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Results Write Up: Modelling of pension policy options, analysis based upon the Wealth and Assets Survey dataset and PPI individual modelling

Analysis is kindly sponsored by the PLSA

PENSIONS AND LIFETIME SAVINGS ASSOCIATION

About this paper

This write-up provides details of analysis undertaken for the **Pensions and Lifetime Savings Association (PLSA).** It includes:

- Background to the analysis
- Modelling approach taken
- Observations and commentary upon the results
- Conclusions

Full results of the modelling are available in a separate Appendix.

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The PPI is grateful for the input from Nicky Day and Simon Sarkar, of the PLSA, in the production of this paper. Editing decisions remains with the author, who takes responsibility for any remaining errors or omissions.

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Section 1: Background to the analysis

Introduction

A previous Pensions Policy Institute (PPI) report[1], commissioned by B&CE, providers of The People's Pension and titled **Projection of future pensioner household income, analysis based upon the Wealth and Assets Survey dataset,** explored what different generations of people who are currently working might earn in retirement. It examined their income through the lens of retirement income standards, allowing the findings to be framed in terms of adequacy, and reveal the implications for the quality of life of many people approaching retirement.

Retirement income standards are central both to the previous paper and this paper. The standards used in these papers are the Pensions and Lifetime Savings Association's (PLSA) minimum, moderate and comfortable standards, which are fixed income levels based on the cost of a "basket of goods", and the Pensions Commission's replacement rates, which are based on an individual's pre-retirement income.

The research found that many people working now were not on track to these targets for retirement adequacy, with the most apparent differences being between generations. Baby Boomers benefitted most from Defined Benefit (DB) pension savings; Millennials benefit most from the new automatic enrolment system; and Generation X, who may not have as much retirement income from either DB or Defined Contribution (DC), were on track to miss retirement living standards more than either other generation. However, even for millennials, who stand to benefit most from recent and future policy changes, the outlook is far from perfect: many are still going to miss the minimum retirement income needed to have an acceptable standard of living in retirement. Furthermore, out of those who will hit this target, many more will not have an income that goes significantly beyond this.

The current Technical Report considers a follow-up question to this work; namely how could policy changes implemented now affect future retirement standards? With a range of possible policies to implement, it is important to understand what the effects of each of these policies will be, both in terms of which sections of the population will benefit, and how much of an improvement they will see.

Research Question:

The intention of the analysis is to provide quantitative evidence to support research into the question:

What are the effects of various proposed policies on people's living standards in retirement?

[1] Pike, T et al. Pensions Policy Institute (2022)

Policy options

Four policies, identified by the PLSA, were modelled as potential options for improving retirement income adequacy.

1. Contribution Rates

Currently, automatically enrolled pension savers who do not make any changes to the default arrangement contribute 5% of their salary to their pension, with their employer contributing 3%, to make a total of 8% salary contributions. One way to increase an individual's pension savings would be to increase the total salary contribution, through some combination of employee and employer contributions.

2. Qualifying Earnings

The calculation on qualifying earnings is currently only made on salary lying within certain bands, above a minimum level and below a maximum level. In the 2022/23 tax year, the lower limit is £6,240 and the upper limit is £50,270. A second way to increase the amount that earners contribute to their pension would be to remove these limits.

3. State Pension Level

The State Pension provides a guaranteed income in retirement to anyone who has paid enough in National Insurance contributions (NICs) to qualify for it. Increasing the level of State Pension to be in line with retirement standards would have a high chance of ensuring those standards are met for most people.

4. Minimum age of contribution

Currently, employees are automatically enrolled into pension schemes when they reach 22 years of age. Lowering this age threshold to 18, as recommended by the Automatic Enrolment Review conducted in 2017[2], would allow people to contribute earlier and therefore increase their pension pot.

Income targets

As in the previous Technical Report[1], the PLSA Retirement Living Standards and the Pension Commission Replacement Rates were the benchmarks used in this project to assess pension adequacy under various simulated policy conditions.

