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Retirement funding: analysis of retirement income patterns

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Social Market Foundation

Retirement Funding: analysis of retirement income patterns

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Introduction

Background

From April 2015, as part of the Coalition Government's 'Freedom and Choice' reforms, UK citizens aged 55 and over have been allowed to access money they have saved into their pension in whatever way they want. This overturns the previous policy where there were significant restrictions on how and when savers accessed their pension pots, with many steered automatically into buying an annuity.

There are some undoubted advantages that come with these new freedoms. Individuals may view pension saving as a more attractive proposition and increase the level of resources that they set aside for retirement. The reforms are likely to disrupt the market of retirement income products and we can expect to see greater innovation from providers. If accompanied by other reforms, there may be scope to inject additional competition into the annuities market.

However, the deregulation of the decumulation phase comes with significant risks. Research by the Financial Conduct Authority (FCA)[1] and others suggests that for many consumers an annuity is a good option. But take up of annuities is often lower than economic theory would lead to us to expect.

Project Purpose

The Social Market Foundation (SMF) wished to assess whether there were other options for policymakers to recommend to ensure improved outcomes for retirees. It drew upon international case studies and applied these lessons to the UK, assessing the potential outcomes for consumers and the Exchequer, and what could be done to enable government and regulators to intervene in a timely manner and with the right people.

The final report 'Golden Years? What freedom and choice will mean for UK pensioners' is available from the SMF website.[2]

Scope of PPI work

The SMF commissioned the PPI to undertake modelling of individuals, drawing on international examples of possible decumulation patterns. Representative individuals were then modelled and the potential outcomes under the different decumulation patterns assessed to identify possible risks.

This PPI report summarises the methodology, assumptions and key findings from the modelling. It does not make recommendations as to the appropriate direction of future policy, but is designed to provide independent evidence to allow policy development to be well informed. Full modelling results can be downloaded separately from the PPI website.[3]

[1] Financial Conduct Authority (2014)
[2] www.smf.co.uk
[3] www.pensionspolicyinstitute.org.uk

Summary of findings

The modelling performed illustrates the potential impact upon post-retirement income under different decumulation paths and highlights key points including:

- The level of post-retirement income
- Changes in post-retirement income due to pot exhaustion
- Residual pension pots throughout retirement
- The scale of the state benefit component to income

The impact of risks to individuals

When taking a private pension through drawdown it is likely that the timing of death will not coincide with the exhaustion of the pension pot. If an individual does not alter their behaviour throughout retirement to allow for this, there is the possibility that they may not have made the fullest use of their pension pot. However, to modify behaviour appropriately will require both financial planning and continual awareness.

Pot exhaustion

Individuals are at risk of pot exhaustion within their lifetime if they take drawdown at an unsustainable level, and maintain this behaviour throughout retirement. Having exhausted the pot the individual's total income will be restricted to the State Pension and benefits unless they have other sources of income.

The risk of exhausting a pot is increased by higher drawdown rates and lower investment returns. Continually drawing down at a rate of 8% of the initial pot per year there is a 96% chance of pot exhaustion within the mean future lifetime of a male and 99.6% chance of pot exhaustion within the mean future lifetime of a female.

Pot exhaustion may not be a concern for those in receipt of Pension Guarantee Credit as any reduction of private pension income will be matched by an increase in pension credit, maintaining their post-retirement income. However, those who have higher post-retirement incomes from their private pension, for example through a greater pot size or higher withdrawal rate, will see a more significant impact upon their retirement income as a result of pot exhaustion.

Under consumption

If an individual were to draw down at a sufficiently low rate throughout their retirement they may have a residual pension pot at death. This will come at a cost of having had a lower level of income during retirement. The residual pot can be seen as an opportunity missed to take a higher income in their lifetime which could have potentially bought them a higher quality of life.

The impact of risks to the Exchequer

There is a potential benefit to the Exchequer if an individual withdraws their pension pot in a tax inefficient manner. However, the financial risk to the Exchequer is higher when individuals exhaust their pot quickly and relies upon the State for means-tested benefits to supplement their State Pension.

Cost of means tested benefits

The cost to the Exchequer for means-tested benefits claimed by individuals is greater after exhausting their pension pot. Some means-tested benefits may be taken prior to pot exhaustion if the drawdown rate is low or the pension pot small.

The risk to the Exchequer is that the individual's pension pot is exhausted quickly resulting in many years of means-tested benefit being payable over the remainder of an individual's lifetime.

Chapter one: the individuals modelled

The individuals

Five individuals were selected to illustrate the potential impact of different decumulation pathways upon certain risk groups. These individuals were identified by the Social Market Foundation (SMF) to represent a range of characteristics within the UK population aged 55 to retirement age that would allow an assessment of the effect of different factors on outcomes for the individual and the State.

The traits of each individual are summarised in Table 1. We have assumed that no one has any additional defined benefit (DB) entitlement.

Table 1: Summary of individuals modelled

Individual	Single / couple	Gender	Pension pot size	Housing	State pension	Retirement age
1	Single	Man	Median for men £29,046	Renter	Full state pension	65
2	Single	Man	Medium/High (70th percentile) £69,813	Homeowner	Full state pension	65
3	Single	Woman	Median for women £15,083	Homeowner	Full state pension	63
4	Single	Man	High (90th percentile) for men £184,787	Homeowner	Full state pension	65
5	Single	Woman	Low (30th percentile) £6,705	Renter	Less than full state pension	63

Decumulation Patterns

The SMF identified four different decumulation patterns to model (Table 2). These are derived from behaviour observed in other countries where pension freedoms exist.

The behaviour of the individuals throughout the decumulation phase has been modelled as constant. That is, the modelling assumes that individuals do not change their behaviour in response to a changing view of their own longevity,

changing economic conditions or other external factors. It could be expected that an individual may alter the rate at which they reduce their pension pot to match their future life expectancy or to reflect the impact of changing investment returns.

Table 2: Different decumulation patterns used in the modelling[4]

Path	Description of decumulation path	Rationale for selection
1. Annuitant	Retiree buys a standard level annuity.	This is the most common form of annuity purchased in the UK.
2. Cautious Australian	Retiree withdraws 0.875% of pension pot plus investment returns each year.	This is based on the behaviour of the average (mean) Australian drawdown rate of non-housing wealth.
3. Quick-spending Australian	Retiree draws down at a rate of 11.6% of their original pot in each year.	This is drawn from Australian evidence that estimates that 40% of the Australian population exhaust their pension pot by age 75. This has been converted into a drawdown rate of 11.6% of the original pot per year.
4. Typical American	Retiree draws down at a rate of 8% of their original pot in each year.	This represents the average withdrawal rate for those Americans withdrawing money from their pensions.

