PENSIONS POLICY INSTITUTE

PPI

Results Write Up: The member impact of accelerated Defined Benefit pension scheme closures

Analysis sponsored by the Trades Union Congress (TUC)

About this paper

This write up details analysis undertaken for the TUC. It includes:

- Introduction to the analysis
- Analysis of the Wealth and Assets Survey
- Individual projections
- Conclusions

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

Tim Pike, PPI Head of Modelling and Chetan Jethwa, PPI Policy Modeller, carried out the modelling and produced this write up in December 2020.

The Pensions Policy Institute is grateful for the input from Jack Jones (TUC) in the production of this paper. Editing decisions remains with the author who takes responsibility for any remaining errors or omissions.

Section 1: Introduction

The PPI projected in the report *Approaching the endgame: The future of Defined Benefit pension schemes in the UK*[2] (prior to the current circumstances of the COVID-19 pandemic) that the number of Defined Benefit (DB) pension schemes open to new members or new accrual could fall from over 3,000 in 2018 to fewer than 850 by 2030.

The COVID-19 pandemic has seen a significant impact upon the labour market and the employment of individuals. It has also anecdotally seen alterations to workplace pension arrangements including the nature of pension provision by employers. The economic circumstances have placed pressure upon the desirability of providing DB occupational pension schemes in the private sector; the result of the interaction of two particular factors:

- The strength of the sponsor's covenant. Many employees are facing financial pressures and challenging trading circumstances as a result of the COVID-19 pandemic.
- The balance of the pension scheme's assets and liabilities. The stock market has been impacted and the value of growth assets has generally fallen while the value of liabilities remains high due to current gilt yields.

There has been anecdotal evidence that private sector employers may have been closing the DB pension schemes and replacing them with a Defined Contribution (DC) pension scheme to reduce the liability to the employer. The impact of employers becoming insolvent is not considered in this paper as there is not generally any alternative to a scheme entering the Pension Protection Fund.

This paper sets out to improve evidence for policymakers concerning:

- The number and nature of individuals at risk from DB scheme closure.
  - This is undertaken with analysis of the most recent pension wealth data in the Wealth and Assets Survey dataset.[1]
- The impact that accelerating scheme closure may have upon retirement income for members.
  - This is undertaken through illustrative vignettes of individuals using the PPI's Individual Model.

Key findings

- Certainty of income in retirement is attained through the State Pension and Defined Benefit pension scheme membership.
- The variation in outcomes as a result of an individual bearing investment risk in a Defined Contribution pension scheme leads to a far wider spread of outcomes.
- A Defined Contribution pension scheme can produce higher income in retirement, however this is associated with an increase in downside risk, meaning that poorer outcomes are more likely in a Defined Contribution scheme than a Defined Benefit scheme.
  - Reducing contribution rates in a DC scheme can greatly reduce the chance of attaining higher living standards in retirement.

Section 2: Analysis of Wealth and Assets Survey

Background

The Wealth and Assets Survey (WAS) is a longitudinal survey which commenced in July 2006. The most recent data, referred to as "Round 6" relates to interviews over the period April 2016 to March 2018. Cross-sectional data from this most recent round of data has been used in this paper. The dataset includes data about the financial situation of households including employment information and pension provision[3] and the survey is weighted to be representative of Great Britain.

The analysis identifies the population who make up active members of private sector DB pension schemes and considers the distribution of their pension savings and employment situation.

The results have been broken down to consider particular age ranges (20-29, 30-39 and 50-59) to reflect younger workers, established workers and older workers.

Results and commentary

The populations analysed reflect private sector active DB pension scheme members, where there are estimated to be around 1.1million active members across all ages and schemes.[4]

Duration of membership in current private sector DB schemes

Table 1: The average (mean) number of years of DB accrual for employees who are active members of a DB pension scheme.

Socio economic class	Aged 20-29		Aged 30-39		Aged 50-59	
	Men	Women	Men	Women	Men	Women
Large employers & higher managerial occupations	2.0	-	12.0	-	23.8	-
Higher professional occupations	1.0	1.0	8.8	11.0	27.4	27.0
Lower managerial & professional occupations	-	9.0	5.4	7.2	32.9	22.0
Intermediate occupations	2.0	-	16.1	-	23.9	26.0
Small employers & own account workers	-	-	-	-	-	-
Lower supervisory & technical occupations	-	-	13.7	-	34.7	5.0
Semi-routine occupations	8.0	2.0	-	11.0	37.8	-
Routine occupations	-	-	19.0	-	11.9	-

- Results are suppressed where the sample size is too small for a meaningful result.
- The results for younger employees are limited by the higher proportion of new members.

For higher socio-economic classes, the number of years of DB pension scheme accrual increases with ages. This is also the case for women where a larger number have maintained pension scheme membership throughout a working life. Women are less likely to maintain

DB pension scheme membership than men, which is more evident in lower and (semi) routine occupations reflecting career histories which more often include time out of employment as a result of being primary carers in family structures.

Annual earnings of active members in current DB schemes

Table 2: The median annual gross earnings of employees who are active members of a DB pension scheme.

Socio economic class	Aged 20-29		Aged 30-39		Aged 50-59	
	Men	Women	Men	Women	Men	Women
Large employers & higher managerial occupations	£35,000	£30,000	£57,600	£36,000	£55,000	£35,900
Higher professional occupations	£26,000	£24,900	£40,000	£30,000	£45,600	£28,200
Lower managerial & professional occupations	£23,000	£22,800	£31,200	£23,400	£30,000	£21,600
Intermediate occupations	£18,000	£16,200	£23,500	£13,000	£26,000	£12,000
Small employers & own account workers	-	-	-	-	-	-
Lower supervisory & technical occupations	£19,800	£13,100	£24,000	£13,800	£26,000	£12,000
Semi-routine occupations	£14,800	£10,500	£17,200	£7,800	£16,400	£7,200
Routine occupations	£15,600	£8,000	£18,200	£4,000	£16,800	£4,300

- Results are suppressed where the sample size is too small for a meaningful result.

While this pattern is typical across the wider population the impact of part-time working is more apparent for women in routine and semi-routine occupations. This will depress their pensionable pay and be reflected in low lifetime earnings. For those who do experience low lifetime earnings, their income in retirement will be more dependent upon State Pension provision as the opportunity to supplement this with a greater degree of private pension saving is more limited.

Mean DC savings of active members in current DB schemes

Table 3: The mean value of DC pension wealth of employees who are active members of a DB pension scheme.

Socio economic class	Aged 20-29		Aged 30-39		Aged 50-59	
	Men	Women	Men	Women	Men	Women
Large employers & higher managerial occupations	£2,900	£8,500	£33,200	£8,500	£164,700	£83,300
Higher professional occupations	£4,200	£1,700	£21,800	£13,300	£125,500	£57,400

Lower managerial & professional occupations	£5,000	£2,000	£13,300	£6,400	£80,100	£34,100
Intermediate occupations	£1,500	£1,400	£7,600	£5,800	£31,700	£20,600
Small employers & own account workers	-	-	-	-	-	-
Lower supervisory & technical occupations	£1,400	£100	£6,600	£1,500	£32,900	£15,800
Semi-routine occupations	£500	£900	£4,000	£1,800	£18,400	£7,900
Routine occupations	£600	£1,500	£3,300	£2,100	£16,400	£6,000

- Results are suppressed where the sample size is too small for a meaningful result.

The DC pension scheme wealth of these individuals is generally determined by membership of occupational DC pension schemes during periods where they are not members of a DB scheme. Many individuals may not be dependent upon the income generated from DC pension savings owing to their DB pension entitlement.

DC pension wealth is assumed to generate a safe drawdown income of 3.5% of the pension wealth per year (rising in line with CPI inflation), which is comparable to current equivalent annuity rates. A DC pension wealth of £100,000 may be used to generate an income of around 30% of the State Pension amount after a lump sum is taken.

Section 3: Individual projections

Background

To understand the repercussions of a scheme closure to the current members of a private sector DB pension scheme illustrative vignettes have been modelled. The projection is performed using the PPI's Individual Model (see appendix for further details) using stochastic projections which allow for the uncertainty of future economic circumstances.

Results

For each individual the key consideration is their income in retirement. Their total gross income is broken down into:

- Private pension income
  - Derived from workplace DB & DC savings
- State Pension income
  - All individuals retire under the new State Pension
- Other income
  - Includes benefit income, such as pension credit where applicable

This is considered in the first year they draw a State Pension, regardless of when they "retire" and leave employment. The income amount is presented in current (2020) earnings terms to allow comparison to the PLSA's retirement income standards.

Workplace pension provision

To analyse the impact of the premature closing of DB pension schemes three scenarios have been projected for each individual. The first is a baseline scenario and reflects the DB pension scheme remaining open to the individual throughout their working life, the alternative scenarios reflect premature closing of the DB occupational scheme and replacement with a DC pension scheme. The replacement DC pension scheme is modelled at three different contributions rates:

- A contribution rate of 25% of an employee's gross income (split between employer and employee) which is comparable to average contribution rates observed for DB schemes.[4] The DC scheme does not represent an employer cutting their contributions to their employees.
- A contribution rate of 15% of an employee's gross income (split between employer and employee) which is in line with the TUC's higher minimum contributions.[5]
- A contribution rate of 8% of an employee's qualifying earnings (split between employer and employee) which is in line with the minimum contributions under automatic enrolment.[6]

The three workplace pension scenarios are:

- The existing DB pension provision remains open until retirement.
- The existing DB pension scheme closes after five years (in 2025) and is replaced by a DC pension scheme.
- The existing DB pension scheme closes immediately and is replaced by a DC pension scheme.