There are two traditional approaches to benchmarking retirement incomes which stem from these different perspectives:

1. Fixed income targets

Fixed income targets have their origins in the State underpin and avoidance of deprivation but have developed into 'basket of goods' approaches (the cost of a basket of goods and services required to meet a certain level of need or lifestyle standard). This method is used by the Joseph Rowntree Foundation (JRF) in their Minimum Income Standard (MIS) and by the PLSA to produce their 'Minimum', 'Moderate' and 'Comfortable' standards. These 'basket of

[2] DWP 2017

goods' approaches produce living standard targets in terms of the fixed incomes required to achieve these levels, regardless of working-life income levels.

These targets are adjusted to allow for household circumstances, including housing costs and household composition, which significantly impact per person expenditure within a household.

2. Proportional income targets

Proportional income targets focus on assessing subjective individual comfort. This approach has its origins in the view of the engaged employer and is embedded in the design of final salary pension arrangements. The Pensions Commission used this approach to make its adequacy assessments, which produced targets in the form of 'replacement rates' (i.e., the proportion by which retirement income replaces other income immediately before retirement). A target replacement rate is one which allows people to replicate working-life living standards in retirement.

These replacement rates depend upon income prior to retirement: it is generally assumed that those with the lowest incomes prior to retirement will need to maintain this income level into retirement, while those with higher incomes may not need to maintain these levels, as their expenditure will undergo a relative decrease due to circumstances associated with retirement. These include:

- paying off a mortgage, resulting in a significant reduction in living costs;
- reduction in potentially substantial travel costs associated with stopping work; and
- reduced discretionary spending as expenditure reduces with older ages.

Section 2: Modelling approach

Introduction

Two separate pieces of modelling work were conducted: one using projections based on the Wealth and Assets Survey (WAS) [3], as in the previous PPI paper[1]; and another using the PPI's Individual Model.

Common Assumptions

Both analyses used many of the same assumptions about retirement behaviour and saving behaviour. As such, the common assumptions are listed here, with any exceptions to these given in the individual sections below.

Retirement behaviour

People are modelled to claim the new State Pension (nSP) and other applicable benefits. After retirement, there is assumed to be no earned income.

Income derived from capital sources, such as Defined Contribution (DC) pension savings, formal financial assets or housing equity, is taken at an initial amount of 3.5% of the starting capital. This allows for the amount to be increased with inflation throughout retirement to protect against the impact of price inflation. The chance of the capital having been exhausted prior to death using this approach is approximately 5%[4], and, as such, can be regarded a sustainable rate of income drawdown of capital.

Saving behaviour and pension accrual

Individuals were assumed to contribute a fixed percentage of their salary towards a DC pension fund, according to the contribution rate being modelled in the given scenario, throughout their working life.

DC assets are projected to achieve investment returns of 1½% above increases in Average Weekly Earnings (AWE).

WAS Modelling

Data

The model projects to retirement the microdata pertaining to working-age individuals collected in the Wealth and Assets Survey (WAS)[3]. The number of households sampled in round 7 was approximately 17,500 (reduced due to the move to financial year reporting). This includes data for nearly 39,000 individuals aged 25 to 64, weighted to be representative of the population of Great Britain.

The PPI have projected the retirement income accrual of each relevant individual to State Pension age (SPa), considering the following individual circumstances.

[3] ONS (2022)
[4] Wilkinson, L. et al. Pensions Policy Institute (2018)

- Savings to date
- Current saving situation
- Housing tenure
- Projected employment trajectory, including earnings levels
- Future savings accrual.

The working-age trajectory includes:

- Earnings at a consistent level within age-dependent earnings distribution. Individuals are assumed to earn income at a consistent level relative to the distribution of income by ages as a proportion of median earnings. This allows for promotional increases in salary and any propensity to reduce working hours.
- Future working allows for periods out of work, based upon a future number of expected years in the labour force by age, derived from analysis of the Labour Force Survey.[5]

Assumptions specific to WAS modelling

Saving behaviour and pension accrual of WAS population

Pension saving

DC pension schemes

Employees who are currently making contributions to a DC workplace pension scheme are assumed to continue making contributions while in employment, with a contribution rate of at least the legislated minimum under automatic enrolment. This follows the working-age trajectory of income and future working as described above. Workers who are not members of workplace pension schemes, primarily the self-employed and those who have opted out, are not assumed to make contributions to a workplace pension.

