PENSIONS POLICY INSTITUTE

PPI

Increasing Savings in Automatic Enrolment: Analysis Sponsored by Which?

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John has been the PPI's Senior Policy Analyst since 2008. In his time at the PPI John has worked in a lead role in the modelling of a wide range of projects including looking at public sector pensions and pension related tax-relief.

At the PPI, John is responsible for the PPI's Pension Facts and has authored Briefing Notes and reports on subjects such as how housing wealth can support retirement, tax policy on pension schemes, harnessing pension savings for debt alleviation, public sector pension reforms.

John joined the PPI in 2008 from Hewitt Associates. At Hewitt he worked primarily on modelling of standard and non-standard Defined Benefit pension scheme calculations for the consultants to present to the clients.

Prior to joining Hewitt John worked for the Government Actuary's Department for 8 years in the Occupational Pensions directorate, during which time he calculated public sector pension scheme valuations, bulk transfer values, and designed models for the use of other Government departments.

John has a BSc in Actuarial Mathematics and Statistics from Heriot Watt and a Post Graduate Diploma in Actuarial Management from Cass Business School.

Tim Pike, Head of Modelling, Pensions Policy Institute

Tim is Head of Modelling at the PPI, with responsibility for delivering the models and modelling to support the PPI's current research program. He joined the PPI in July 2015 and since then has analysed the projected implication of pension policies upon many significant groups. These have included the self-employed, women, younger generations, and the Exchequer.

Tim has worked alongside academics and other researchers on collaborative projects including WHeRL and CASPeR. These projects bring multidisciplinary research to widen the research scope to give a more complete view of the implications of interacting areas of policy.

Prior to joining the PPI Tim worked for Legal and General where he spent nearly ten years contributing to a wide variety of actuarial modelling projects, from financial reporting to annuity pricing.

Tim has an MA (Cantab.) having studied mathematics at Fitzwilliam College Cambridge.

The Pensions Policy Institute (PPI)

The PPI is an educational, independent research organisation with a charitable objective to inform the policy debate on pensions and retirement income provision. The PPI's aim is to improve information and understanding about pensions and retirement provision through research and analysis, discussion and publication. It does not lobby for any particular issue or reform solution but works to make the pensions and retirement policy debate better informed.

Pensions affect everyone. But too few people understand them and what is needed for the provision of an adequate retirement income. The PPI wants to change that. We believe that better information and understanding will lead to a better policy framework and a better provision of retirement income for all. The PPI aims to be an authoritative voice on policy on pensions and the provision of retirement income in the UK.

The PPI has specific objectives to:

- Provide relevant and accessible information on the extent and nature of retirement provision
- Contribute fact-based analysis and commentary to the policy-making process
- Extend and encourage research and debate on policy on pensions and retirement provision
- Be a helpful sounding board for providers, policy makers and opinion formers
- Inform the public debate on policy on pensions and retirement provision.

We believe that the PPI is unique in the study of pensions and retirement provision, as it is:

- Independent, with no political bias or vested interest
- Led by experts focused on pensions and retirement provision
- Considering the whole pension framework: state, private, and the interaction between them
- Pursuing both academically rigorous analysis and practical policy commentary
- Taking a long-term perspective on policy outcomes on pensions and retirement income
- Encouraging dialogue and debate with multiple constituencies

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Increasing savings in automatic enrolment: analysis sponsored by Which?

