low variants) for both males and females aged 65 in the year 2010 are taken from Office for National Statistics sources^{15,41} In accordance with current rules on pension enhancement, the enhancement rate is calculated as 1 per cent of the state pension payment for every five weeks of the pension deferral period, that is, 10.4 per cent for each year.

We assume that the equivalence of pension cash receipts between time periods can be represented by the opportunity cost of personal savings, since pension deferral results in delayed consumption. The real terms discount rate, representing the time value of money, is assumed to be 2.5 per cent. It is based on a proxy measure of the real terms rate of return on household savings.^{42–44} We assume a value of 4 per cent per annum in real terms as the rate of interest to be applied in the case of a lump sum payment. This is based on a representative measure of the real terms Bank of England base rate, plus 2 percentage points, in accordance with the current rules for the lump sum interest rate.⁴⁵ These measures are derived from data relating to a 15-year period from January 1996 to December 2010 in order to obtain values that are reasonably characteristic for the United Kingdom.

In the next section we present a range of scenarios to generate insights into the relative financial attractiveness of the decision to defer claiming the state pension, and of the lump sum and enhanced pension stream alternatives that follow a period of deferral. Indifference or ‘breakeven’ points for the alternative strategies will be identified with respect to post-deferral survival period, tax rates and incentive variables.

POINTS OF INDIFFERENCE BETWEEN ALTERNATIVE DEFERRAL STRATEGIES

We examine a range of scenarios from two perspectives: firstly, under what conditions is

there a positive financial value associated with the decision to defer, as opposed to claiming the state pension as entitled; and secondly, following a period of deferral, under what conditions is each of the alternative rewards preferable? As outlined above, deferral will be of value if either V_E or V_L is greater than V_F .

Defer-lump sum

The value of the lump sum that may be claimed at the end of the deferral period can be compared with an alternative strategy of claiming pension payments over the same period and investing them at the assumed deposit rate of 2.5 per cent.

From equations (1) and (2),

$$\frac{V_L}{V_F} = \left[\frac{(1-t_l)}{(1-t_d)} \right] \frac{e^{i_d n_d} (e^{(g_d - i_d) n_d} - 1)(g_d - i_d)}{e^{i_d n_d} (e^{(g_d - i_d) n_d} - 1)(g_d - i_d)} \quad (4)$$

Equation (4) is parameterised to fit the chosen scenarios. Table 1 shows the breakeven lump sum interest rate values above which $V_L/V_F > 1$, that is, the defer-lump sum strategy is preferable to the claiming and self-investing strategy. Breakeven values of less than 4 per cent, the actual lump sum interest rate, indicate that the lump sum (V_L) is preferable. The lump sum is preferable to self-investing in all cases except where the tax rate payable on the lump sum payment is significantly higher than that of the deferral period (as indicated by the shaded cells in the table). This would be quite an unusual

Table 1: Lump sum interest rate values at which $V_L = V_F$

Deferral period tax rate (%)	Tax rate payable on lump sum payment (%)	Breakeven lump sum interest rate by deferral period (%)		
		3 years	6 years	9 years
0	0	2.50	2.50	2.50
	20	16.70	9.52	7.13
	40	33.75	17.96	12.70
20	0	<0	<0	<0
	20	2.50	2.50	2.50
	40	20.63	11.47	8.41
40	0	<0	<0	<0
	20	<0	<0	<0
	40	2.50	2.50	2.50

circumstance, as personal income would typically fall in retirement.

Defer-enhance

The value of claiming an enhanced pension at the end of the deferral period may be compared with the alternative strategy of claiming the pension over the same period, again assuming a deposit rate of 2.5 per cent. From equations (2) and (3),

$$\frac{V_E}{V_F} = \left[\frac{(1-t_c)}{(1-t_d)} \right] \frac{r n_d e^{g_d n_d} (e^{(g_c - i_c) n_c} - 1)(g_d - i_c)}{e^{i_c n_d} (e^{(g_d - i_c) n_d} - 1)(g_c - i_c)} \quad (5)$$

We make the simplifying assumption, both here and throughout our analysis, that g_c will be equal to g_d . Table 2 illustrates the breakeven survival period after the end of the deferral period above which $V_E/V_F > 0$, that is, pension deferral and subsequent enhancement is worthwhile, and the rational decision outcome under a variety of assumptions regarding real terms pension growth, tax rates, deferral period and actual life expectancy.