Defined Benefit (DB) pension schemes

Employees who are members of DB pension schemes are assumed to continue to accrue benefits to retirement in a scheme equivalent to their current membership, subject to their working-age trajectory. This is especially worth noting as the policies only affect DC savings, and so including DB income in the modelling can appear to reduce the effects of the policies compared to individual modelling that assumes no DB savings.

Housing assets and housing benefit

For homeowners currently paying mortgages: Mortgages are assumed to be paid off by retirement, future generations are assumed to have attained the same extent of home ownership as current generations by retirement (allowing for later transitions for transitioning from renting to ownership).

Where households rent in retirement: Households may be eligible for Housing Benefit. This means-tested benefit effectively reduces the need to support housing costs from other income sources.

[5] Mitchell and Guled (no date). NISRA and ONS (2022)

Formal financial assets

Formal financial assets are expected to achieve investment returns consistent with DC pension savings.

Retirement Behaviour of WAS population

Prior to SPa, pension savings are untouched as households are assumed to be able to finance until SPa without needing to access pension savings.

Assessment of income level of WAS population

Retirement income is calculated at three levels for each household:

- **'Standard income'** is defined as the income from the State Pension, DB entitlement and DC savings, but after taking a tax-free lump sum from pension savings at retirement, which is not included in this level.
- **'Additional capital'** includes all items in standard income, as well as income generated from pension lump sums and financial assets.
- **'Housing capital'** includes all items in additional capital, as well as income generated through releasing equity from housing wealth.

Assessment of retirement outcomes

Each projected individual will be measured against income levels. This will include both fixed income approaches and proportional income targets.

Pensions and Lifetime Savings Association (PLSA) retirement living standards

The retirement living standards produced by the PLSA are based on the Minimum Income Standards (MIS) research supported by the Joseph Rowntree Foundation (JRF) and carried out by the Centre for Research in Social Policy (CRSP) at Loughborough University. It determines an annual target income under three different retirement living standards (Minimum, Moderate and Comfortable) for those living in London and outside London, and for single person and couple households [Table 2.1].

Table 2.1: PLSA retirement living standards net household income levels[6]:

PLSA retirement living standards	Single households		Couple households	
	Outside London	London	Outside London	London
Minimum	£10,900	£13,200	£16,700	£21,100
Moderate	£20,800	£24,500	£30,600	£36,200
Comfortable	£33,600	£36,700	£49,700	£51,500

[6] PLSA (2019)

Figures have been uprated using earnings inflation.

Pensions Commission Target Replacement Rates (TRRs)

This measure considers whether an individual can achieve a standard of living comparable to the standard of living the individual had before retirement. This approach was used by the Pensions Commission in 2005. It defines a proportion of working-age income that is necessary in retirement to maintain living standards after retirement [Table 2.2].

Table 2.2: Pension Commission TRRs[7]:

Pre-retirement gross earnings (2004)	Pre-retirement gross earnings (2021)	Replacement rate threshold
Up to £9,500	Up to £15,000	80%
£9,500 to £17,500	£15,000 to £27,500	70%
£17,500 to £25,000	£27,500 to £39,300	67%
£25,000 to £40,000	£39,300 to £62,800	60%
£40,000 or more	£62,800 or more	50%

These income levels are applicable to individual incomes. To apply these to multiple occupancy households, the household income is first equivalised and then comparison to the threshold is made.

Pre-retirement gross earning thresholds have been uprated using earnings inflation.

Each of the adequacy measures were applied to individuals in the WAS round 7 dataset, giving a proportion of the population meeting each target level.

Modelling Policy Options

Contribution rates

The contribution rates modelled initially were 8%, 10%, 12%, 15%, 16% and 20%. These could be made up of different combinations of employer and employee combinations, with the final 8%, 12% and 16% modelled in depth being made up of 5% + 3%, 6% + 6%, and 12% + 6% from the employee and employer respectively.

Earnings limits

The limits were modelled as either being kept and uprated in line with earnings or removed altogether. If being modelled as being kept, they started with their 2022 values of £6,240 and £50,270.