The individuals

Six individuals have been modelled and these are summarised in Table 4, below. The lifecourses associated with these illustrations are informed by research undertaken as part of the WHeRL project which modelled life histories[7] to ensure that they are representative. They are selected to represent men and women who are:

- Generally in routine and semi-routine occupations with lower earnings
- Following typical career trajectories
- At different stages of their working life
  - Near the beginning of their working life
  - Established in their career
  - Nearing retirement

Table 4: The individuals modelled

This reflects the situation of the individuals in 2020 before they are projected to retirement.

Individual Number	Sex and current age	Career trajectory	Earning level (relative to age and sex)	Current pension entitlement
1	Man aged 28	Works throughout until retirement at SPa	30th percentile	Active member of a DB scheme for 8 years
2	Woman aged 25	Works part-time until retirement at SPa	30th percentile	Active member of a DB scheme for 2 years
3	Man aged 35	Works throughout until retirement at SPa	50th percentile (median)	Active member of a DB scheme for 10 years £6,600 of other DC saving
4	Woman aged 35	Takes 16 years away from employment before working part-time until retirement at SPa	30th percentile	A new active member of a DB scheme £1,500 of other DC saving
5	Man aged 55	Retires early at age 60	50th percentile (median)	Active member of a DB scheme for 24 years £32,000 of other DC saving
6	Woman aged 55	Has taken 5 years away from employment before working part-time until retirement at SPa	50th percentile (median)	Active member of a DB scheme for 25 years £21,000 of other DC saving

Results and Commentary

General observations

PLSA income standards

Incomes are benchmarked against PLSA income standards. These have been developed to represent the income level necessary to facilitate varying standards of living.[8] The standards are broken down to detail income levels for a single individual or a couple and geographically for living in London. The figures referenced in this paper reflect the income level (before housing costs) for a single individual living outside of London. The income levels are described as:

- Minimum: Covers all your needs, with some left over for fun
- Moderate: More financial security and flexibility
- Comfortable: More financial freedom and some luxuries

The State Pension

The State Pension is assumed to increase in line with the Triple Lock which results in the value increasing in earnings terms over time. The income from this source is constant across the private pension scenarios.

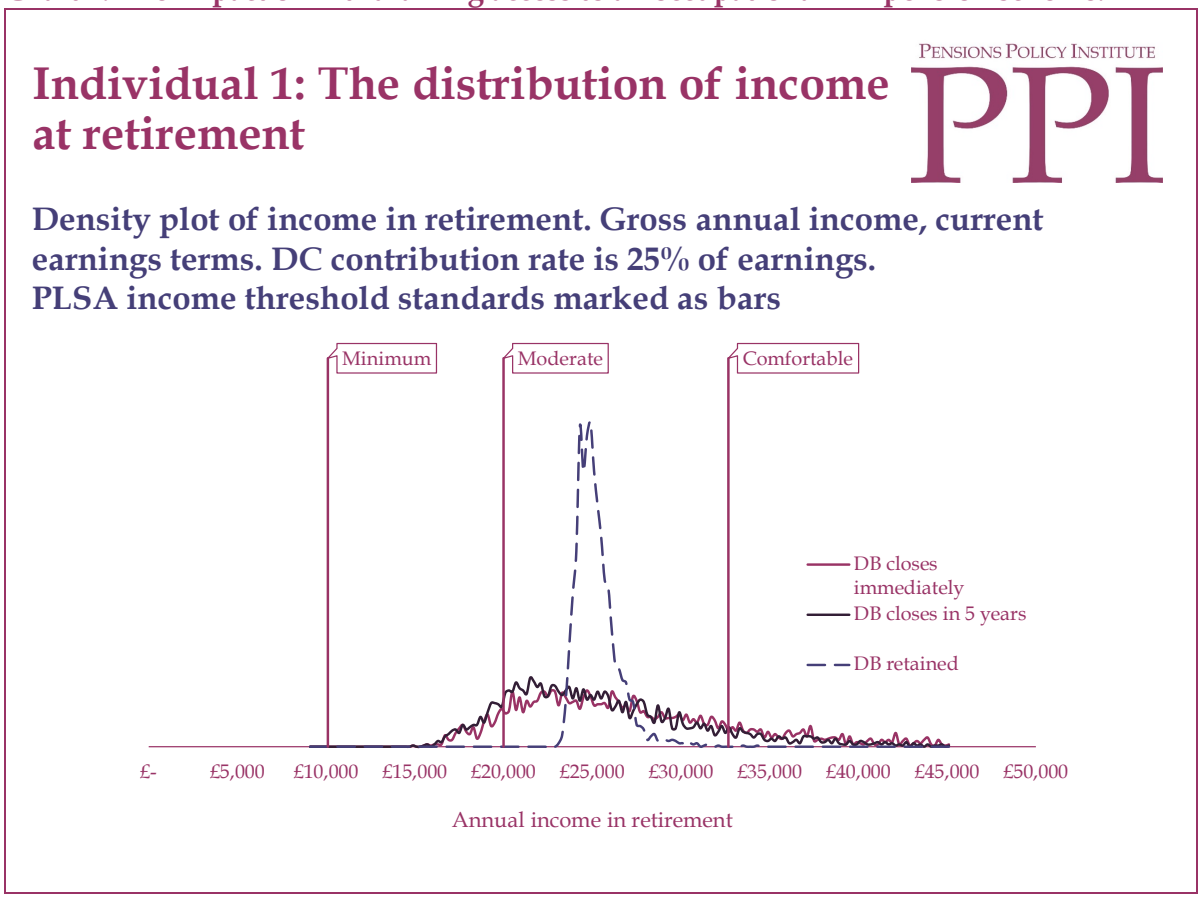
Uncertainty of DC pension provision

DC pensions give far more varied outcomes as they are subject to uncertain investment return. This lack of security provides a far wider spread of results when an individual is more dependent on DC savings rather than DB entitlement or State Pension income.

Individual 1

This is a young man currently aged 28, who works at a low income (30th percentile of earnings by age and gender) who will work through to their retirement at State Pension age.

Chart 1: The impact of withdrawing access to an occupational DB pension scheme:

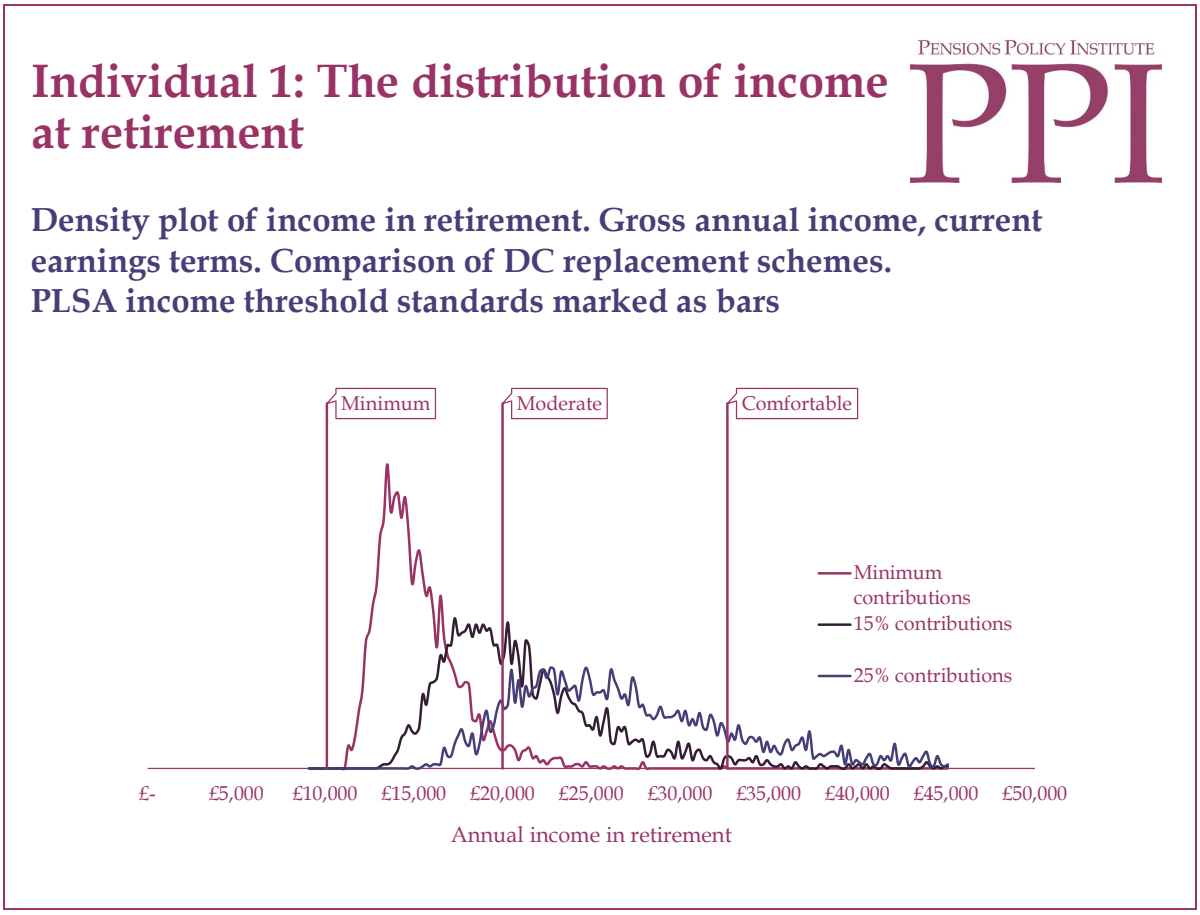


The DB scheme offers a more predictable income, resulting in the range of outcomes being narrower [Chart 1, DB retained series has the narrowest, highest peak]. A DC replacement (with comparable contributions to a DB scheme) is more likely to result in both the highest and lowest outcomes (an income above £30,000 or below £24,0000) [Chart 1, DB closes series are higher in these income ranges] reflecting the upside and downside of the investment risk being borne by the member. As a result, a DC pension scheme (at this contribution level) represents both a greater chance of attaining the PLSA comfortable retirement living standard and a greater chance of not attaining the moderate retirement living standard.