The left-hand side of the table shows the breakeven post-deferral survival period at which the not-defer (V_F) and defer-enhance (V_E) strategies are of equal value. The right-hand side of the table indicates rational deferral decision outcomes based on a comparison of the breakeven survival period with life expectancy projections. If life expectancy is greater than the breakeven survival period, the defer-enhance strategy has a positive value, as indicated by a 'Y' (yes) in the table. Conversely, cases where deferral will not have a positive payoff are indicated by 'N' (no); the strategy of claiming and investing the pension payments would be preferable to deferral.

The likelihood of a positive payoff from the defer-enhance strategy decreases as the length of the deferral period increases and as the tax rate payable on the eventual enhanced pension stream increases relative to that of the deferral period. A higher real terms pension growth rate and higher life expectancy, both in terms of the GAD projection and being female rather than male, are associated with a higher value of V_E and hence, the likelihood of a positive payoff. There is evidently

an incentive to defer for three years in all scenarios, except in certain cases where the tax rate payable on the enhanced pension is 40 per cent while the deferral period tax rate is 20 per cent or zero. Such cases are likely to be unusual in practice since individuals' income tax rates would be expected to fall in retirement rather than rise. The results for 6 years and 9 years deferment show that as the deferral period increases, there is a lesser likelihood of living long enough to benefit sufficiently from the enhanced pension stream to justify deferral. However, in all scenarios where the tax rate payable on the enhanced pension is equal to or less than the tax rate payable over the deferral period, and the deferral period is 6 years or shorter, it pays to defer.

Post-deferral choice

Assuming a period of pension deferral has been completed, it can be determined whether the enhanced pension stream or the lump sum has the greater financial value. From equations (1) and (3),

$$\frac{V_L}{V_E} = \left[\frac{(1-t_l)}{(1-t_c)} \right] \frac{e^{i_d n_d} (e^{(g_d - i_d) n_d} - 1)(g_c - i_c)}{r n_d e^{g_d n_d} (e^{(g_c - i_c) n_c} - 1)(g_d - i_d)} \quad (6)$$

Tipping points may be identified for certain variables that correspond with indifference between the enhancement and lump sum options, that is, where $V_L/V_E = 1$.

By life expectancy

From (6), an expression for n_c may be determined for which $V_L/V_E = 1$, that is, the number of years of remaining life that correspond with indifference between the enhancement and lump sum options. Denoting this by n_c^* gives:

$$n_c^* = \frac{\ln \left[1 + \frac{(1-t_l) e^{i_d n_d} (e^{(g_d - i_d) n_d} - 1)(g_c - i_c)}{(1-t_c) r n_d e^{g_d n_d} (g_d - i_d)} \right]}{(g_c - i_c)} \quad (7)$$

Table 3 shows the breakeven post-deferral survival periods under a number of different assumptions. The left-hand side displays the breakeven post-deferral survival period at which the defer-lump sum (V_L) defer-enhance (V_E) are of

Table 2: Post-deferral breakeven survival period at which $V_E = V_F$

Real terms pension growth (%)	Deferral period tax rate (%)	Enhanced pension tax rate (%)	Breakeven survival period by length of deferral	Rational deferral decisions by life expectancy projection, gender and anticipated deferral period																																			
				Low variant projection									Principal projection									High variant projection																	
				Male						Female						Male						Female						Male						Female					
				3 years	6 years	9 years	3 years	6 years	9 years	3 years	6 years	9 years	3 years	6 years	9 years	3 years	6 years	9 years	3 years	6 years	9 years	3 years	6 years	9 years	3 years	6 years	9 years												
0	0	0	11.49	12.01	12.57	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N													
		20	14.96	15.67	16.44	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N													
		40	21.52	22.64	23.86	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N												
	20	0	8.91	9.30	9.72	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y													
		20	11.49	12.01	12.57	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N													
		40	16.19	16.97	17.82	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N													
	40	0	6.49	6.77	7.06	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y													
		20	8.29	8.65	9.03	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y													
		40	11.49	12.01	12.57	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y													
1	0	0	10.64	10.91	11.18	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y														
		20	13.59	13.94	14.30	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N													
		40	18.81	19.32	19.84	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N												
	20	0	8.37	8.58	8.79	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y													
		20	10.64	10.91	11.18	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y													
		40	14.60	14.98	15.37	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	Y													
	40	0	6.18	6.33	6.48	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y													
		20	7.82	8.01	8.21	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y													
		40	10.64	10.91	11.18	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y													
2	0	0	9.93	10.01	10.09	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y														
		20	12.49	12.59	12.69	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N													
		40	16.84	16.97	17.10	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N													
	20	0	7.90	7.97	8.03	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y													
		20	9.93	10.01	10.09	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	Y													
		40	13.35	13.46	13.56	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y													
	40	0	5.90	5.94	5.99	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y													
		20	7.40	7.46	7.52	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y													
		40	9.93	10.01	10.09	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y													