State Pension

[7] Pensions Commission (2005)

The State Pension was modelled as being set at either the current level or the PLSA minimum retirement living standards level (see Table 2.1), and uprated in line with the triple lock. The triple lock uprates the State Pension by the higher of earnings, the rise in the Consumer Prices Index (CPI), or 2.5%. There are currently no stated plans to end the triple lock policy. The Government has committed to retaining it until at least the end of the current parliament in 2024.

Individual Modelling

Data

The PPI's Individual Model is based on the Office for Budget Responsibility (OBR) figures for the Economic and Fiscal Outlook (EFO). These figures provide a projection of economic determinants such as inflation. With these assumptions about the future of the economy, it is possible to project and model other policies and conditions that would affect a DC saver in the future, and therefore estimate their retirement income.

Assumptions Specific to Individual Modelling

Characteristics of individuals under Individual Modelling assumptions

All individuals modelled for this report were assumed to be 18 in 2022. The individuals may start work and finish working at various ages. The median salary for each gender and age was derived from the Labour Force Survey (LFS)[8], and all individuals modelled were assumed to be earning, throughout their life, one of:

- Median earnings
- Half of these median earnings
- Double these median earnings.

Individuals could have complex working patterns throughout their life, for example by taking breaks or working part time. But, while they were working, their salary was adjusted so that they would either be earning the median, half the median, or twice the median salary for their age, gender and employment status.

Saving behaviour and pension accrual under Individual Modelling assumptions

DB pension schemes

Individuals were modelled as having no DB pension entitlements. This is out of scope of the individual modelling.

Housing assets and housing benefit

Individuals were modelled as not receiving housing benefit, and retirement income was given without any housing costs deducted.

Formal financial assets

Individuals were modelled as having no formal financial assets.

[8] Labour Force Survey, 2021

Retirement behaviour under Individual Modelling assumptions

People are projected to retire at various ages, access pension savings and claim the nSP and other applicable benefits. Individuals may retire before SPa, in which case they will start accessing their DC pension savings at that point. After retirement, there is assumed to be no earned income.

The individuals are modelled as not choosing to take a tax-free lump sum at retirement, but to keep this money in their pension fund to draw down from.

Section 3: Observations and commentary upon the results

Wealth & Assets Survey (WAS) Modelling

The WAS modelling was conducted to gain a population-wide estimate of the effects of the proposed policy changes, and to check for any differences among specific populations. By examining the effects of the proposed policy changes on a large number of individuals, who were weighted in the WAS according to how representative they were of the whole population, it was possible to estimate what effects the policies might have on the entire population.

Below is shown the effect of varying only the contribution rates, on the population that make some contribution to a Defined Contribution (DC) pension. The three graphs represent the scenarios when individuals make use of the standard, additional and housing income described earlier; and the lines indicate the percentage of this population that misses the associated target at the given contribution level. In this case, the modelling assumptions are that the lower limit for qualifying earnings bands is removed, and that contribution rates are raised accordingly; otherwise, the current situation in terms of policy was maintained.

Chart 3.1: Percentage of population with DC savings who miss targets under different minimum contribution levels, when using "standard" sources of retirement income