Leaving the DB scheme 5 years later may produce marginally lower retirement incomes than leaving the scheme immediately due the nature of the two different schemes as modelled:

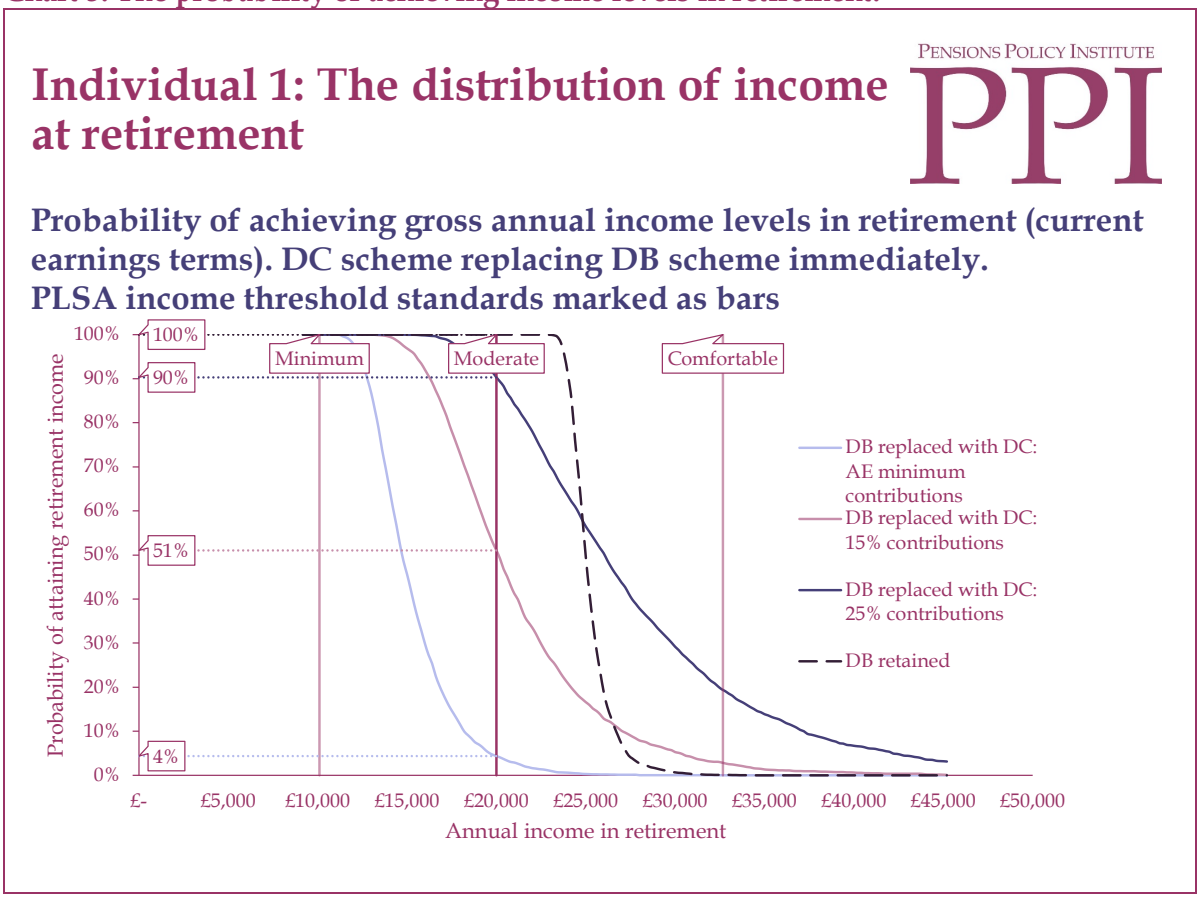
- The investment strategy in the DC scheme would typically be more growth seeking and over a long enough time frame should produce a higher yield than a typical DB investment strategy.
- The DC contribution rate of 25% is above the DB contribution needed at this age, so the contribution to the replacement DC scheme is higher than the contribution would be to the DB scheme over this limited timeframe (this does not hold for older individuals).

Chart 2: Lower contribution rates in the replacement Defined Contribution scheme result in lower retirement incomes:



Where the DB scheme closes immediately, the income in retirement from the DC scheme is linked to the contribution rate. Contribution rates more typically associated with DC pension schemes yield significantly lower retirement incomes than the 25% contributions typically associated with DB pension schemes. Where the contribution level is lower, a higher proportion of income in retirement will come from the State Pension. The State Pension provides a relatively certain income (in earnings terms) with the variation largely stemming from the investment performance of the DC scheme. The result is that higher contributions produce higher incomes, however the range of outcomes is wider [Chart 2, higher contribution rates produce lower peaks at higher income levels].

Chart 3: The probability of achieving income levels in retirement:



The probability of achieving the PLSA's moderate retirement living standard decreases with contribution levels in a replacement DC scheme. It is attained in 90% of cases when contributions are 25% of earnings but in only 4% of cases when contributions are made at the automatic enrolment minimum (8% of qualifying earnings) [Chart 3, intersection of pension curves with moderate income standards]. The DB scheme results in the moderate living standard being attained in all simulations. It can be more probable to achieve the comfortable retirement living standard from a DC replacement scheme even where contribution levels are 15% of earnings. However, there is considerably more downside risk and it is only in the most fortunate of cases that the comfortable retirement living standard is attained.

Individual 2

This is a young woman currently aged 25, who works at a low income (30th percentile of earnings by age and gender) and who will work part-time through to their retirement at State Pension age.

Chart 4: The impact of withdrawing access to an occupational DB pension scheme:

Individual 2: The distribution of income at retirement

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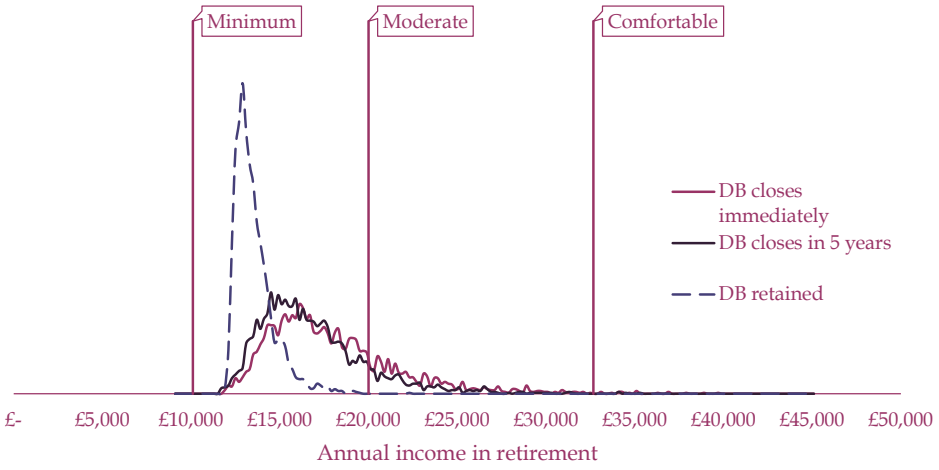
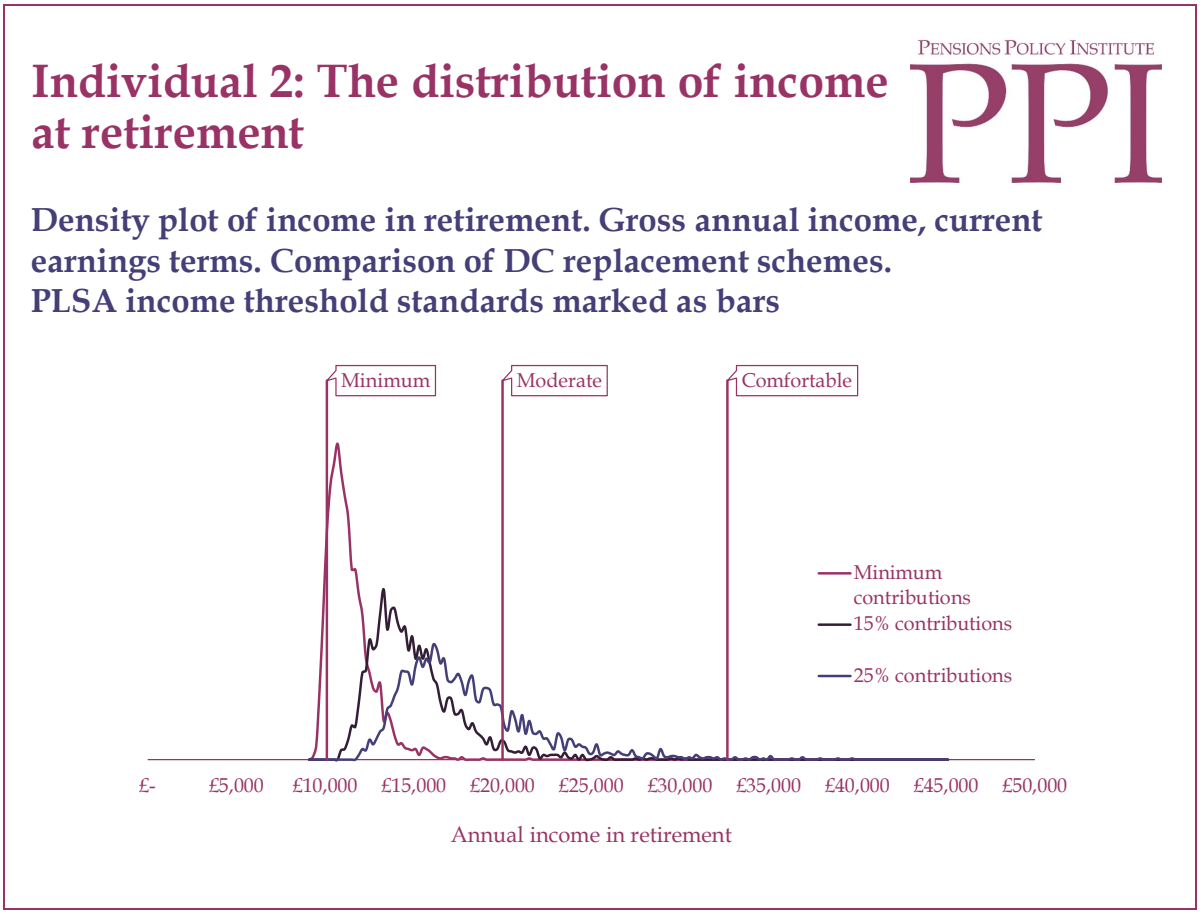
Density plot of income in retirement. Gross annual income, current earnings terms. DC contribution rate is 25% of earnings. PLSA income threshold standards marked as bars