Table 3: Post-deferral breakeven survival period at which $V_E = V_L$

Real terms pension growth (%)	Lump sum tax rate (%)	Enhanced pension tax rate (%)	Breakeven post-deferral survival period by length of deferral	Rational enhanced pension choices by life expectancy projection, gender and anticipated deferral period															
				Low variant projection									Principal projection						
				Male			Female						Male			Female			
				3 years	6 years	9 years	3 years	6 years	9 years	3 years	6 years	9 years	3 years	6 years	9 years	3 years	6 years	9 years	3 years
0	0	0	11.80	12.68	13.66	13.66	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		20	15.38	16.60	17.96	17.96	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		40	22.18	24.12	26.33	26.33	N	N	N	N	N	N	N	N	N	N	N	N	N
	20	0	9.14	9.80	10.53	10.53	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		20	11.80	12.68	13.66	13.66	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		40	16.65	17.99	19.50	19.50	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	40	0	6.65	7.12	7.63	7.63	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		20	8.51	9.11	9.79	9.79	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		40	11.80	12.68	13.66	13.66	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1	0	0	10.91	11.47	12.07	12.07	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		20	13.94	14.67	15.46	15.46	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		40	19.32	20.38	21.53	21.53	N	N	N	N	N	N	N	N	N	N	N	N	N
	20	0	8.58	9.01	9.47	9.47	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		20	10.91	11.47	12.07	12.07	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		40	14.98	15.77	16.63	16.63	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	40	0	6.33	6.64	6.98	6.98	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		20	8.01	8.41	8.84	8.84	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		40	10.91	11.47	12.07	12.07	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	0	0	10.16	10.49	10.82	10.82	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		20	12.79	13.20	13.62	13.62	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		40	17.24	17.80	18.38	18.38	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	20	0	8.09	8.34	8.61	8.61	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		20	10.16	10.49	10.82	10.82	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		40	13.67	14.11	14.56	14.56	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	40	0	6.04	6.23	6.42	6.42	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		20	7.57	7.81	8.06	8.06	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
		40	10.16	10.49	10.82	10.82	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

equal value. On the right-hand side of the table, rational decision outcomes based on comparing breakeven survival periods with life expectancy projections are presented. A 'Y' indicates a positive value for the defer-enhance strategy (V_E), where the life expectancy is greater than the calculated breakeven survival period. The longer the deferral period, the lower the likelihood of a positive payoff from adopting the defer-enhance strategy as indicated by the 'N' (no) notations. Also as the tax rate payable on the eventual enhanced pension stream increases, so the likelihood of a positive payoff from enhancement reduces. A higher real terms pension growth rate alongside a higher life expectancy projection (more prevalent in females than males) are associated with higher values of V_E , and an increased likelihood of a positive payoff.

The underlying pattern is similar to that displayed for the not-defer and defer-enhance strategies outlined in Table 2. In comparison, however, in Table 3 the enhanced pension strategy becomes less attractive at lower enhanced pension tax rate and shorter deferral periods.

The incentive to draw the enhanced pension is evident for 3 years in all scenarios, again with exceptions where the tax rate payable on the enhanced pension is 40 per cent, while the lump sum tax rate is 20 per cent or zero. This would be an untypical circumstance for most individuals. Again, the results for 6- and 9-year deferral indicate that as this period increases, the likelihood of surviving long enough to benefit from the enhanced pension reduces. In the scenarios where the tax rate payable on the enhanced pension is equal to or less than the tax rate payable on the lump sum, it still largely pays to draw the enhanced pension.

By tax rate on enhanced stream

From equation (6), the breakeven tax rate payable on the enhanced pension payment stream is the value that equates the enhanced and lump sum options. Denoting this breakeven tax rate by t_c^* gives:

$$t_c^* = 1 - \frac{(1-t_l)e^{i_d n_d}(e^{(g_d-i_d)n_d}-1)(g_c-i_c)}{r n_d e^{g_d n_d}(e^{(g_c-i_c)n_c}-1)(g_d-i_d)} \quad (8)$$

Table 4 presents the breakeven tax rates payable on an enhanced pension payment stream at which the values of V_E and V_L are equal. The lump sum is preferable in cases where the expected tax rate over the post-deferral period is greater than the breakeven rate. Within the table, the breakeven tax rate is categorised in three bands: <20 per cent (darker shaded cells), $\geq 20 < 40$ (lighter shade cells) and ≥ 40 (unshaded cells).