Executive Summary

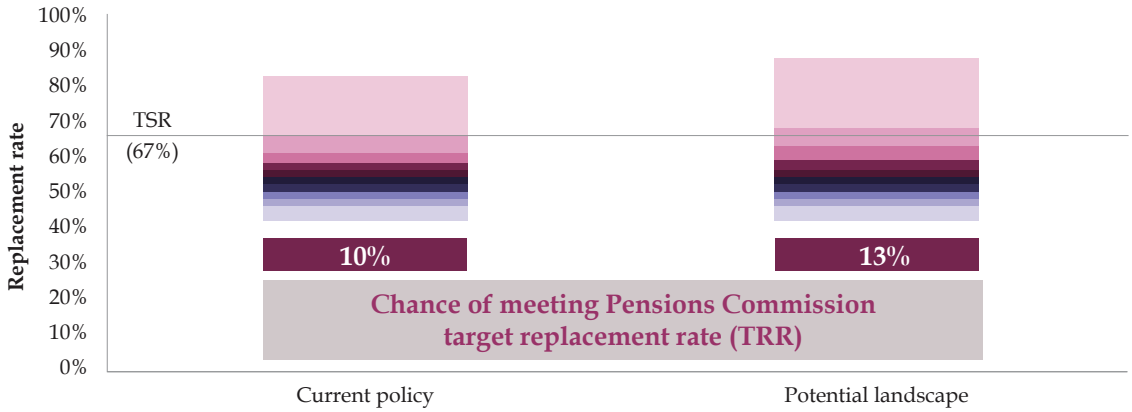
Which? is interested in exploring ways that policy levers can be used to help people contribute more to pension schemes and what impact successful changes would have on outcomes for individuals. The output of the modelling contained in this report has been used by Which? to inform their publication: Top up the pots: Achieving adequate retirement incomes with automatic enrolment.[1]

Automatic enrolment has substantially increased the number of active pension savers. However the minimum contribution levels may not be sufficient to provide an income in retirement that will maintain living standards for retirees. Policy or scheme approaches to increasing contributions can improve the likelihood of better outcomes for retirees.

There may be a future change to the balance of pension provision with increased private pension saving and lower new State Pension (nSP) increases. If the lower level of qualifying earnings is removed, as recommended by the 2017 Automatic Enrolment Review, and nSP is delinked from the triple lock and indexed in line with earnings by a future government, there is only a small net impact upon the distribution of outcomes and the chance of meeting a target replacement rate remains low (Chart Ex 1).

Chart Ex 1: Current policy produces similar outcomes to an environment with neither LEL or triple lock

Distribution of replacement rate outcomes, for median earning male, comparing current policy with the potential new landscape



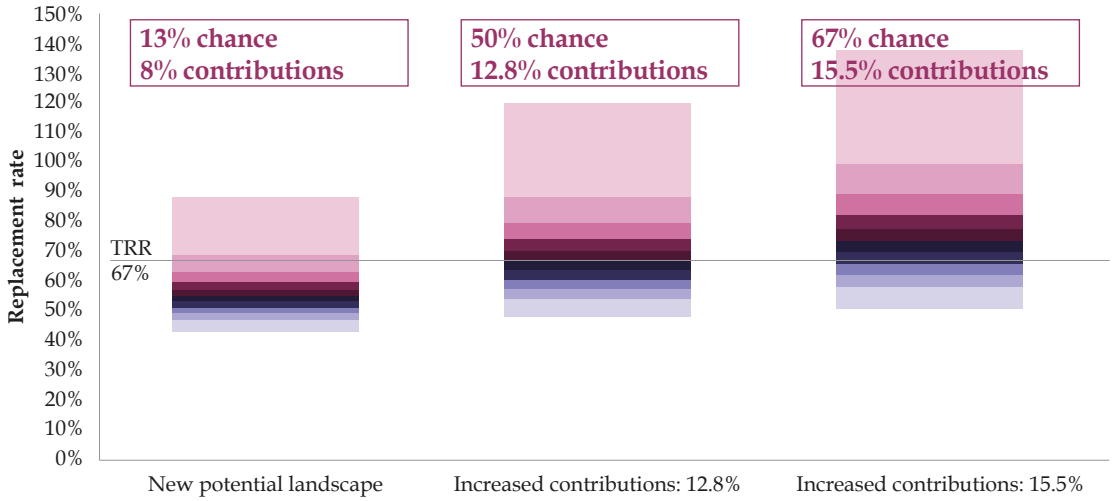
1. Which? (2019)

For any approach to raising contributions, the scale of the impact on retirement income depends not only on the new rate of contributions, but how quickly it is reached and how long any contribution level is maintained.