With low lifetime earnings (from working part-time at a low level of earnings) her income in retirement is primarily dependent upon the State Pension. The limited amount of private pension entitlement or saving under either a DB or DC arrangement leads to relatively smaller differences in retirement [Chart 4]. The chance of attaining the PLSA's moderate income threshold is limited to upside outcomes from DC investment.

Chart 5: Lower contribution rates in the replacement Defined Contribution scheme result in lower retirement incomes:

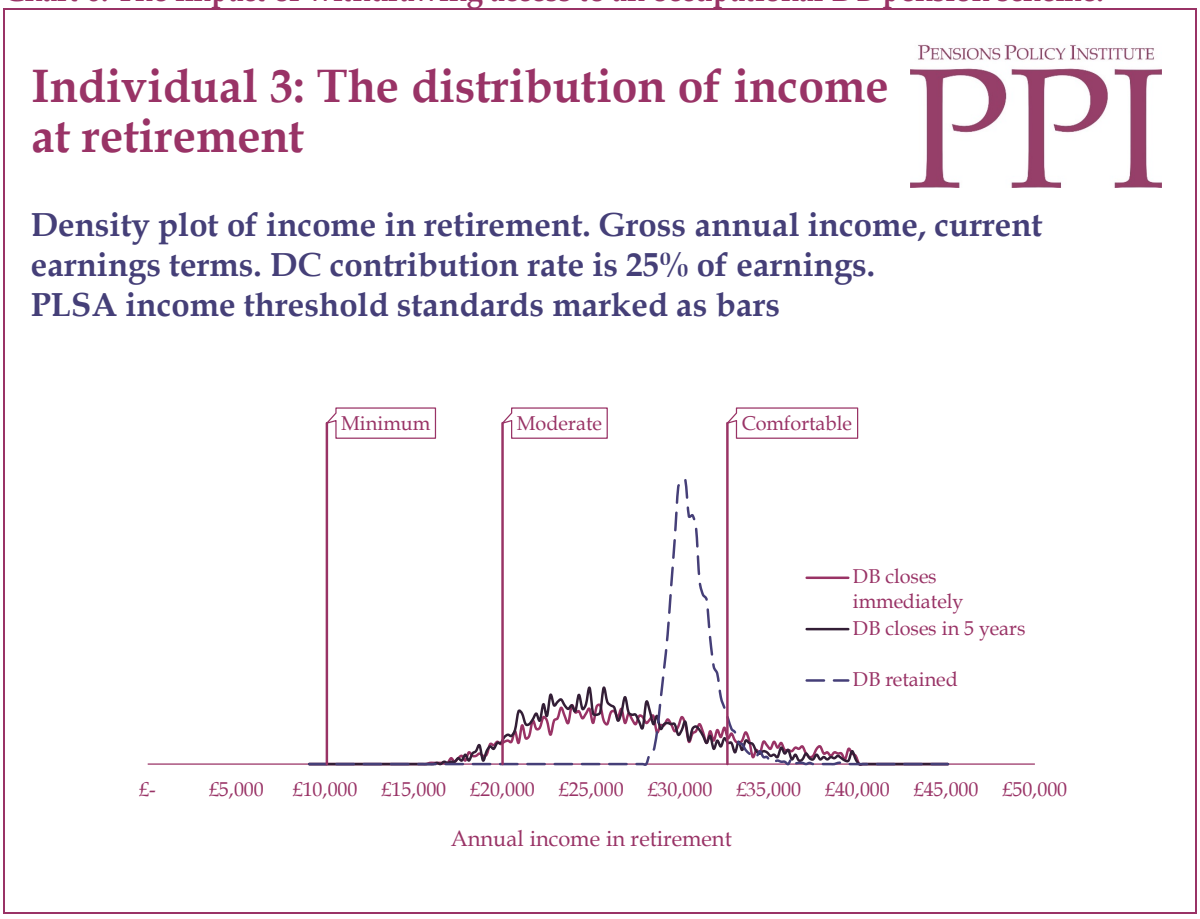


Where the DB scheme closes immediately the income in retirement from the DC scheme is linked to the contribution rate. The underpin of the State Pension provides the certainty of a basic income while the uncertainty of future investment returns means that the DC scheme could provide widely varying outcomes [Chart 5]. Where contribution rates are at the automatic enrolment minimum there in 10% of outcomes she does not manage to attain the income threshold for the PLSA's minimum retirement living standard [Chart 5, the proportion of the distribution below the minimum income threshold].

Individual 3

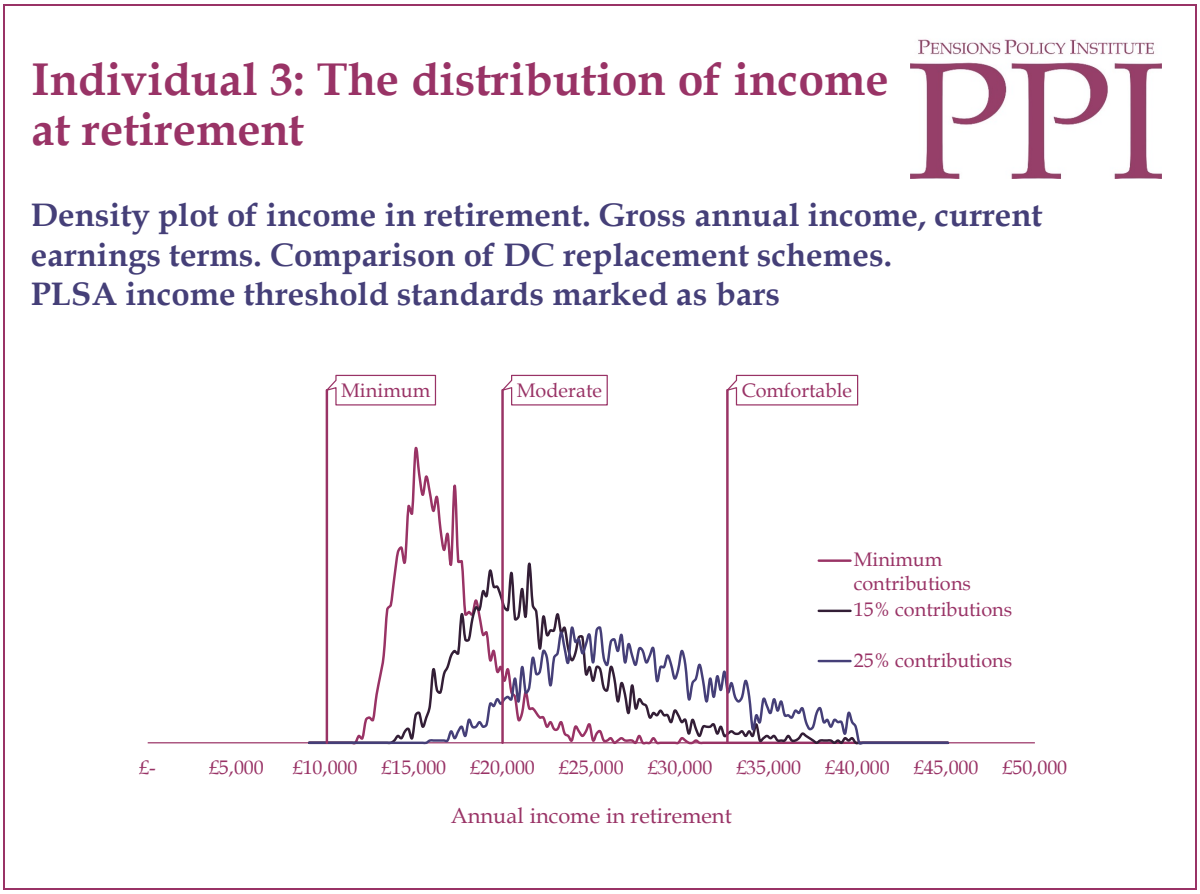
This is a man currently aged 35, who works full time at a median income and has been a member of a DB pension scheme for ten years already. He will continue to work through to their retirement at State Pension age.