Path 3 was calculated to ensure that, in the median economic scenario, the accumulated pension pot is exhausted after 10 years of drawdown. This equates to a decumulation rate of 11.6% of the initial pot each year based on other assumptions used in this modelling. Depending upon actual economic conditions, this drawdown rate may exhaust the pot either sooner or later.

[4] Social Market Foundation (2015)

Chapter two: the post-retirement income of an individual

Unless otherwise stated the analysis in this chapter is based upon the results from the modelling of the median male. Results have been presented in current inflation terms based upon Consumer Price Index (CPI) unless otherwise stated. This means that future values have taken account for the increase in CPI in future years and discounted back to the current index level.

The decumulation patterns modelled were supplied by the Social Market Foundation (SMF) and are detailed in Chapter one alongside the rationale by which they were selected.

The data for other individuals in Table 1 follow a similar pattern unless noted. Full results are available for download in a separate annex. The individual components and total income results are also available for download in 2016 earnings terms from the PPI website.[5]

Private pension income

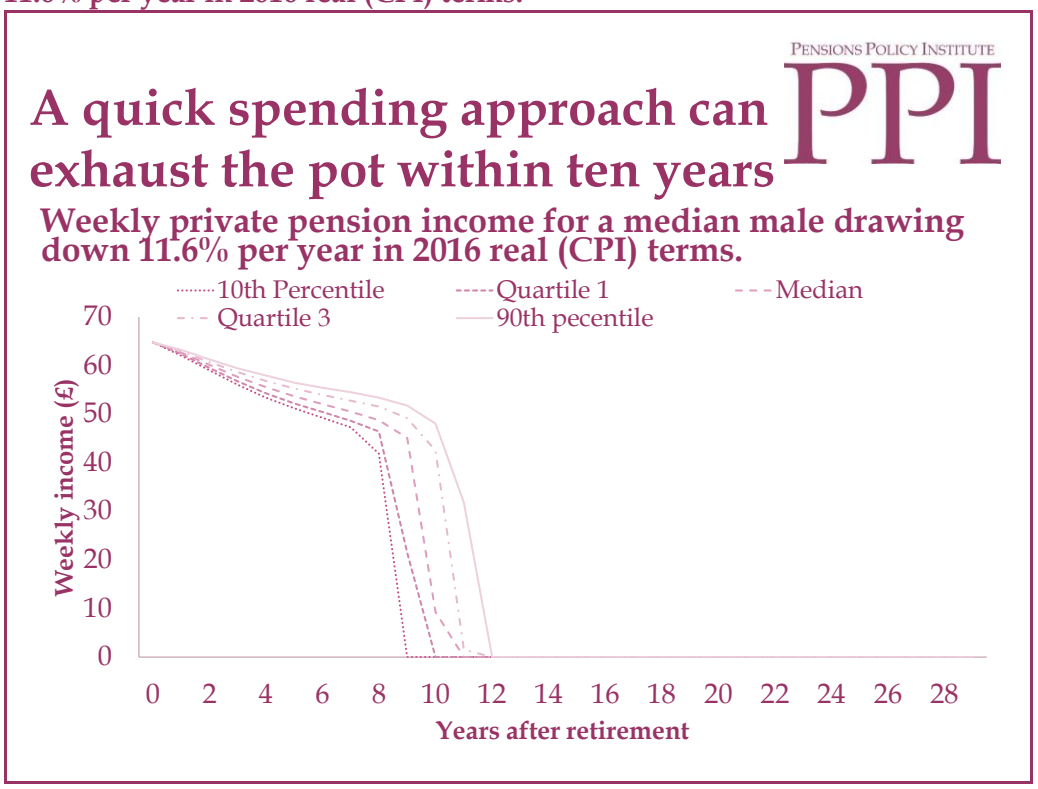
The contribution from a private pension to an individual's overall post retirement income is dependent upon both the size of the pension pot available and the rate at which it is withdrawn. The quicker a pension pot is drawn the less time there is for it to accumulate additional investment returns, which can be exacerbated in times of low yields.

Private pension income is maintained until the pot is exhausted or the death of the individual. Drawing down at a rate of either 8% or 11.6% per year will potentially exhaust the pot in the lifetime of the individual, whereas a drawdown rate of 0.875% plus investment returns will last the future lifetime of the individual. An annuity pays an income for life.

The impact of pot exhaustion upon the private pension cashflow is illustrated in Chart 1 for a median male drawing down at 11.6% per year. The median scenario exhausts the pot after ten years, the spread over which the pot is exhausted is a result of differing investment returns with a higher investment return allowing the drawdown to be supported for a greater length of time. There is a fall in the value of the income stream over time before the exhaustion of the pot due to reporting the income in 2016 earnings terms.

[5] www.pensionspolicyinstitute.org.uk

Chart 1: Weekly private pension income for a median male drawing down 11.6% per year in 2016 real (CPI) terms.