Contribution rates may need to nearly double from the minimum contribution level to give a median earning man a two in three chance of meeting a target replacement rate (Chart Ex 2).

Chart Ex 2: The probability of achieving a target replacement rate at different contribution levels

Distribution of replacement rate outcomes, for median earning men at different contribution rates



There is a balance to be struck between not making any contribution increase too painful to the employee, be that by engaging with them so they are happy about being in the pension scheme, and structuring increases in a way that does not have a large cliff-edge impact on reducing take-home pay. Should an employee consider opting out, they may also sacrifice employer contributions. The balance between the employer and employee contribution rates could be an important factor in this decision, as an individual may have to sacrifice a large employer contribution for a small change in take home pay or vice versa.

Chapter 1: Background

This paper gives a brief overview of the results and technical information on how they were produced. Full results are contained in the appendices with only limited results discussed in the report.

Chapter one provides background to the automatic enrolment system in the UK and the pension landscape in which it operates.

Chapter two explains the modelling outputs and a brief analysis on the results under current pension policy.

Chapter three considers the impact that a number of policy interventions could have upon pension outcomes.

Chapter four considers the impact of policy in the potential future landscape.

Appendix 1 sets out the policy scenarios and the individuals modelled.

Appendix 2 sets out the modelling approach in terms of methodology and assumptions.

Appendix 3 gives tables of results that were used in creating the charts. The tables contain outputs for more variables than just the replacement rate which is used in the charts.

Analysis

Which? is interested in how to increase the pension savings from automatic enrolment. They asked the PPI to perform stochastic modelling of policy reforms in order to determine the possible effect of such reforms. This note sets out results of that modelling. For the analysis by Which? please see Achieving adequate retirement incomes with automatic enrolment.[2]

Where pension contributions are based on a percentage of salary, the pension outcomes are dependent on:

i. the level of the contribution rate;
ii. the amount of income subject to the contribution rate;
iii. how long contributions are made for;
iv. the investment return achieved;
v. how the pension savings are accessed in retirement.

Automatic enrolment

The Government introduced legislation to automatically enrol employees, from 2012, who meet age and salary eligibility requirements into a work-based pension scheme with

2. Which? (2019)

an option to opt out. Under the automatic enrolment legislation, contributions are made into a qualifying pension scheme for employees who remain enrolled. There is a minimum level of contributions payable which started at 2% of qualifying salary in 2012, was increased to 5% of qualifying salary in 2018 and is due to increase to the long-term level of 8% of qualifying salary in 2019 (under current government policy). Employers are required to contribute to the pension scheme; the employee and the government (through tax relief) then make a balancing contribution to take the total up to the total minimum contribution level (Table 1).

In 2018/19 the salary band for contributions is on earnings between £6,032 and £46,350. So, while the contribution is 5% of qualifying earnings, the contribution rate as a percentage of total earnings is less than 5%. A person earning £15,000 a year would contribute £448 (5% of their qualifying earnings), which is only 3.0% of their total salary.

Table 1: Legislated automatic enrolment contribution levels

Year	Qualifying earnings (Annual)		Minimum contribution as a % of qualifying earnings		Effective total contribution rate	
	Lower level of qualifying earnings	Upper level of qualifying earnings	Employer	Total	Based on £15,000 earnings	Based on £20,000 earnings
2012-13	£5,564	£42,475	1%	2%	1.3%	1.4%
2013-14	£5,668	£41,450	1%	2%	1.2%	1.4%
2014-15	£5,772	£41,865	1%	2%	1.2%	1.4%
2015-16	£5,824	£42,385	1%	2%	1.2%	1.4%
2016-17	£5,824	£43,000	1%	2%	1.2%	1.4%
2017-18	£5,876	£45,000	1%	2%	1.2%	1.4%
2018-19	£6,032	£46,350	2%	5%	3.0%	3.5%
2019-20	£6,136	£50,000	3%	8%	4.7%	5.5%

The Department for Work and Pensions carried out a review of automatic enrolment in 2017 which made recommendations, including:

- Removing the lower level of qualifying earnings, so that pension contributions are payable on the first pound of earnings;
- Reducing the age criteria for eligibility from 22 to 18;
- Exploring ways to encourage savings among self-employed people.