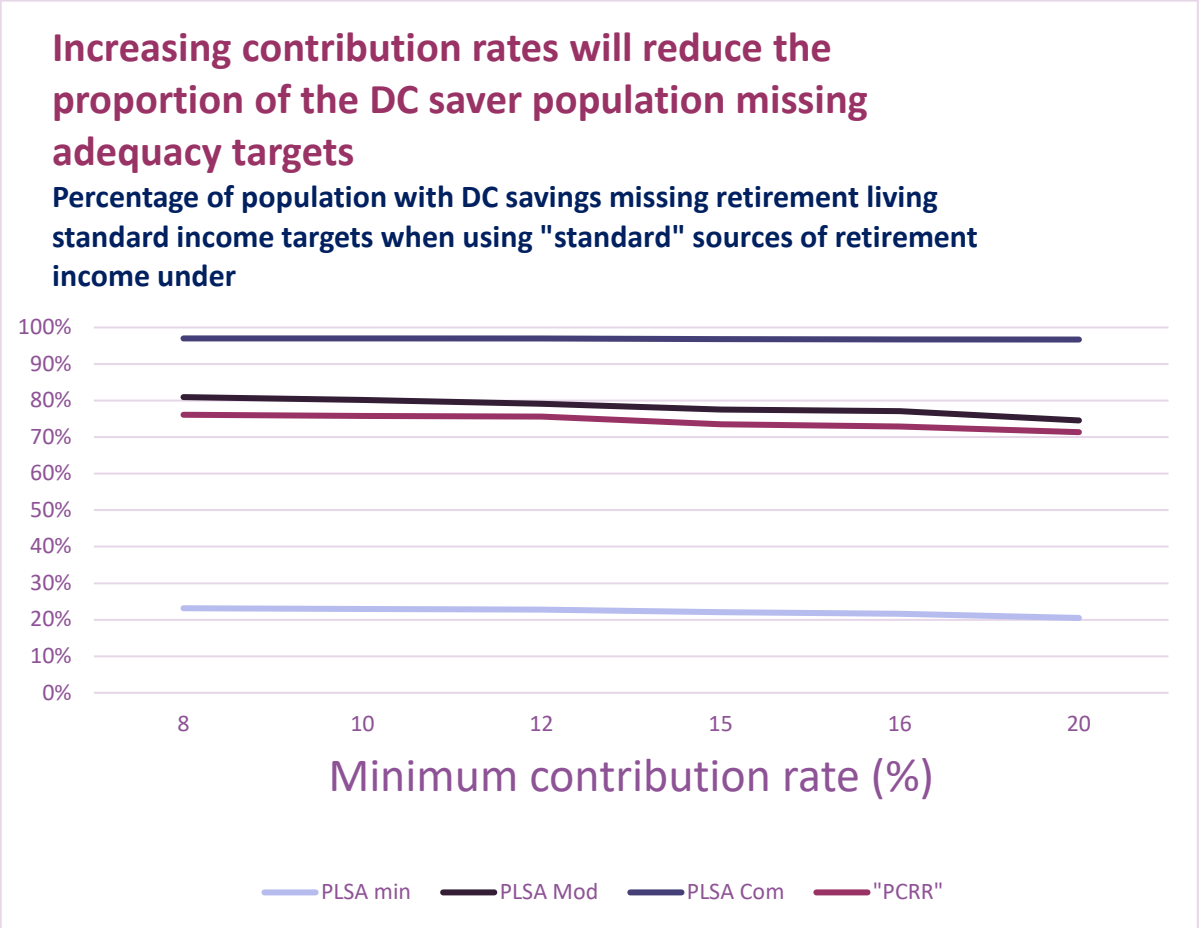


Chart 3.2: Percentage of population with DC savings who miss targets under different minimum contribution levels, when using "additional" sources of retirement income