It is evident that the breakeven tax rate on the enhanced pension stream (t_c^*) is higher in all instances for females in comparison to males, since higher life expectancy projections are reflected in higher expected cumulative pension drawings and greater expected values for V_E . It increases for both genders as the real terms pension growth rate rises, due to increases in the cumulative amount of enhanced pension payments up to the end of an individual's life. The value of t_c^* also increases with the lump sum tax rate, reflecting a corresponding increase in the relative value of the enhanced payment stream.

Where the deferral period is 3 years, t_c^* is greater than 20 per cent in all scenarios, and also exceeds 40 per cent in the overwhelming number of cases. Hence, there is a strong incentive overall to choose enhancement rather than the lump sum. With a 6-year deferral period, t_c^* is less than 20 per cent in a few cases relating to males whose lump sum tax rate is zero; it is still greater than 40 per cent in the majority of cases, especially for females.

Where there is a 9-year deferral period, a more mixed picture emerges for the incentive preference. For males, in all instances where real terms pension growth is zero, t_c^* is less than 40 per cent and actually becomes negative in some cases where the lump sum tax rate is zero. In such instances, the lump sum payment is clearly preferable. For females t_c^* is greater than 20 per cent in all instances where the lump sum tax rate is greater than zero; an individual with a tax rate of 20 per cent in retirement would still choose enhancement, unless the lump sum tax rate were zero.

Table 4: Tax rate payable on enhanced pension stream – breakeven rate at which $V_E = V_L$

Life expectancy variant	Real terms pension growth (%)	Tax rate payable on lump sum payment (%)	Breakeven tax rate payable on enhanced pension stream by gender and deferral period (%)					
			Male			Female		
			3 years	6 years	9 years	3 years	6 years	9 years
Low	0	0	27.26	9.61	<0	35.09	21.53	2.02
		20	41.81	27.69	5.94	48.07	37.22	21.62
		40	56.36	45.77	29.46	61.05	52.92	41.21
	1	0	33.97	18.14	<0	41.77	29.79	12.58
		20	47.18	34.52	15.04	53.42	43.83	30.07
		40	60.38	50.89	36.28	65.06	57.88	47.55
	2	0	40.21	25.97	4.11	47.93	37.32	22.08
		20	52.16	40.78	23.29	58.35	49.85	37.67
		40	64.12	55.58	42.47	68.76	62.39	53.25
	0	0	30.43	14.52	<0	37.24	24.69	6.96
		20	44.35	31.62	12.56	49.79	39.76	25.57
		40	58.26	48.71	34.42	62.35	54.82	44.18
Principal	1	0	37.13	22.94	1.72	43.92	32.89	17.33
		20	49.70	38.35	21.38	55.14	46.31	33.86
		40	62.28	53.76	41.03	66.35	59.73	50.40
	2	0	43.33	30.64	11.69	50.06	40.33	26.63
		20	54.67	44.51	29.35	60.05	52.27	41.30
		40	66.00	58.38	47.01	70.04	64.20	55.98
	0	0	33.54	19.23	<0	39.21	27.55	11.33
		20	46.83	35.38	18.68	51.37	42.04	29.06
		40	60.12	51.54	39.01	63.53	56.53	46.80
	1	0	40.23	27.54	9.07	45.89	35.69	21.53
		20	52.18	42.03	27.25	56.71	48.55	37.22
		40	64.14	56.52	45.44	67.53	61.41	52.92
High	2	0	46.40	35.12	18.72	52.02	43.07	30.65
		20	57.12	48.09	34.97	61.62	54.45	44.52
		40	67.84	61.07	51.23	71.21	65.84	58.39

Overall, given that the great majority of income tax payers, including state pension claimants have a marginal income tax rate of 20 per cent or below,⁴⁰ there is a strong incentive to choose the enhanced pension rather than the lump sum.

By enhancement rate

The analysis in the previous sections has demonstrated that there is a clear incentive in the majority of scenarios for individuals to defer claiming the state pension; and, having deferred, to choose the enhanced pension payment stream. It is therefore of interest to examine what the breakeven enhancement rate to be set by government would be.