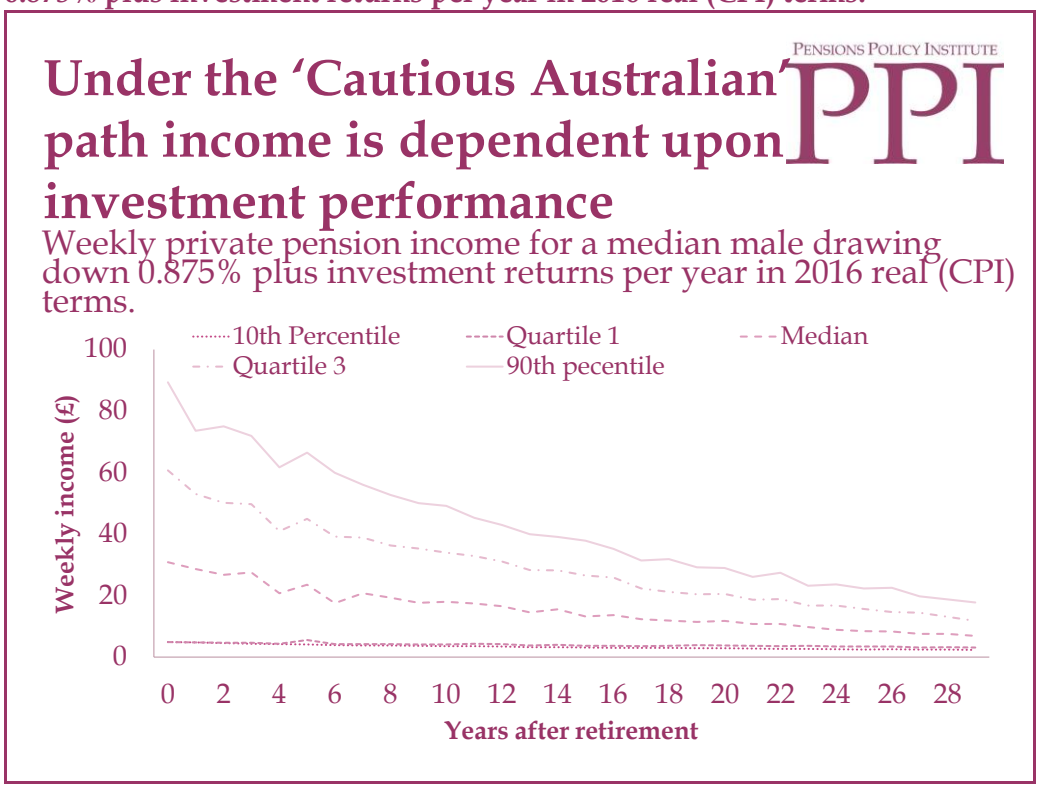


The pattern of income achieved when drawing at 8% per year is similar, however the pot is not exhausted until 16 years after retirement. These extra six years are achieved through an income stream which is approximately 30% lower than that resulting from drawing down the income at 11.6%.

Should the individual die before the exhaustion of the pot the remaining value of this pension pot will be part of the individual's estate. Alternatively should they outlive their private pension pot they will experience a drop in income with a potential impact upon their future quality of life.

To avoid this risk an individual can take an annuity which will provide a guaranteed constant income or consider a more sustainable decumulation path, such as drawing down 0.875% plus investment returns per year (the 'Cautious Australian' path). Chart 2 illustrates the private pension income for this decumulation path which is heavily dependent upon the investment returns available in a particular year.

Chart 2: Weekly private pension income for a median male drawing down 0.875% plus investment returns per year in 2016 real (CPI) terms.



When returns are high the investment return component of the drawdown income produces a higher overall income. There is a large variance in the potential outcomes dependent upon investment performance so the income level is heavily tied to the investment strategy, in terms of both volatility and level. The income is eroded over time as the value decreases in 2016 earnings terms and the capital is withdrawn.

Other sources of income

New State Pension

It is assumed that the individuals in this analysis reach State Pension Age (SPA) in 2016 and so qualify for the new State Pension. The new State Pension is paid in proportion to the number of qualifying years achieved. The level of the benefit is currently increased by the triple lock assumption which will increase the benefit in 2016 earnings terms over time. The current estimated level payable is £158.70 per week which is received by all individuals except the 30th percentile female, who is assumed to have only achieved 31 qualifying years, resulting in an income level of £140.56 in the first year of retirement. The future value of the State Pension grows in real terms due to the effect of the triple lock guarantee.

Housing Benefit and Council Tax support

Housing Benefit and Council Tax support are means-tested benefits dependent upon the circumstances of an individual. For those with a low private pension

income the benefit level will be the full value of rent, where applicable, and Council Tax. After the exhaustion of the pension pot the level of these benefits increases due to the reduction in income. For those individuals with a low post-retirement income, such as the 30th percentile female, the benefit will be payable throughout the entirety of the projected retirement.

The benefit payable increases to its maximum amount upon the exhaustion of the pot. Prior to this the benefit is payable at a lower level, dependent upon the income achieved from the individual's private pension. Council tax support follows the same pattern, albeit with lower absolute values.

Those decumulation paths which do not exhaust the pension pot do not lead to the full benefit level. However, for such paths, the lower private pension incomes in the earlier years does result in a higher benefit payment level at that point in time.

Clearly the longer the benefit is paid at a higher level the greater the cost to the state will be over the lifetime of the individual.

Pension Credit

Guarantee Credit is only payable to those who receive an income at a level below the full State Pension. The only individual modelled who is eligible for this benefit is the 30th percentile female, and the level of benefit payable is dependent upon the amount of private pension income she has as an income.

The effect is to bring post-retirement income up to a fixed level. Higher rates of pensions credit being paid corresponds to a lower rate of income from private pension income, so that the total income level is maintained.

As the individuals modelled reach SPA after April 2016 they are not assumed to be entitled to Savings Credit.

Other items

Winter Fuel Payment (WFP) currently provides a payment between £100 and £300 depending on the eligibility of the individual. The higher rates are available for those receiving Pension Credit and those aged 80 or over.[6] This causes an increase in the income level for individuals in the year they reach 80.

The Christmas Bonus is paid to those receiving State Pension at the current level of £10.[7]

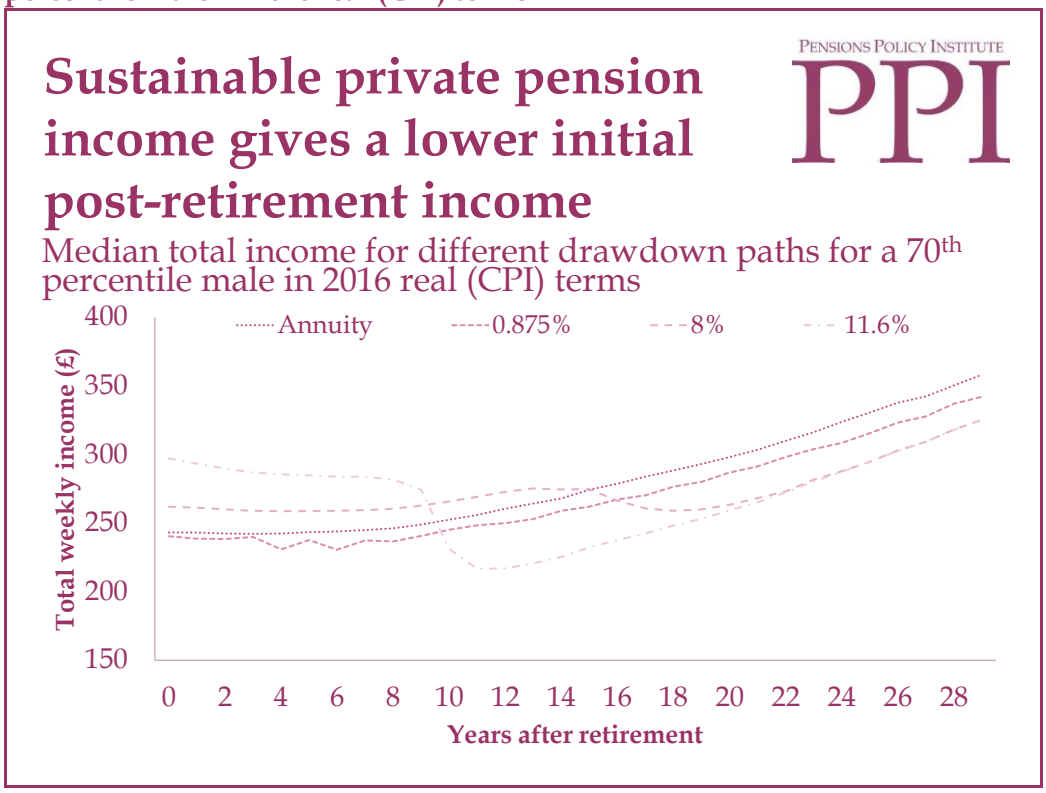
[6] Winter Fuel Payment – GOV.UK www.gov.uk/winter-fuel-payment/overview
[7] Christmas Bonus – GOV.UK www.gov.uk/christmas-bonus/overview