Chart 6: The impact of withdrawing access to an occupational DB pension scheme:



At median income levels the value of the DB pension will provide for a more comfortable retirement. It has a higher value relative to the DC replacement at the older ages yet to be worked, so the value of the pension to be accrued is higher in the DB scheme [Chart 6]. As a result, there is less chance of a DC scheme being able to better the income from the DB scheme through higher investment returns than for the younger individuals modelled.

Chart 7: Lower contribution rates in the replacement Defined Contribution scheme result in lower retirement incomes:

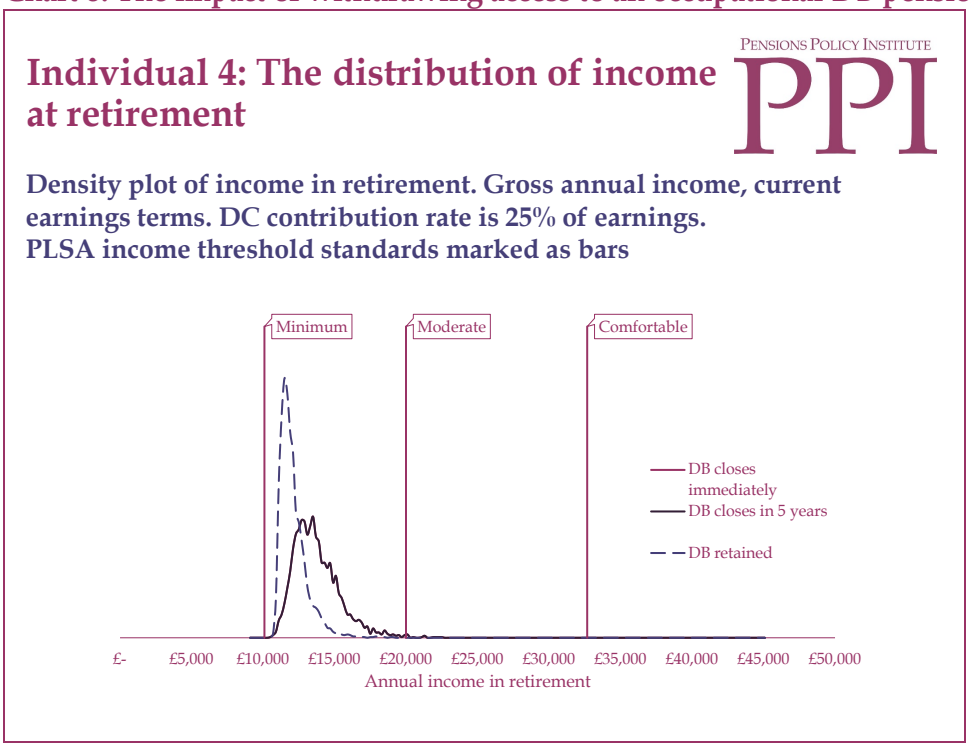


Where the DB scheme closes immediately the income in retirement from the DC scheme is linked to the contribution rate. The underpin of the State Pension provides the certainty of a basic income while the uncertainty of future investment returns means that the DC scheme could provide widely varying outcomes. The chance of attaining the moderate income threshold increases from 10% when contributions are made at the automatic enrolment minimum level to 95% when contributions are 25% of earnings [Chart 7]. The DB pensions scheme attained the moderate income threshold in all simulations.

Individual 4

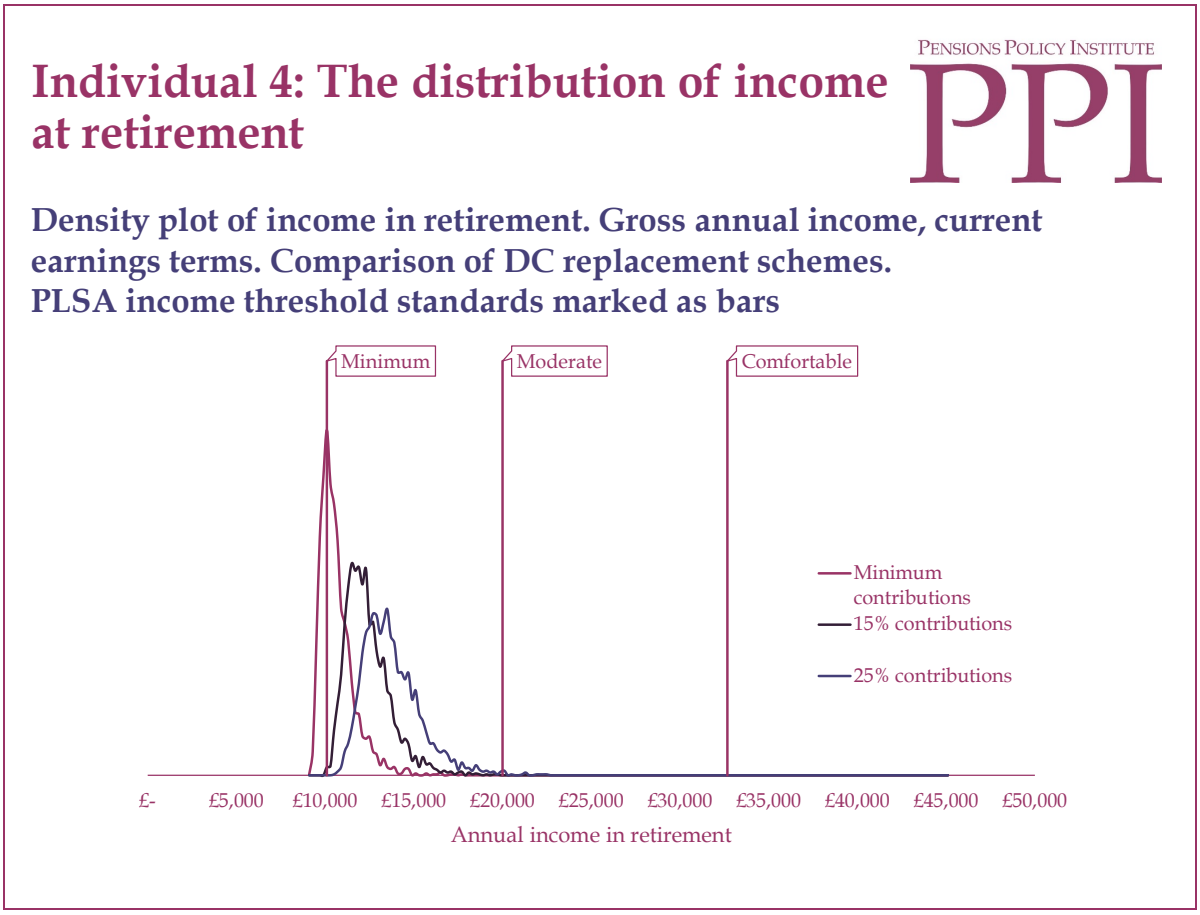
This is a woman currently aged 35, working at a low income (30th percentile of earnings by age and gender). She takes 16 years away from employment (typically associated with raising a family) before working through to her retirement at State Pension age. She joins the DB pension scheme on returning to the labour market after taking the time away.

Chart 8: The impact of withdrawing access to an occupational DB pension scheme:



Her income in retirement is low (no scenarios attained the moderate income threshold) due to the low lifetime earnings, particularly due to taking time away from work. The impact of the break means that the retention of the DB scheme for five years makes no difference as she will not be an active member over those years. Low future earnings results in small private pension savings with the largest part of her retirement income coming from the State Pension and relatively small differences in retirement [Chart 7].

Chart 9: Lower contribution rates in the replacement Defined Contribution scheme result in lower retirement incomes:

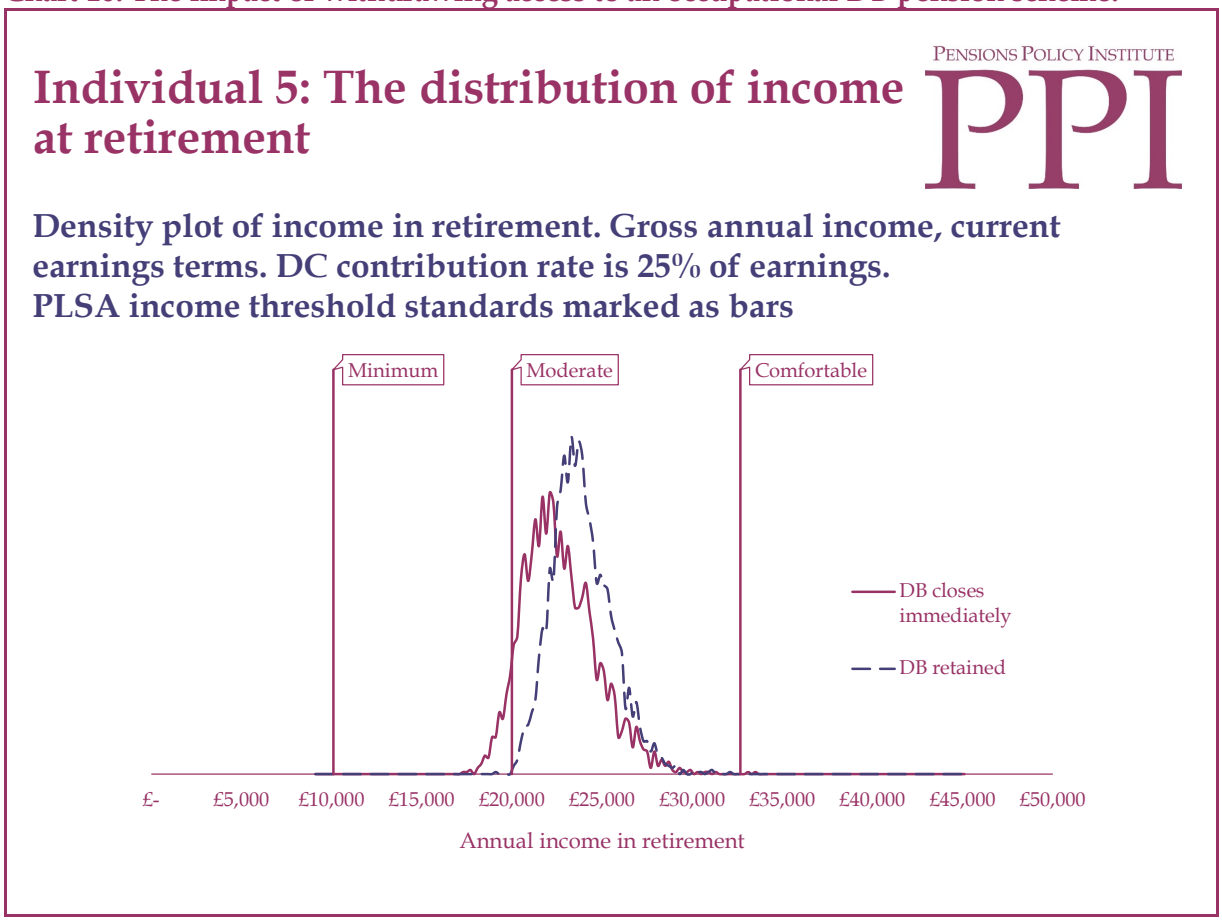


Where the DB scheme closes immediately, the income in retirement from the DC scheme is linked to the contribution rate. The underpin of the State Pension provides the certainty of a basic income while the uncertainty of future investment returns means that the DC scheme could provide widely varying outcomes. Contributing at the automatic enrolment minimum level she only has a 69% chance of attaining the minimum income threshold, where she will attain this level with higher DC contributions or retaining the DB scheme [Chart 9].

Individual 5

This is a man currently aged 55, who works full time at a median income and has been a member of a DB pension scheme for 24 years already. He will stop working at age 60, in five years.

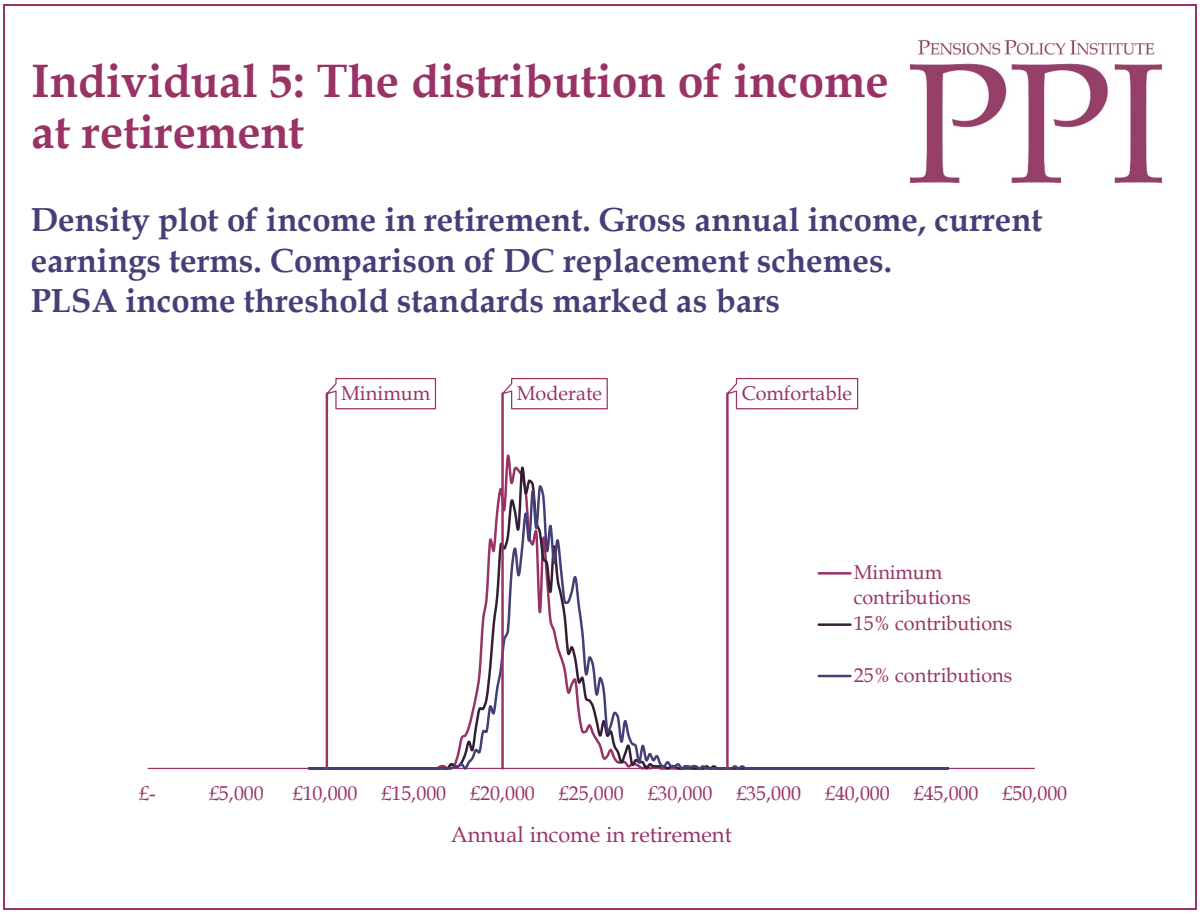
Chart 10: The impact of withdrawing access to an occupational DB pension scheme:



Retaining the DB pension scheme for five years will see him to the end of his service. If the scheme close immediately the DC alternative is of considerably lower value than the DB scheme as the contributions for an older individual are typically higher and there is not a great deal of time for the DC contributions to accrue significant investment returns. However, with only five years to accrue any additional private pension the difference in outcomes is limited [Chart 10].

There is more uncertainty in the DB outcome of this individual when reported in current earnings terms as the DB scheme is completely linked to price inflation from the age of 60 whereas in other individuals there is a link to earnings retained until State Pension age.

Chart 11: Lower contribution rates in the replacement Defined Contribution scheme result in lower retirement incomes:

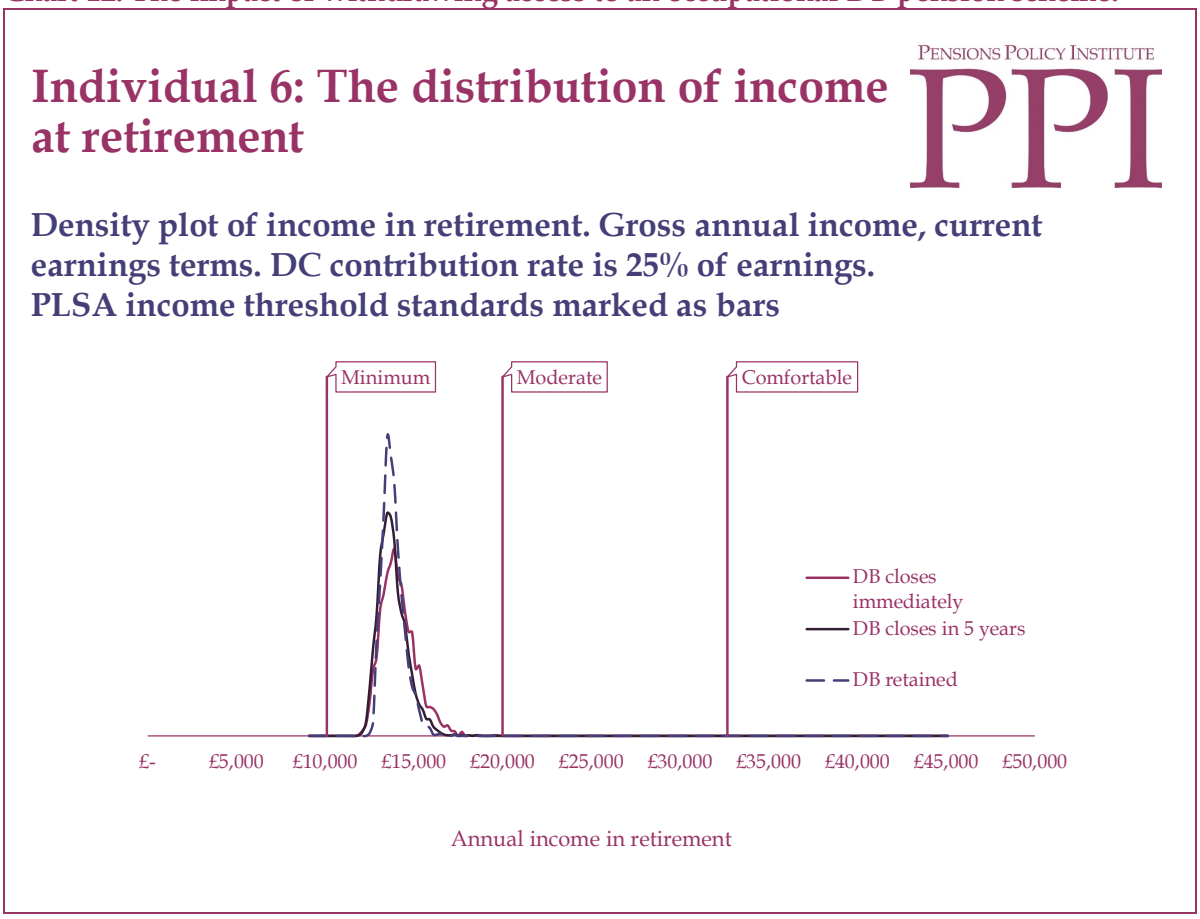


Where the DB scheme closes immediately the income in retirement from the DC scheme is linked to the contribution rate. As the large part of income in retirement is accounted for through the State Pension and DB entitlement, the limited amount of DC savings accrued over the remaining working years has a relatively limited impact upon income in retirement [Chart 11].