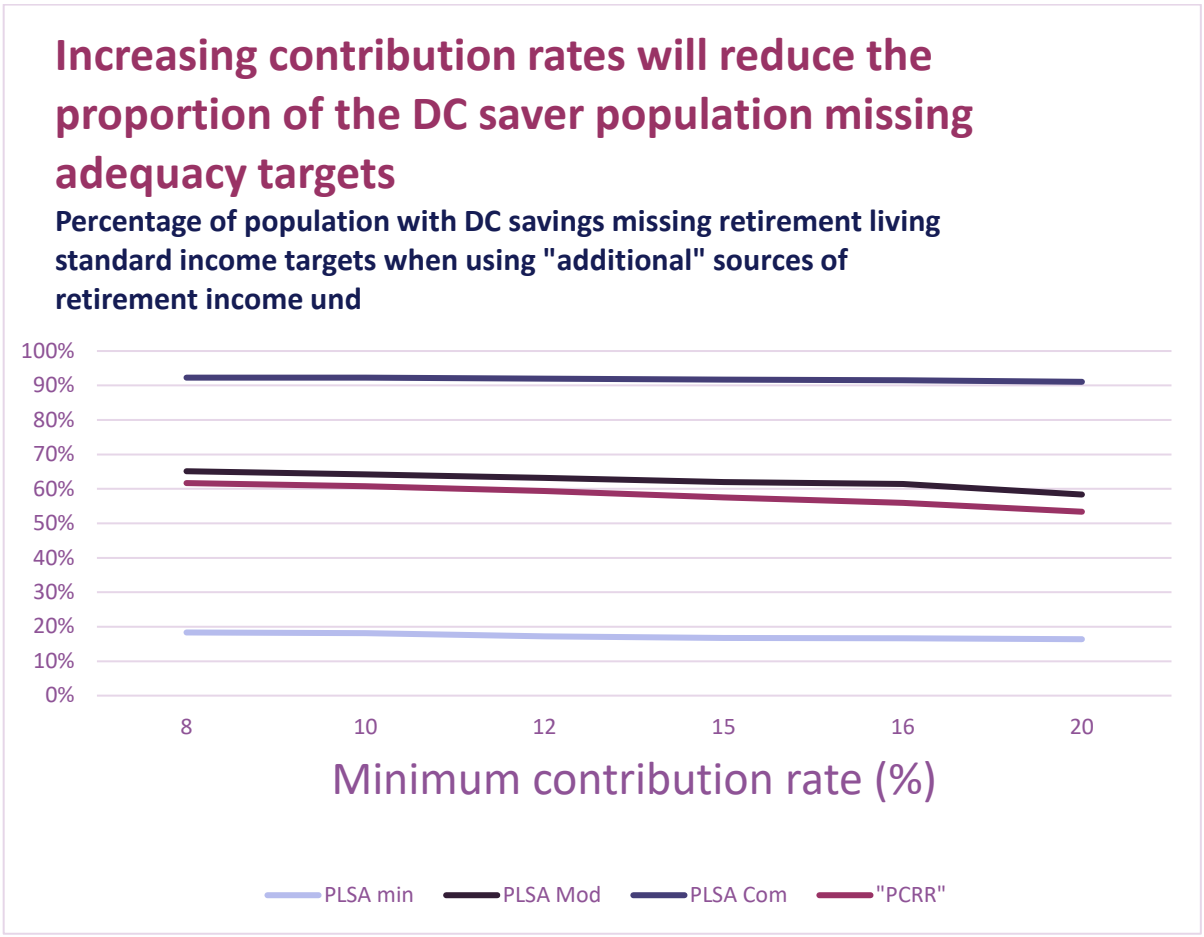
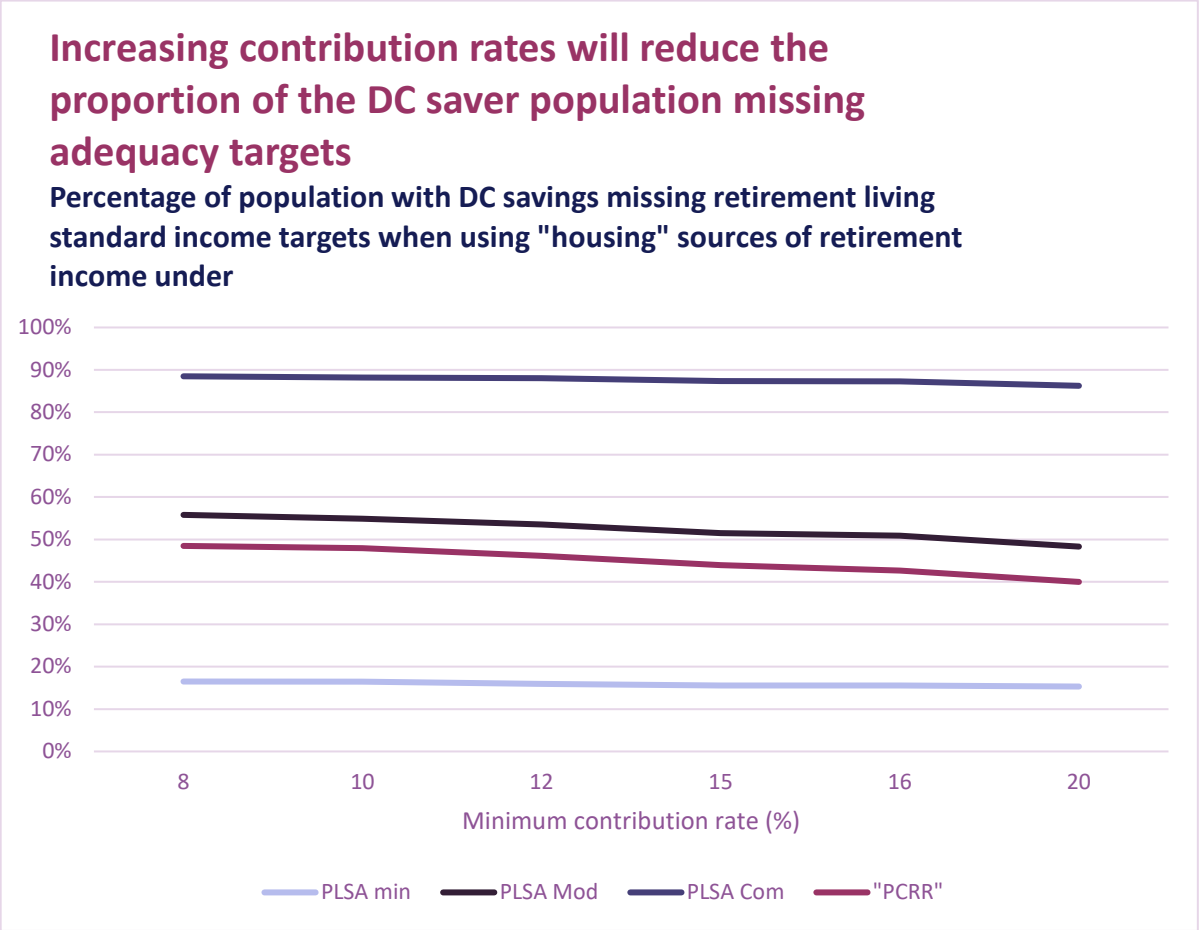