The effect of implementing the automatic enrolment recommendations on the individual in the example above would be that their entire £15,000 salary would be subject to the 8% contribution rate in future, leading to pension contributions of £1,200, up from £709 if only qualifying earnings were considered.

Defined contribution pensions

In 2014 the Chancellor of the Exchequer announced a new "Freedoms and Choice" policy that would allow people to withdraw from their pension scheme as they wished, without the need to secure an income for life (generally through the purchase of an annuity) as had been the policy previously.

The policy meant that people could choose to make use of it in any way they see fit. This could lead the risk that people might spend down their pension too slowly, if they over estimate how long they will live or are especially risk averse, or conversely spend the pension too quickly, leading to a reduced standard of living in later retirement when the remaining pension fund runs low.

New State Pension

The new State Pension (nSP) was introduced in 2016. The key elements of the nSP on introduction were:

- A new, single-tier, State Pension of £155.65 per week (now £164.35) (for the full nSP) was put in place for those retiring from April 2016. This replaced the basic State Pension (bSP) and the State Second Pension (S2P);
- No further accrual of S2P entitlement;
- To qualify for the full nSP an individual needs 35 years of National Insurance Contributions (NICs), with a minimum of ten years to qualify for any nSP;
- Individuals reaching State Pension age (SPa) from April 2016 receive the higher of the nSP or their entitlement built up under the old system up to April 2016. Any further entitlement accrued after April 2016 is added to this amount until they reach the full amount of nSP or they reach SPa, whichever happens sooner.

The nSP was designed to operate alongside automatic enrolment which would introduce a large number of new savers, many of whom would be saving quite small amounts. Small amounts of pension income could, for many of the target group, simply erode their eligibility to means tested benefits, rather than increase their income in retirement. In order to maintain an incentive to save for retirement, the government introduced the nSP set at just above the level of the means tested Guarantee Credit.

The nSP has been uprated each year in line with the triple-lock. This means that this portion of State Pension income is increased by whichever is greater of earnings growth, consumer price inflation or 2.5%. This will tend to lead to the State Pension growing on average at a rate higher than assumed earnings growth. The Government has committed to maintain the triple lock until the end of the current parliamentary term in 2022.

Policy scenarios

Which? identified a number of policy scenarios to investigate how they may impact a range of individuals who are automatically enrolled into workplace pension schemes in line with legislation.

The policy environments the scenarios are based on

- Current policy which is used as a baseline for comparison with the impact of policy interventions.
- Future potential landscape, as current policy except:
  - The triple lock is replaced at the end of the current parliament (due in 2022) with an earnings link;
  - Pension contributions are payable on the first pound of earnings in line with the Automatic Enrolment Review recommendations.

State Pension policy

- Removal of the triple lock guarantee.

Automatic enrolment policy scenarios

- Removal of the lower level of qualifying earnings.
- Increasing minimum contributions to 12% of qualifying earnings.

Contribution escalation scenarios

- Tiered marginal contribution rates.
- Automatic escalation linked to earnings:
  - 25% of future pay rises are directed into pension contributions, capped at 15% contribution rate.
- Automatic escalation linked to age:
  - Minimum contributions increasing to 12% at age 35 and 15% at age 50.

Individuals considered

The impact of these policy scenarios have been stochastically projected for a number of individuals:

Earnings levels

- 25th percentile, median and 75th percentile of gender and age linked earnings based upon Labour Force Survey (LFS) analysis.

Working patterns

- Men are assumed to be in employment throughout working ages
- Women are modelled as:
  - Employed throughout working ages;
  - Employed throughout working ages, but working reduced (50%) hours between ages 30 and 40.