From (6), the breakeven enhancement rate (denoted r^*) would be:

$$r^* = \frac{(1-t_l) e^{i_d n_d} (e^{(g_d - i_d) n_d} - 1)(g_c - i_c)}{(1-t_c) n_d e^{g_d n_d} (e^{(g_c - i_c) n_c} - 1)(g_d - i_d)} \quad (9)$$

Table 5 shows the breakeven enhancement rates at which the lump sum and enhanced pension stream are of equal value.

The shaded cells in the table represent cases where the breakeven enhancement rate is greater than the current 10.4 per cent per year of deferral as set by government. The breakeven enhancement rate increases as the deferral period and enhanced pension tax rate increase, and as

Table 5: Enhancement rate breakeven point at which $V_E = V_L$

Real terms pension growth (%)	Lump sum tax rate (%)	Enhanced pension tax rate (%)	Breakeven enhancement rate by life expectancy, gender and deferral period (%)											
			Low variant projection						Principal projection					
			Male			Female			Male			Female		
			3 years	6 years	9 years	3 years	6 years	9 years	3 years	6 years	9 years	3 years	6 years	9 years
0	0	0	7.56	9.40	12.23	6.75	8.16	10.19	7.23	8.89	11.37	6.53	7.83	9.68
		20	9.46	11.75	15.28	8.44	10.20	12.74	9.04	11.11	14.21	8.16	9.79	12.10
		40	12.61	15.67	20.38	11.25	13.60	16.98	12.06	14.82	18.95	10.88	13.05	16.13
	20	0	6.05	7.52	9.78	5.40	6.53	8.15	5.79	7.11	9.09	5.22	6.27	7.74
		20	7.56	9.40	12.23	6.75	8.16	10.19	7.23	8.89	11.37	6.53	7.83	9.68
		40	10.09	12.53	16.30	9.00	10.88	13.59	9.65	11.85	15.16	8.70	10.44	12.90
	40	0	4.54	5.64	7.34	4.05	4.90	6.11	4.34	5.33	6.82	3.92	4.70	5.81
		20	5.67	7.05	9.17	5.06	6.12	7.64	5.43	6.67	8.53	4.90	5.87	7.26
		40	7.56	9.40	12.23	6.75	8.16	10.19	7.23	8.89	11.37	6.53	7.83	9.68
1	0	0	6.87	8.51	11.04	6.06	7.30	9.09	6.54	8.01	10.22	5.83	6.98	8.60
		20	8.58	10.64	13.81	7.57	9.13	11.36	8.17	10.02	12.78	7.29	8.72	10.75
		40	11.45	14.19	18.41	10.09	12.17	15.15	10.90	13.36	17.03	9.72	11.63	14.33
	20	0	5.49	6.81	8.84	4.84	5.84	7.27	5.23	6.41	8.18	4.67	5.58	6.88
		20	6.87	8.51	11.04	6.06	7.30	9.09	6.54	8.01	10.22	5.83	6.98	8.60
		40	9.16	11.35	14.73	8.07	9.74	12.12	8.72	10.69	13.63	7.78	9.31	11.46
	40	0	4.12	5.11	6.63	3.63	4.38	5.45	3.92	4.81	6.13	3.50	4.19	5.16
		20	5.15	6.38	8.28	4.54	5.48	6.82	4.90	6.01	7.67	4.37	5.23	6.45
		40	6.87	8.51	11.04	6.06	7.30	9.09	6.54	8.01	10.22	5.83	6.98	8.60
2	0	0	6.22	7.70	9.97	5.41	6.52	8.10	5.89	7.21	9.18	5.19	6.21	7.63
		20	7.77	9.62	12.47	6.77	8.15	10.13	7.37	9.02	11.48	6.49	7.76	9.54
		40	10.36	12.83	16.62	9.02	10.87	13.51	9.82	12.02	15.31	8.66	10.34	12.72
	20	0	4.97	6.16	7.98	4.33	5.22	6.48	4.71	5.77	7.35	4.15	4.96	6.10
		20	6.22	7.70	9.97	5.41	6.52	8.10	5.89	7.21	9.18	5.19	6.21	7.63
		40	8.29	10.26	13.30	7.22	8.69	10.80	7.86	9.62	12.25	6.92	8.27	10.17
	40	0	3.73	4.62	5.98	3.25	3.91	4.86	3.54	4.33	5.51	3.12	3.72	4.58
		20	4.66	5.77	7.48	4.06	4.89	6.08	4.42	5.41	6.89	3.89	4.65	5.72
		40	6.22	7.70	9.97	5.41	6.52	8.10	5.89	7.21	9.18	5.19	6.21	7.63

lump sum tax rate and real terms pension growth decrease. It also increases as post-deferral life expectancy decreases, and in the case of males as compared to females as a function of differing life expectancy.