Total income

The total income stream available to individuals is therefore largely based upon their state entitlement with an additional amount available as a result of the decumulation pattern taken from their private pension.

The pattern of income is the same for all individuals who do not qualify for Pension Credit. The median income levels for the 70th percentile male[8] is illustrated in Chart 3 for the different decumulation paths modelled.

Chart 3: Median total income for different drawdown paths for a 70th percentile male in 2016 real (CPI) terms



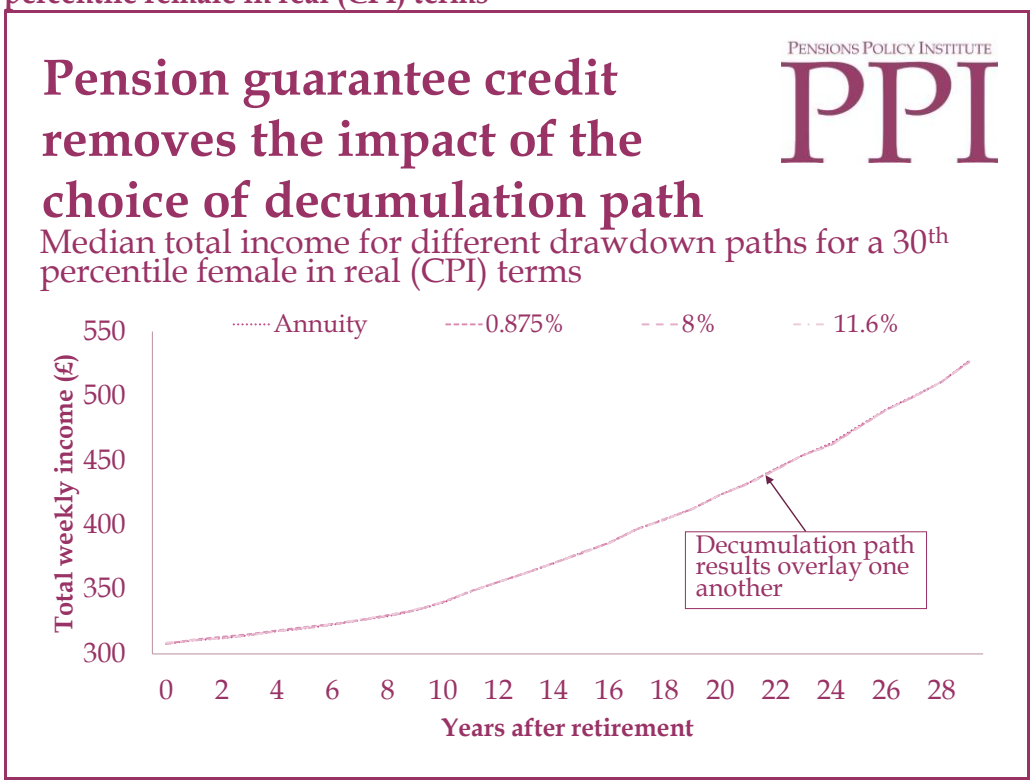
The analysis highlights that:

- The difference in the initial level of income is dependent upon the decumulation path taken.
- Higher initial rates of income are associated with a more rapid exhausting of the pension pot.
- Lower initial rates of income are sustainable throughout the retirement period.
- There is a reduction in income as a result of pot exhaustion, if drawing down, to the income level provided by state entitlements only. This reduction is of greater value for those with a larger private pension income.

[8] 70th percentile male has been chosen for this illustration as the impact of pot exhaustion is more pronounced than for the median male.

Where there is an entitlement to Pension Credit the income level post-retirement is constant regardless of the decumulation path. This is due to the benefit bringing the income level up to this guaranteed floor. In the case of the 30th percentile female only drawing down at the highest rate, 11.6% p.a., does the income level (only slightly) exceed this floor. Chart 4 illustrates the post retirement income for the 30th percentile female demonstrating the lack of impact that the choice of decumulation path has upon the final outcome with the paths overlaying one another.

Chart 4: Median total income for different drawdown paths for a 30th percentile female in real (CPI) terms