Individual 6

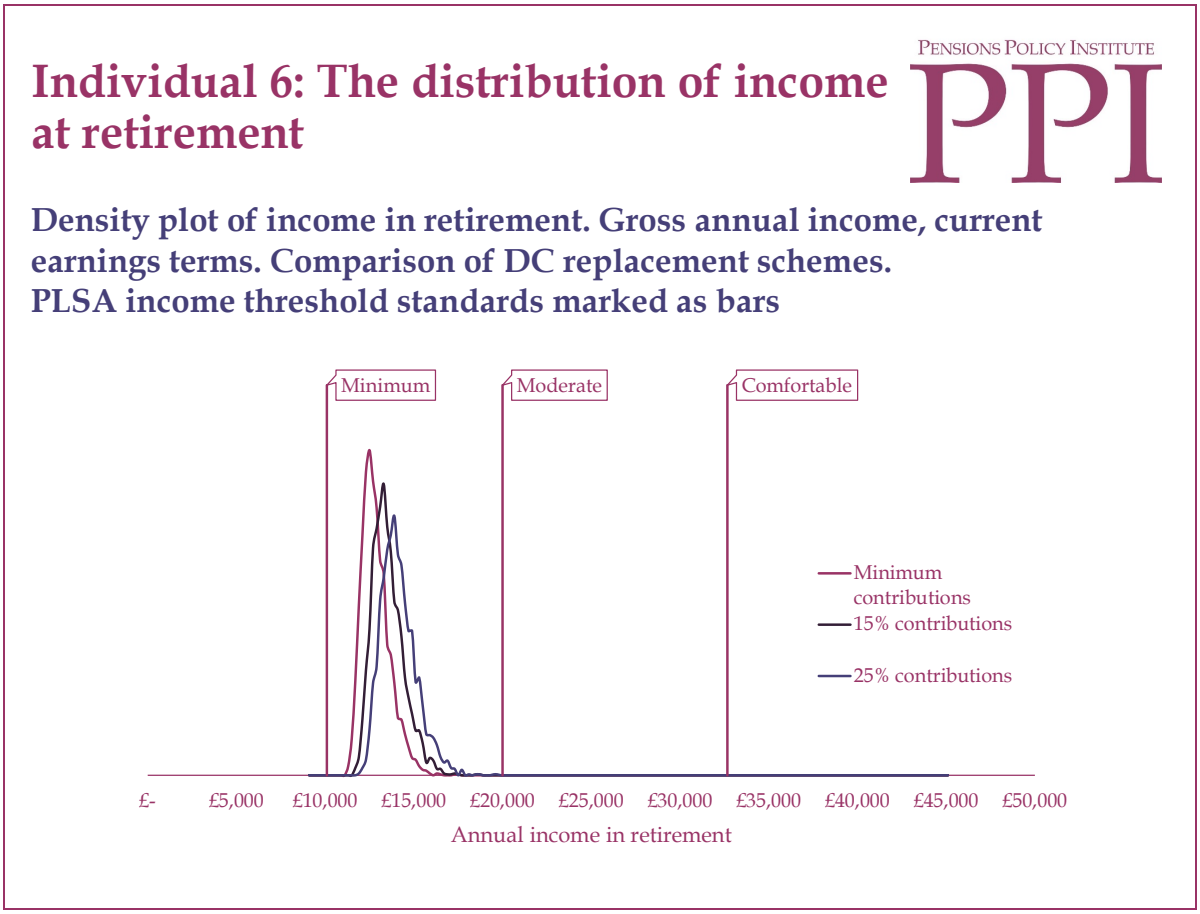
This is a woman currently aged 55, who is now working part-time at a median income and has been a member of a DB pension scheme for 25 years already. She will continue to work until retirement at State Pension age.

Chart 12: The impact of withdrawing access to an occupational DB pension scheme:



Low lifetime earnings mean that her income in retirement will be primarily made up of State Pension. She has already accrued sufficient DB entitlement to ensure she will attain the minimum income threshold and give relative certainty in her retirement income. Working part-time and with few years until retirement mean that her future earnings will be low and variation in future pension arrangements will have little impact upon her final income in retirement [Chart 12].

Chart 13: Lower contribution rates in the replacement Defined Contribution scheme result in lower retirement incomes:



Where the DB scheme closes immediately the income in retirement from the DC scheme is linked to the contribution rate. As the large part of income in retirement is accounted for through the State Pension and DB entitlement, the limited amount of DC savings accrued over the remaining working years has a relatively limited impact upon income in retirement, however the higher contributions will improve her final income in retirement [Chart 13].

Section 5: Conclusions

The State Pension provides an underpin to retirement income which is predictable and assured. Low lifetime earnings will result in State Pension entitlement savings making up a greater proportion of income in retirement.

Long-term Defined Benefit pension scheme membership will produce a more predictable retirement income as the investment risk is not borne by the member. This investment risk produces less predictable outcomes when private pension saving is based around Defined Contribution membership.

Appendix

Additional results

Additional results tables from the projection of the vignette illustrations

Individual 1

Key metrics

Metric		DB Retained	DB closes in 5 years			DB closes immediately		
			AE min conts	15% conts	25% conts	AE min conts	15% conts	25% conts
Income after SPa	Mean	£25,200	£15,400	£20,200	£25,700	£15,200	£21,100	£27,600
	Median	£25,000	£15,000	£19,500	£24,500	£14,700	£20,100	£26,100
Per-centage attaining PLSA income standard	Minimum	100%	100%	100%	100%	100%	100%	100%
	Moderate	100%	4%	44%	87%	4%	51%	90%
	Comfortable	0%	0%	1%	11%	0%	3%	19%

- All values are current (2020) earnings terms
- PLSA income standards are for an individual living outside London

Distribution of annual income after State Pension age (current earnings terms)

Percentile of income	DB Retained	DB closes in 5 years			DB closes immediately		
		AE min conts	15% conts	25% conts	AE min conts	15% conts	25% conts
10%	£24,000	£13,100	£16,200	£19,500	£12,800	£16,300	£20,100
20%	£24,300	£13,600	£17,100	£20,900	£13,300	£17,300	£21,700
30%	£24,600	£14,000	£17,900	£22,000	£13,800	£18,200	£23,000
40%	£24,800	£14,500	£18,600	£23,200	£14,200	£19,100	£24,500
50%	£25,000	£15,000	£19,500	£24,500	£14,700	£20,100	£26,100
60%	£25,200	£15,500	£20,400	£25,800	£15,300	£21,200	£27,600
70%	£25,600	£16,200	£21,500	£27,500	£16,000	£22,500	£29,800
80%	£25,900	£16,900	£22,900	£29,600	£16,800	£24,200	£32,500
90%	£26,700	£18,100	£25,100	£33,300	£18,200	£27,100	£37,200

Individual 2

Key metrics

Metric		DB Retained	DB closes in 5 years			DB closes immediately		
			AE min conts	15% conts	25% conts	AE min conts	15% conts	25% conts
Income after SPa	Mean	£13,500	£11,400	£14,400	£16,800	£11,400	£15,000	£17,900
	Median	£13,300	£11,100	£14,000	£16,200	£11,100	£14,500	£17,100
Per-centage attaining PLSA income standard	Minimum	100%	90%	100%	100%	90%	100%	100%
	Moderate	0%	0%	2%	13%	0%	5%	22%
	Comfortable	0%	0%	0%	0%	0%	0%	1%

- All values are current (2020) earnings terms
- PLSA income standards are for an individual living outside London

Distribution of annual income after State Pension age (current earnings terms)

Percentile of income	DB Retained	DB closes in 5 years			DB closes immediately		
		AE min conts	15% conts	25% conts	AE min conts	15% conts	25% conts
10%	£12,500	£10,100	£12,100	£13,600	£10,100	£12,400	£14,100
20%	£12,700	£10,400	£12,700	£14,400	£10,400	£13,000	£15,000
30%	£12,900	£10,600	£13,100	£14,900	£10,600	£13,500	£15,700
40%	£13,100	£10,800	£13,500	£15,600	£10,800	£14,000	£16,400
50%	£13,300	£11,100	£14,000	£16,200	£11,100	£14,500	£17,100
60%	£13,500	£11,400	£14,500	£16,900	£11,400	£15,100	£18,000
70%	£13,800	£11,700	£15,000	£17,700	£11,700	£15,700	£19,100
80%	£14,200	£12,200	£15,800	£18,800	£12,200	£16,700	£20,400
90%	£15,000	£13,000	£17,100	£20,700	£13,000	£18,200	£22,700