Pension provision

- Individuals are assumed to be members of workplace pension schemes when employed.
- At retirement they are assumed to draw down on their pension fund at an annual amount equal to 3.5% of the initial fund at retirement, rising each year in line with the increase in the Consumer Prices Index (CPI).
- Individuals modelled have been assumed to be entitled to a full nSP:
  - This is based upon National Insurance contributions and claiming qualifying benefits when not working.

Chapter 2: Outcomes under current policy

This chapter considers the potential range of outcomes for individuals under the current pension landscape of automatic enrolment. Potential incomes in retirement are considered, however a consequence of Pensions Freedoms is that the income levels calculated are merely indicative. This does, though, provide a suitable basis for comparison of results.

Box 1: Interpretation of results

Replacement rates

Results are represented as replacement rates. These are calculated as the income from projected private DC scheme and the new State Pension (nSP) divided by pensionable income just prior to retirement. This may not reflect the totality of an individual's income in retirement as other sources of income are not included.

The use of replacement rates means that the figures do not require additional manipulation to be considered in current terms, as they are effectively represented in earnings terms.

It is generally accepted that it is not necessary to have a retirement income that is the same as the pre-retirement income (i.e. a replacement rate of 100%). The Pensions Commission set out benchmark target replacement rates which varied according to pre-retirement income,[3] these target rates are used in the analysis, after adjusting for 2018 earnings terms.

Stochastic projection

An individual's projected pension saving is subject to stochastic economic projection. Results are drawn from 3,000 equally probable projections of future economic scenarios. Each different scenario affects the individual's earnings and therefore their contributions, as well as the investment return on funds and the impact of inflation.

This leads to a distribution of different levels of retirement income resulting from the economic scenarios drawn from a distribution (see The PPI's Economic Scenario Generator for further detail on the Economic Scenario Generator).

Results are presented as points in the distribution of outcomes.

Pensions Commission target replacement rates[4]

Earnings[5]	Target replacement rate
< £9,500	80%
£9,500 - £17,499	70%
£17,500 - £24,999	67%
£25,000 - £39,999	60%
£40,000 +	50%

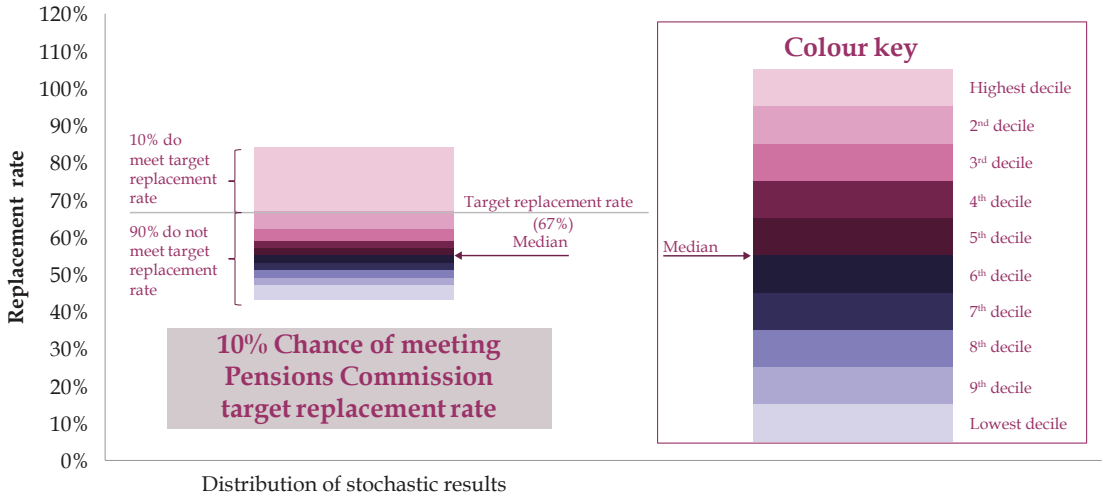
3. Pensions Commission (2004)
4. Pensions Commission (2004)
5. Earnings are in 2004 terms

Box 2: Interpretation of charts

The outcomes under each stochastic scenario are grouped into deciles from highest replacement rate to lowest replacement rate.