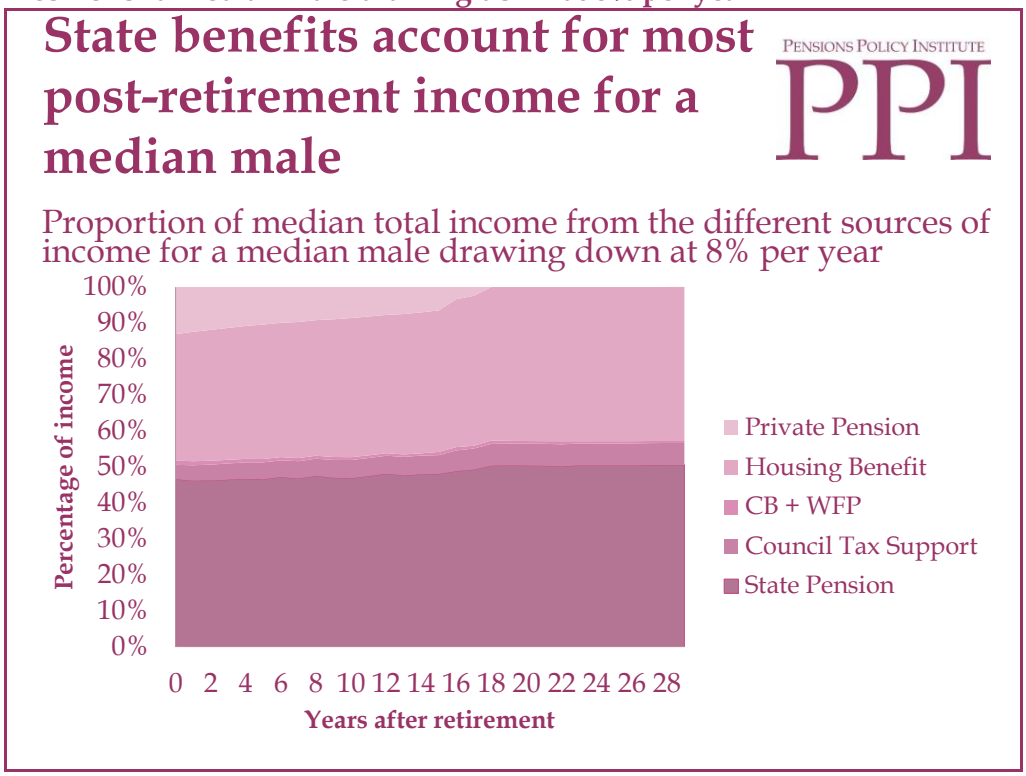


Chapter three: the relative importance of the income sources and the risks to the individual

The importance of each component of post-retirement income differs by total income level and home ownership as well as how private pension income is taken.

Over time, a median male's post-retirement income is dominated by the State Pension and Housing Benefit. Where they draw down their private pension wealth at 8% per year, Housing Benefit and State Pension account for 82% of their post-retirement income in the first year,[9] rising to 91% in year 18, after the exhaustion of the pension pot (Chart 5).

Chart 5: Proportion of median total income from the different sources of income for a median male drawing down at 8% per year

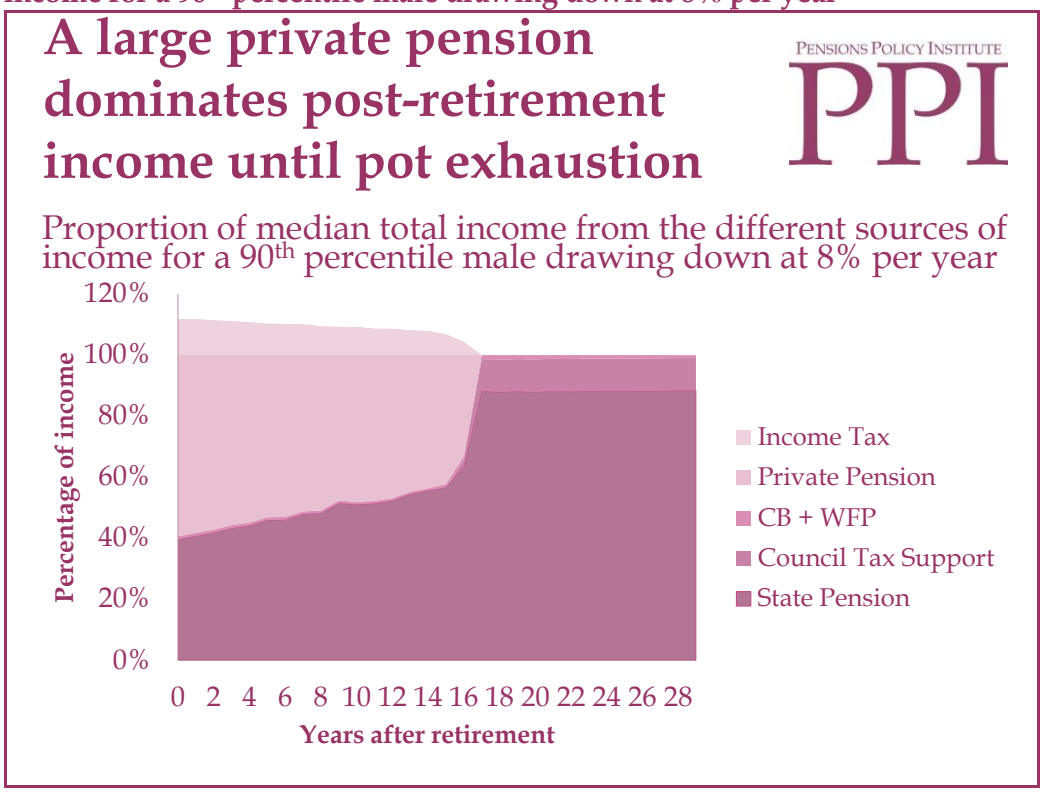


Individuals with greater amounts of private pension wealth and who are not entitled to Housing Benefit will have a far greater proportion of their income as private pension income. This can lead to greater exposure to this source of income. These same individuals are more likely to have further assets or wealth available (e.g. through housing equity).

[9] The proportion of income in the first year derived from a private pension will be higher when drawing down at an increased rate. Drawing down at 11.6% private pension income accounts for 19% of first year retirement income.

The largest pension pot modelled, a male with 90th percentile pension wealth, has a private pension income accounting for 59% of their initial post-retirement income after income tax (£237 of £400 per week) when drawing down at 8% per year. The exhaustion of the pot has a proportionately higher impact upon the income of the individual (Chart 6). Once the pot has been exhausted the individual is entitled to means-tested benefits, with Council Tax support being paid at its full level.

Chart 6: Proportion of median total income from the different sources of income for a 90th percentile male drawing down at 8% per year