Individual 3

Key metrics

Metric		DB Retained	DB closes in 5 years			DB closes immediately		
			AE min conts	15% conts	25% conts	AE min conts	15% conts	25% conts
Income after SPa	Mean	£30,700	£17,400	£21,800	£27,000	£16,800	£22,300	£28,800
	Median	£30,500	£17,000	£21,200	£26,100	£16,300	£21,400	£27,500
Per-centage attaining PLSA income standard	Minimum	100%	100%	100%	100%	100%	100%	100%
	Moderate	100%	13%	65%	95%	10%	65%	95%
	Comfortable	7%	0%	1%	13%	0%	3%	23%

- All values are current (2020) earnings terms
- PLSA income standards are for an individual living outside London

Distribution of annual income after State Pension age (current earnings terms)

Percentile of income	DB Retained	DB closes in 5 years			DB closes immediately		
		AE min conts	15% conts	25% conts	AE min conts	15% conts	25% conts
10%	£29,400	£14,700	£17,700	£21,100	£14,000	£17,400	£21,400
20%	£29,800	£15,400	£18,700	£22,600	£14,700	£18,600	£23,200
30%	£30,000	£16,000	£19,500	£23,700	£15,200	£19,500	£24,600
40%	£30,300	£16,500	£20,400	£24,900	£15,700	£20,500	£26,000
50%	£30,500	£17,000	£21,200	£26,100	£16,300	£21,400	£27,500
60%	£30,800	£17,600	£22,100	£27,400	£17,000	£22,500	£29,100
70%	£31,100	£18,400	£23,200	£28,900	£17,600	£23,800	£31,000
80%	£31,600	£19,200	£24,500	£30,800	£18,600	£25,400	£33,500
90%	£32,200	£20,500	£26,500	£33,900	£20,100	£28,100	£37,800

Individual 4

Key metrics

Metric		DB Retained	DB closes in 5 years			DB closes immediately		
			AE min conts	15% conts	25% conts	AE min conts	15% conts	25% conts
Income after SPa	Mean	£12,100	£10,700	£12,400	£13,700	£10,700	£12,400	£13,700
	Median	£11,900	£10,400	£12,200	£13,500	£10,400	£12,200	£13,500
Per-centage attaining PLSA income standard	Minimum	100%	69%	100%	100%	69%	100%	100%
	Moderate	0%	0%	0%	0%	0%	0%	0%
	Comfortable	0%	0%	0%	0%	0%	0%	0%

- All values are current (2020) earnings terms
- PLSA income standards are for an individual living outside London

Distribution of annual income after State Pension age (current earnings terms)

Percentile of income	DB Retained	DB closes in 5 years			DB closes immediately		
		AE min conts	15% conts	25% conts	AE min conts	15% conts	25% conts
10%	£11,200	£9,700	£11,000	£12,000	£9,700	£11,000	£12,000
20%	£11,400	£9,900	£11,400	£12,400	£9,900	£11,400	£12,400
30%	£11,500	£10,100	£11,600	£12,800	£10,100	£11,600	£12,800
40%	£11,700	£10,200	£11,900	£13,100	£10,200	£11,900	£13,100
50%	£11,900	£10,400	£12,200	£13,500	£10,400	£12,200	£13,500
60%	£12,100	£10,600	£12,500	£13,800	£10,600	£12,500	£13,800
70%	£12,300	£10,900	£12,800	£14,300	£10,900	£12,800	£14,300
80%	£12,700	£11,300	£13,300	£14,900	£11,300	£13,300	£14,900
90%	£13,300	£11,900	£14,000	£15,800	£11,900	£14,000	£15,800

Individual 5

Key metrics

Metric		DB Retained	DB closes in 5 years			DB closes immediately		
			AE min conts	15% conts	25% conts	AE min conts	15% conts	25% conts
Income after SPa	Mean	£23,900	£23,900	£23,900	£23,900	£21,200	£21,900	£22,700
	Median	£23,700	£23,700	£23,700	£23,700	£21,000	£21,600	£22,400
Percentage attaining PLSA income standard	Minimum	100%	100%	100%	100%	100%	100%	100%
	Moderate	100%	100%	100%	100%	73%	85%	93%
	Comfortable	0%	0%	0%	0%	0%	0%	0%

- All values are current (2020) earnings terms
- PLSA income standards are for an individual living outside London

Distribution of annual income after State Pension age (current earnings terms)

Percentile of income	DB Retained	DB closes in 5 years			DB closes immediately		
		AE min conts	15% conts	25% conts	AE min conts	15% conts	25% conts
10%	£21,900	£21,900	£21,900	£21,900	£19,100	£19,700	£20,300
20%	£22,500	£22,500	£22,500	£22,500	£19,700	£20,300	£20,900
30%	£22,900	£22,900	£22,900	£22,900	£20,200	£20,700	£21,400
40%	£23,300	£23,300	£23,300	£23,300	£20,600	£21,200	£22,000
50%	£23,700	£23,700	£23,700	£23,700	£21,000	£21,600	£22,400
60%	£24,100	£24,100	£24,100	£24,100	£21,400	£22,100	£23,000
70%	£24,600	£24,600	£24,600	£24,600	£22,000	£22,700	£23,600
80%	£25,300	£25,300	£25,300	£25,300	£22,600	£23,300	£24,300
90%	£26,000	£26,000	£26,000	£26,000	£23,600	£24,400	£25,400

Individual 6

Key metrics

Metric		DB Retained	DB closes in 5 years			DB closes immediately		
			AE min conts	15% conts	25% conts	AE min conts	15% conts	25% conts
Income after SPa	Mean	£13,800	£13,100	£13,500	£13,800	£12,900	£13,500	£14,100
	Median	£13,700	£13,000	£13,400	£13,700	£12,700	£13,400	£14,000
Per-centage attaining PLSA income standard	Minimum	100%	100%	100%	100%	100%	100%	100%
	Moderate	0%	0%	0%	0%	0%	0%	0%
	Comfortable	0%	0%	0%	0%	0%	0%	0%

- All values are current (2020) earnings terms
- PLSA income standards are for an individual living outside London

Distribution of annual income after State Pension age (current earnings terms)

Percentile of income	DB Retained	DB closes in 5 years			DB closes immediately		
		AE min conts	15% conts	25% conts	AE min conts	15% conts	25% conts
10%	£13,100	£12,300	£12,600	£12,900	£12,000	£12,500	£13,000
20%	£13,300	£12,500	£12,900	£13,100	£12,200	£12,800	£13,300
30%	£13,500	£12,700	£13,000	£13,300	£12,400	£13,000	£13,600
40%	£13,600	£12,900	£13,200	£13,500	£12,500	£13,200	£13,800
50%	£13,700	£13,000	£13,400	£13,700	£12,700	£13,400	£14,000
60%	£13,900	£13,200	£13,600	£13,900	£12,900	£13,600	£14,300
70%	£14,100	£13,400	£13,800	£14,100	£13,200	£13,900	£14,500
80%	£14,300	£13,700	£14,100	£14,400	£13,500	£14,200	£14,900
90%	£14,700	£14,100	£14,500	£14,900	£13,900	£14,700	£15,400

The PPI Individual Model

The Individual Model is the PPI's tool for modelling illustrative individual's income during retirement. It can model income for different individuals under current policy or look at how an individual's income would be affected by policy changes. This income includes benefits from the State Pension system and private pension arrangements and can also include income from earnings and equity release. It is useful to see how changes in policy can affect individuals' incomes in the future.

The PPI's Individual Model calculates streams of retirement incomes for constructed individuals. The streams of income include State Pension, private pension and various state benefits in retirement. The Individual Model uses flexible policy parameters to define the pension landscape throughout the individual's working life and retirement. The individual is constructed by setting out the work history in terms of working patterns and salary level throughout their working life, along with pension scheme membership details.

All individuals were assumed to exhibit the same illustrative behaviour at retirement with any Defined Contribution pension saving:

- Withdrawing 25% of their pension wealth as a tax-free lump sum at retirement;
- Drawing an income from their remaining wealth, initially at a rate of 3.5% of their remaining pension wealth and increasing the amount in line with CPI until they have exhausted their pot.

This gives an indicative income to quantify the impact of their private pension saving in accumulation.

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 modelled is as currently legislated. The triple lock is assumed to be maintained. Individuals are assumed to currently be members of a Defined Benefit (DB) occupational pension scheme.

Economic simulations

Future inflation and investment returns are modelled stochastically with curves generated by the PPI's Economic Scenario Generator (ESG). 3,000 simulations were produced providing values for equity returns, bond returns, cash returns, CPI and earnings increases each year for each scenario. The assumed median values for each of these values are listed below, these are based on Office for Budget Responsibility long-term assumptions:

- CPI: 2.0%
- Earnings: 3.8%
- Equity return: 7.0%
- Bond Return: 4.1%
- Risk-free Return: 2.1%

Other economic assumptions

Other economic assumptions are taken from the Office for Budget Responsibility's Economic and Fiscal Outlook[9] (for short-term assumptions) and Fiscal Sustainability Report[10] (for long-term assumptions).

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. For example, if investments are performing poorly, an individual may choose to decrease their withdrawal rate in retirement and vice versa.

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).
- 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 model is 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 to assess their impact upon individuals under investigation.

This area has the scope to consider the build-up of pensions in their framework such as the auto-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 Office of Budget Responsibility (OBR) Economic and Fiscal Outlook (EFO) to ensure consistency. They cover both historical data and future projected values.

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