Chart 3.3: Percentage of population with DC savings who miss targets under different minimum contribution levels, when using "housing" sources of retirement income



Individual Modelling

A wide range of individuals were modelled using the Individual Model. The full set of results is available in the Appendix, but this section shows some of the key findings from implementing the following policy recommendations:

- Increasing contribution rates to 16%
- Increasing the state pension to the level of the Pensions and Lifetime Savings Association's (PLSA) minimum income standard
- Lowering the age threshold of automatic enrolment to 18
- Removing qualifying earnings bands

Table 3.1: Weekly retirement earnings of median earners, before and after implementation of proposed policy changes by the PLSA

Age	Man, current situation	Man, all policies implemented	Woman, current situation	Woman, all policies implemented
68	£314	£468	£301	£440
70	£310	£457	£298	£431
75	£303	£430	£292	£409
80	£296	£406	£288	£388
85	£290	£385	£283	£370
90	£286	£366	£280	£355
95	£283	£351	£278	£342
Retirement average	£295	£401	£287	£384

Table 3.2: Weekly retirement earnings of people who earn half of what median earners earn, before and after implementation of proposed policy changes by the PLSA

Age	Man, current situation	Man, all policies implemented	Woman, current situation	Woman, all policies implemented
68	£265	£363	£258	£349
70	£265	£358	£258	£345
75	£264	£348	£259	£337
80	£264	£338	£260	£329
85	£265	£330	£261	£322
90	£266	£323	£263	£317
95	£267	£318	£265	£314
Retirement average	£265	£336	£261	£328

Table 3.3: Weekly retirement earnings of people who earn twice of what median earners earn, before and after implementation of proposed policy changes by the PLSA

Age	Man, current situation	Man, all policies implemented	Woman, current situation	Woman, all policies implemented
68	£358	£678	£358	£622
70	£352	£654	£352	£602
75	£338	£596	£338	£552
80	£325	£543	£325	£507
85	£314	£495	£314	£466
90	£304	£453	£304	£430
95	£297	£417	£297	£400
Retirement average	£322	£531	£322	£497

Section 4: Conclusions

The previous PPI Wealth & Assets Survey (WAS) Analysis showed the effects of the shift towards Defined Contribution (DC) saving on the current working population. It showed the effects on different demographics, particularly different generations. However, one instrumental part of this research was the Pensions and Lifetime Savings Association's (PLSA) retirement living standards, which helped to show the shortcomings of the current system, even among those who benefit most from it. It showed that many would have an unacceptable standard of living in retirement, and of those that did, few would have much more income than what was needed to hit these targets.