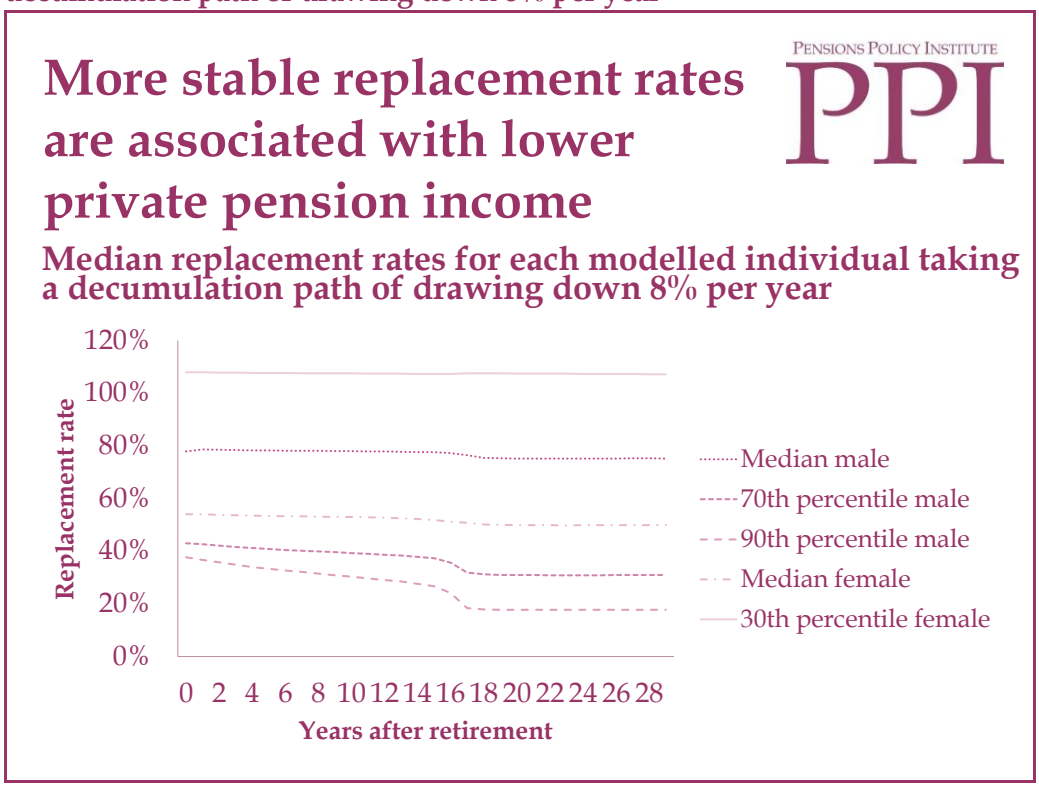
Replacement rates

Replacement rates link the total income received in retirement to the income level of the individual immediately before retirement. They are taken as the ratio of the post-retirement income to the income immediately before retirement adjusted for earnings growth. This can be used to gauge the impact that the level of post-retirement income may have upon the lifestyle of the individual.

Replacement rates post-retirement have similar features to the total income, showing the impact of pot-exhaustion, however they are linked to future earnings and as such do not show the same real (CPI) terms increase over time. This is due to the linking of benefits to increases in earnings, through the triple lock guarantee and the assumption that rental costs, for example, increase in line with incomes.

The relative results for individuals reflects the impact that private pension has upon their post-retirement income, and the relative scale of benefits to their pre-retirement income. This defines the initial replacement rate and the impact of falling back to state supported levels after pot exhaustion. This is illustrated in Chart 7 for each individual modelled when considering a decumulation path of 8% per year.

Chart 7: Median replacement rates for each modelled individual taking a decumulation path of drawing down 8% per year



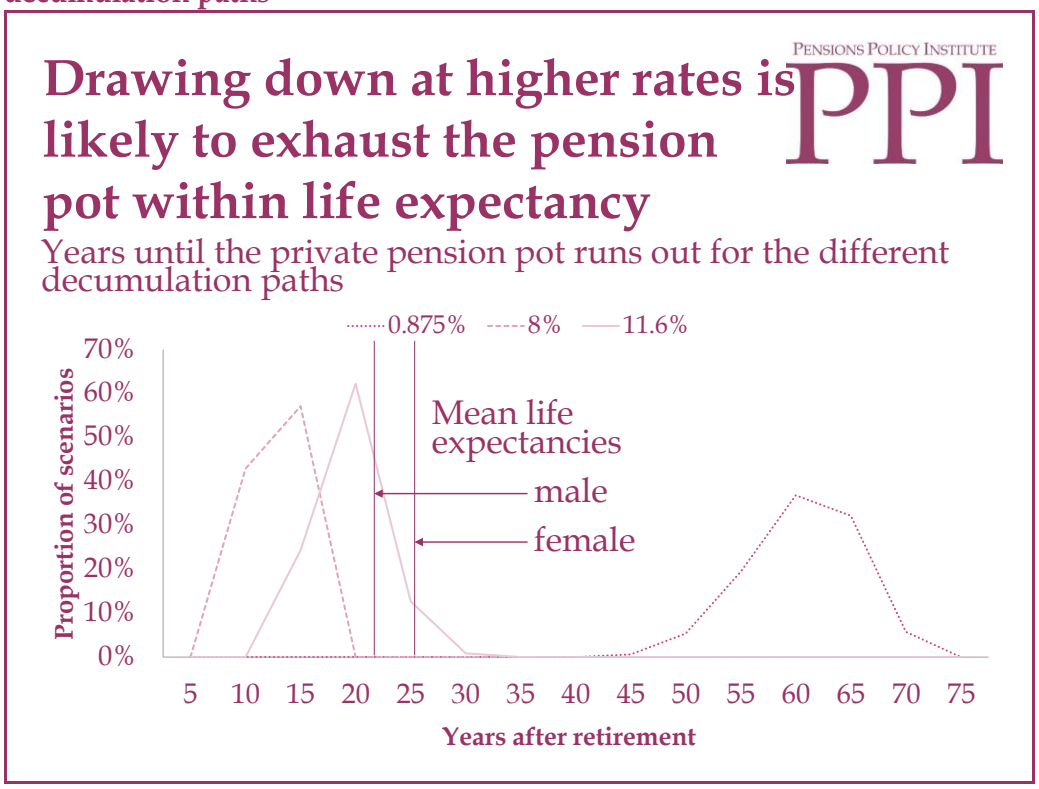
Risks

Longevity

The risk of longevity to an individual's post-retirement income is to consider whether or not the pension pot has been exhausted before death. For an 8% per year drawdown pattern, there is a 4% chance the pot will last the mean male life expectancy (22 years) and only a 0.4% chance of lasting the mean life expectancy of a female (26 years) (Chart 8).

Should a pension pot be exhausted private pension income will decrease, and where there is no balance from Pension Credit, there will be a reduction in income to the individual. This may have an impact upon quality of life for the individual. Conversely should the individual have pension wealth remaining at death this represents missed income during retirement which could have been used to enhance quality of life.

Chart 8: Years until the private pension pot runs out for the different decumulation paths



This risk can be mitigated through the purchase of an annuity which will provide an income for life, albeit at a lower level than that achieved through withdrawal at a higher rate.

Economic performance

The impact of economic performance upon the private pension income for an individual has two potential impacts: changing the level of income available; changing the length of time until the pot is exhausted. This may lead to behavioural impacts upon the investment strategy selected by the individual.