It can be seen from Table 5 that in many of the scenarios the breakeven enhancement rate is less than 10.4 per cent, and by a significant margin. Where the enhanced pension tax rate is equal to or less than the lump sum tax rate, the breakeven enhancement rate is less than the current 10.4 per cent for all deferral periods, for both females and for deferral periods of 3 or 6 years for males. The scenarios are likely to form the majority of cases: taxable income over the eventual pension claiming period is unlikely to be taxed at a higher rate than a lump sum at the end of the deferral period, and a deferral period of 9 years would be expected to be relatively unusual. In addition, any real terms growth in pension payments will increase the value of the enhanced payment stream and push the breakeven enhancement rate down still further.

CONCLUSION

The incentives for deferring the state pension beyond retirement age has been a part of the UK pension system for many decades. Fundamentally, statutory measures to encourage people to defer their retirement can be justified on the grounds that they make the balance between work and leisure a matter of individual choice, even though they seek to steer individual action in particular directions. The principle of sovereignty is of vital importance to the design of economic institutions because it enables individuals to determine their own conception of the good life, rather than requiring them to comply with externally imposed preferences. This is consistent with the deontological premise that all individuals should be regarded as ends in their own right, and not merely means to the ends of others.³ Yet any emphasis on the importance of sovereignty would be highly questionable if the policy measures at its centre were not able to augment economic and social well-being. Public policy must respect individual sovereignty, but it should also have the capacity to enhance individual welfare.

Reflecting the importance of this consequentialist constraint on public policy design, this article has explored the value of the UK's state pension deferral options through a modelling exercise. They were appraised in comparison to the alternative of drawing the state pension immediately at the SPA. Having deferred, the options of receiving an enhanced pension or lump-sum payment were evaluated under a range of conditions. Our evaluation has suggested that existing statutory deferral provisions do augment the economic well-being of retirees, as well as putting its first pillar social insurance arrangement on a more sustainable financial footing in the immediate term.

In particular, our analysis shows clear financial benefits associated with deferral, particularly in relation to the decision to receive an enhanced pension stream following the deferral period. The combined effects of the increase in the deferred pension enhancement rate to 10.4 per cent, growing life expectancy projections, and the real terms pension increase arising from the restored earnings link create a strong financial incentive to defer. Indeed, an enhancement rate significantly lower than 10.4 per cent would still provide an attractive incentive to undertake the defer-enhance strategy under most conditions. In the case of the lump sum payment option, this decision is still more attractive than immediately drawing and self-investing the state pension on retirement, largely for tax reasons.

If the defer-enhance strategy were more widely adopted, at the aggregate level there would be a reduction in the number of state pension claimants in the short term, with an inevitable corresponding increase in the total pension liabilities over the longer term. This aside, in relation to the wider economy, higher levels of state pension deferral would increase workforce participation beyond SPA. For a variety of reasons, then, statutory measures to encourage the take-up of existing deferral options in the first pillar pension arrangement should be regarded as beneficial.

Empirical evidence³⁴ has indicated that awareness of BSP deferral options is limited; indeed, many who do defer drawing the BSP do

so accidentally. If there is relatively low uptake of BSP deferral options, the explanation would seem to lie not with the generosity of the incentives, but elsewhere. Further investigation into the characteristics of deferrers versus non-deferrers and the responsiveness of uptake to changes in BSP policy and its promotion would provide useful insights for future policy.

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rate introduced in April 2010. Consequently, we ignore the 50 per cent additional rate applicable to taxable income above £150 000 as it applies to an insignificant number of taxpayers.

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- 42 Specifically, we take the 'Monthly interest rate of UK monetary financial institutions (excluding Central Bank) sterling fixed rate bond deposits from households (in percent) not seasonally adjusted' (Bank of England⁴³) from the start of the series in January 1996 through to December 2010. This is then deflated by the corresponding change in the Retail Price Index (excluding mortgage interest) (ONS⁴⁴). The median result of 2.34 per cent is approximated to 2.5 per cent in our analysis.
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