The PLSA's multiple retirement living standards help to define precisely what quality of life in retirement looks like; they detail specific costs such as housing, food and energy bills. The Pension Commission Target Replacement Rates (TRRs) informed the automatic enrolment scheme and the associated minimum contribution rates, in an attempt to create a system that will ensure that more people are able to maintain their pre-retirement standard of living in retirement. The PLSA retirement living standards, on the other hand, show that, for many, maintaining their standard of living may only provide a basic standard of living. This may avert a critical level of poverty and inadequacy, but it also leaves a lot of room for improvement, and having multiple, fixed levels helps to quantify what these next targets are.

The research conducted here helps to show that, through achievable policy changes, significant numbers of people can have their living standards improved. This is particularly the case for those who can be brought up from the minimum living standard to the moderate living standard. Modelling of different combinations of these policies, given in the Appendix, also shows that none of these policies alone are doing the heavy lifting, but rather that a combination of these policies together is needed to bring about the improvements seen.

Appendix

Additional results

Full results of all the modelling are available in the separate Appendix here.

Projection Assumptions

Key assumptions

Except where explicitly stated in the report, the key assumptions used in the report are detailed below.

The pensions system

The pension system is modelled as currently legislated. The triple lock is assumed to be maintained. In the Wealth & Assets Survey (WAS) modelling, it was assumed that policies would be implemented in 2027, as a best guess for when they might realistically be implemented. However, in the individual modelling, it is assumed that policy changes are implemented from 2022. While this would be too soon to implement in practice, this aims to provide figures for an illustrative argument, and reduce liability of incorrectly predicting the date of implementation.

Other economic assumptions

Other economic assumptions are taken from the Office for Budget Responsibility's (OBR) Economic and Fiscal Outlook (EFO)[9] (for short-term assumptions) and Fiscal Sustainability Report[10] (for long-term assumptions). Investment returns are assumed to be 1.5% above the rate of increase in average earnings.

Limitations of analysis

Care should be taken when interpreting the modelling results used in this report. In particular, individuals are not considered to change their behaviour in response to their pension provision or personal circumstances. For example, an individual will not increase their contributions to pension saving as they approach retirement or have higher incomes.

Key results

The key output from the model is the built-up pension wealth and entitlement over the course of the individual's work history and the post-retirement income that results from this.

The post-retirement income is presented as projected cashflows from retirement over the future lifespan of the individual. These are annual cashflows which include the following key items:

State Pension

- Reflects entitlement and the projected benefit level of State Pension components.

Private pension

- Derived from the decumulation of the pension pot, allowing for tax-free cash lump sum and the chosen decumulation style (e.g., annuity or drawdown).

[9] OBR (2021)
[10] OBR (2020)

Other State benefits

- Other benefits contributing to post-retirement income, such as pension credit.

Tax

- Tax payable on the post-retirement income, to understand the net income available to the individual.

These cashflows are calculated as nominal amounts and restated in current earnings terms.

Outcomes are expressed in current earnings terms for two reasons; it improves the comprehension of the results and reduces the liability of either overly optimistic or cautious economic assumptions.

Application of output

The models are best used to compare outcomes between different individuals, policy options, or other scenarios. The results are best used in conjunction with an appropriate counterfactual to illustrate the variables under test.

Key data sources

The specification of a model run is based upon three areas:

1. The individual

The individual to be modelled is specified based upon an earnings and career profile. Saving behaviour for private pension accumulation is considered, as well as the behaviour at retirement.

These are generally parameterised according to the project in question, designed to create vignettes to highlight representative individuals of the groups under investigation.

2. The policy options

The policy option maps the pension framework in which the individual exists. It can accommodate the current system and alternatives derived through parameterisation. This allows flexing of the current system to consider potential policy options, in order to assess their impact upon individuals under investigation.

This area has the scope to consider the buildup of pensions in their framework, such as the automatic enrolment regulations for private pensions and the qualification for entitlement to State benefits.

The framework in retirement allows for the tax treatment and decumulation options taken by the individual, as well as other sources of State benefits which influence the post-retirement outcomes for individuals.

3. Economic assumptions

The deterministic assumptions used in this analysis are taken from the OBR's EFO to ensure consistency. They cover both historical data and future projected values.

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