Increasing the level of income

Where the income depends heavily upon investment returns, such as the 0.875% plus investment income drawdown per year, the investment performance directly influences the income derived. The impact upon the income between the 10th and 90th percentile economic scenario for a median male is over £75 per week immediately after retirement.

Delaying the exhaustion of the pot

When drawing down at a flat amount from a pension pot the higher the investment return earned upon the remaining pot the longer the pot will last until exhaustion. For the 8% per year drawdown path there is a ten year difference in how long the pension pot lasts depending upon economic performance. By the time that a pot is exhausted for a median male the weekly income is worth approximately £20 in 2016 earnings terms.

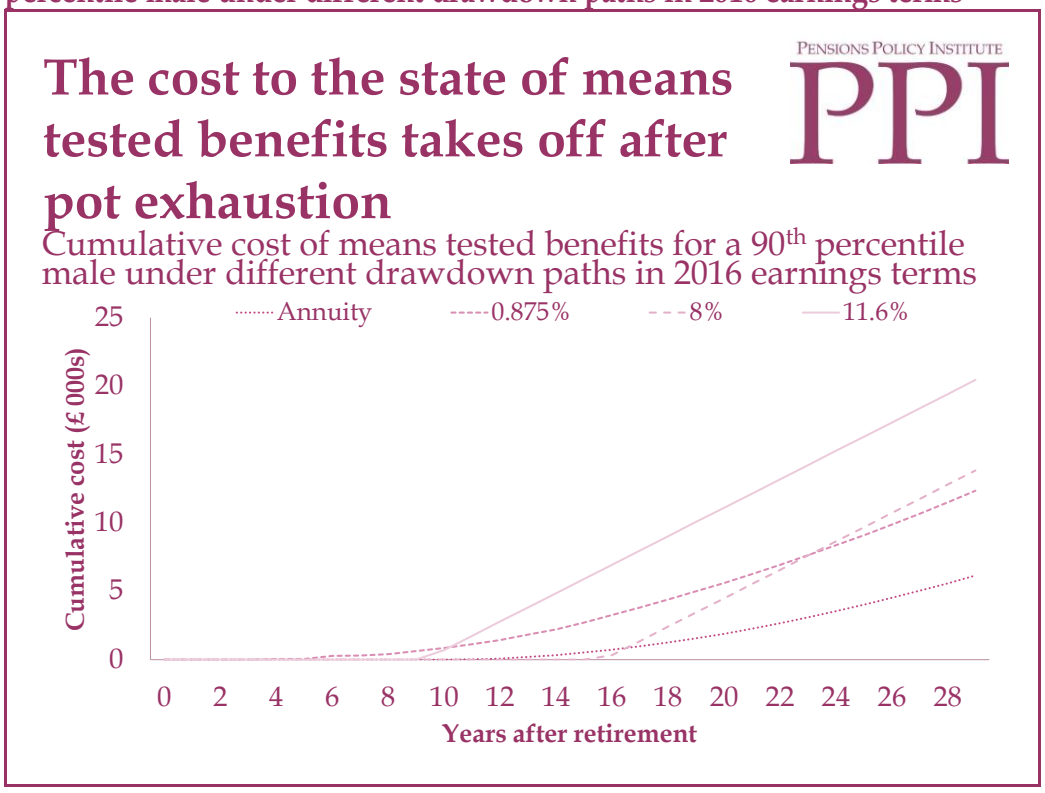
Chapter four: the impact to the State of individual's decisions

The impact upon the cost to the State is based upon the impacts upon income tax on pension income received against the payment of benefits.

The cost of means-tested benefits depends significantly upon the exhaustion of the pension pot after which an individual will require support. The rate of means-tested benefits payable is constant for an individual after the exhaustion of their pot, assuming that state benefits remain unchanged.

As the value of the income from an annuity or the 0.875% plus investment return per year drawdown reduces over time there will be a graduated introduction of state benefits payable (Chart 9).

Chart 9: Cumulative cost to the state of means tested benefits for a 90th percentile male under different drawdown paths in 2016 earnings terms



For the 30th percentile female the cost to the State is more consistent over time as there is a means-tested component to which she is entitled which significantly increases the absolute values and produces very similar results for each decumulation path.

Other benefits do not vary dependent upon the decumulation path taken by the individual.

Whilst an individual may exhaust their pot more rapidly with a higher income the impact of this will be to pay more income tax at their marginal rate. However the value of this increase in tax revenue is unlikely to offset the cost of additional state benefits paid upon exhaustion of the pot.

Appendix: Methodology, assumptions and limitations

Methodology

Model

The modelling has been undertaken using the PPI's Individual Model. The PPI Individual Model (IM) projects the components of income over retirement for a hypothetical individual with a specific working life.[10] The assumed future economic conditions (i.e. CPI, earnings and investment returns) come from the PPI's Economic Scenario Generator.

The model was run assuming 500 different economic scenarios from the PPI's Economic Scenario Generator (see below for description of how this was generated). For each economic scenario, values are generated for CPI, earnings, gilt return and equity return. The actual value for each variable will vary around the median (which are defined in Table A1). Using these variables, outcomes are generated within the PPI's Individual Model.

Economic scenario generation

This section provides a description of the model used to generate the economic scenarios for this project. The model is based upon a combination of PPI economic assumptions and analysis of historical data. Figure A1 summarises: the risk factors that were modelled; the sources of historical data used and; the PPI's long-term economic assumptions.

Figure A1 Model risk factors

Abbreviation	Description
	Source of historical data
	Long term assumptions
G	Nominal GDP.
	ONS quarterly data from 30/06/1955 to present.[11]
	Annual GDP growth of 4.0%.
P	CPI.
	ONS monthly data from 29/02/1988 to present.[12] Data from 31/01/1950 to 31/01/1989 derived from ONS RPI data using the methodology described by O'Neill and Ralph.[13]
	Annual CPI growth of 2.0%.
W	Average Weekly Earnings.
	ONS monthly data from 31/01/2000 to present.[14]

[10] For more information on the Individual Model, see PPI (2003) The Under-pensioned
[11] Source Bloomberg L.P
[12] Source Bloomberg L.P
[13] Robert O'Neill and Jeff Ralph, Office for National Statistics (2013)
[14] Source Bloomberg L.P

	Rescaled valued from ONS Average Earnings Index from 31/01/1963 to 31/12/1999.[15]
	Annual average earnings growth of 4.4%.
Y^l	Long term yields.
	End of month FTSE Actuaries 15 Year Gilts Index from 30/11/1998 to present.[16] Low coupon 15 year gilts yields from 31/12/1975 to 31/10/1998.[17]
	Nominal return on gilts of 3%.
S	Stock returns.
	End of month FTSE All share total return index from 31/12/1985 to present.[18]
	Nominal return on equities of 7%.

Using these variables, a six dimensional process, x_t is defined.

$$x_t = \begin{bmatrix} \ln G_t - \ln G_{t-12} \\ \ln(P_t - \ln P_{t-12} + 0.02) \\ \ln W_t - \ln W_{t-12} \\ \ln\left(e^{Y_t^l} - 1\right) \\ \ln\left(e^{Y_t^s} - 1\right) \\ \ln S_t \end{bmatrix}$$

Where t denotes time in months.

The development of the vector x_t is modelled by the first order stochastic difference equation:

$$\Delta x_t = A x_{t-1} + a + \varepsilon_t$$

Where A is a 6 by 6 matrix, a is a six dimensional vector and ε_t are independent multivariate Gaussian random variables with zero mean. The values of A and a and the volatilities and correlation of the ε_t are given in
Table A1. The matrix A and the covariance matrix of the ε_t were determined by calibrating against the historical data. The coefficients of a were then selected to match the long term economic assumptions.

It follows that the values of x_t will have a multivariate normal distribution. Simulated investment returns will, however, be non-Gaussian partly because of the nonlinear transformations above. Moreover, the yields are nonlinearly related to bond investments.

The first component and third components of x_t give the annual growth rates of GDP and wages, respectively. The fourth and fifth components are transformed yields. The transformation applied ensures that the yields are always positive in simulations. Similarly the second component gives a transformed growth rate of CPI. In this case, the transformation applied ensures that inflation never drops

[15] Source Bloomberg L.P
[16] Source Bloomberg L.P
[17] Data from the Heriot-Watt/Institute and Faculty of Actuaries Gilt Database
[18] Source Bloomberg L.P

below -2% in the simulations. This figure was selected to be twice the maximum rate of deflation ever found in the historical data. More sophisticated transformations of the CPI that allow for arbitrarily negative deflation has not been be considered.

Table A1: Model parameters

The matrix A

	G	P	W	Y^l	Y^s	S
G	0.0000	-0.0026	0.0000	0.0010	-0.0006	0.0000
P	0.0000	-0.0383	0.3936	0.0000	0.0000	0.0000
W	0.1028	0.0000	-0.3759	-0.0010	0.0020	0.0000
Y^l	0.0000	0.0000	0.0000	-0.0055	0.0000	0.0000
Y^s	6.4361	0.0000	0.0000	0.0000	-0.0348	0.0000
S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

The vector a'

G	P	W	Y^l	Y^s	S
-0.0101	-0.1406	0.0085	0.0220	-0.1190	0.0058

Annual volatility of ε_t

G	P	W	Y^l	Y^s	S
0.41	0.09	1.20	1.34	1.25	0.73

Correlation matrix of ε_t

	G	P	W	Y^l	Y^s	S
G	1.00	-0.01	0.11	0.07	0.10	0.13
P	-0.01	1.00	0.02	0.06	0.04	-0.04
W	0.11	0.02	1.00	0.15	0.07	-0.02
Y^l	0.07	0.06	0.15	1.00	0.30	-0.12
Y^s	0.10	0.04	0.07	0.30	1.00	-0.12
S	0.13	-0.04	-0.02	-0.12	-0.12	1.00

Monthly log-returns on bond and money market investments are given by

$R_t^j = Y^j/12 - D^j \Delta Y_t^j \qquad j = l, s$

Where D is the duration of the investment class, $D^l = 12.25$ and $D^s = 0.125$.

For a general reference on multivariate time series analysis see Lütkepohl.[19] Other applications of the modelling approach presented here can be found, for example, in Koivu, Pennanen and Ranne[20] and Aro and Pennanen (2005).[21]

[19] Lütkepohl (2006)
[20] M.Koivu, T.Pennanen and A.Rann (2005)
[21] H.Aro and T.Pennanen (2012)

Assumptions

The model was run on the following assumptions:

- The median return on equities is assumed to be 7% and the median return on gilts is assumed to be 3%.
- The pension pot is assumed to be invested 70% in gilts and 30% in equities.
- There is a 0.75% charge on drawdown.
- The individual's characteristics are set as in the descriptions.
- For drawdown, the rate is assumed to be the percentage of the initial pot.
- For the 0.875% drawdown rate, it is assumed they drawdown 0.875% of the initial pension pot plus any investment returns in that year.
- For the decumulation path to run out after 10 years, to ensure on average individuals run out at this point, a drawdown rate of 11.6% is assumed.
- The pension pot was determined from ELSA Wave 5 by taking everyone aged 50 to the state pension age (SPA) and projecting their pension pot until they reach SPA. The assumption made is they continue to contribute at the same level as stated in the ELSA dataset. The data is then discounted back to 2016 terms. (The data used in this modelling is from the "How complex are the decisions that pension savers need to make at retirement?" report and uprated by earnings to be in 2016 terms and split by gender).
- The full pension pot is assumed to go through drawdown (no lump sum is taken).
- The individuals are assumed to retire at their state pension age (aged 63 for females and 65 for males) in the year 2016.
- The individual is assumed to receive the new state pension from the year she retires. The additional state pension part, which prevents retirees losing what they would be entitled to in the old system, has been removed.
- The state pension is assumed to increase by the triple lock.
- They receive the Christmas Bonus and Winter Fuel Payment which are assumed to be constant but the Winter Fuel Payment increases once she reaches age 80.
- The median earnings and CPI increase is assumed to be 4.4% and 2.0% respectively.
- The average life expectancy is taken from the ONS cohort life expectancies for males aged 65 and females aged 63 in 2016.
- For the individual who receives less than the fully state pension, it is assumed they have a break of 10 years.
- Council tax is assumed to be £20 a week and increases in line with earnings.
- The rent is assumed to be £141 for a median male and £129 for a low female (taken from the ONS family expenditure survey and uprated to 2016 terms) and increases in line with earnings.

Limitations of analysis

Care should be taken when interpreting the results in this report. In particular, one of the main limitations is that individuals are not considered to change their behaviour in response to investment performance. For example, if investments are performing poorly, an individual may choose to decrease their withdrawal rate and vice versa.

Monte Carlo simulation, used for investment scenarios, can be a powerful tool when trying to gain an understanding of the distribution of possible future outcomes. However, in common with other projection techniques, it is highly dependent on the assumptions made about the future. In this case, the choice of distribution and parameters of the underlying variables, the investment returns of equities, gilts and cash are important to the results.

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