Example chart

Distribution of replacement rate outcomes



Meeting TRR

The stochastic results fall above and below this level of the Pensions Commission target replacement rate (TRR) indicated on the chart.

The chance of meeting the TRR is calculated as the proportion of equally probably outcomes which meet this replacement rate.

In the example above only the highest decile of results exceed the TRR, so the probability of meeting the TRR is 10%.

Bands

Each coloured band represents a decile of results. The deciles are not the same width as the distribution of outcomes is not uniform. Many outcomes are around or about an average level, illustrated by narrower bands. At the ends of the distribution bands are wider, particularly at the highest outcomes, as there is a large tail on the distribution of outcomes.

The median result is at the boundary of the 5th and 6th deciles.

The highest and lowest deciles omit the highest 1% and lowest 1% of outcomes which fall outside of the coloured bands.

Results

Baseline scenario

The baseline scenario represents a median earning man aged 22 in 2018:

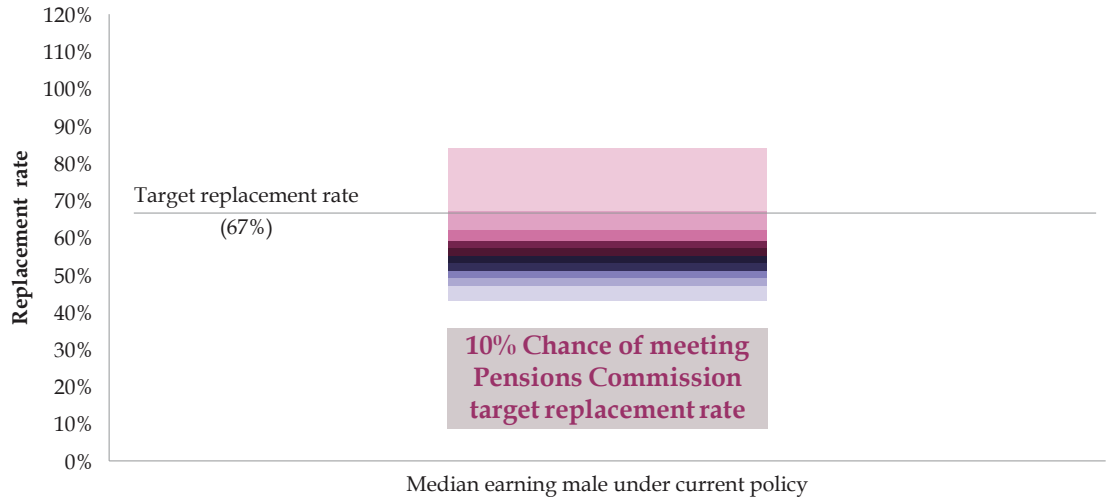
- Earning at the age-related median earnings level for men, throughout his working life.
- Contributing to a pension scheme at the automatic enrolment minimum level.
- Retiring from work at his State Pension age.

In retirement he draws down on his pension fund at an annual amount equal to 3.5% of the initial fund at retirement, each year increased in line with the increase in the Consumer Prices Index (CPI). This rate of drawdown is considered sustainable with around a 4% chance of exhausting a pot before death.[6] He is eligible to receive the full level of the new State Pension (nSP).

The median earning man's income just before retirement is £24,500 in 2018 earnings terms. For this level of earnings, the Pensions Commission's target replacement rate would be 67% of pre-retirement earnings to maintain a consistent standard of living. This replacement rate is only achieved in the highest decile of outcomes, this means that in only 10% of the projected runs did the baseline savings scenario manage to achieve the target replacement rate (Chart 1).

Chart 1: A median earning man is unlikely to achieve his target replacement rate

Distribution of replacement rate outcomes, for median earning male under current policy



6. PPI (2018)

Individuals with other earnings profiles

Having a different level of earnings throughout working life can affect the replacement rate achieved in retirement in several ways:

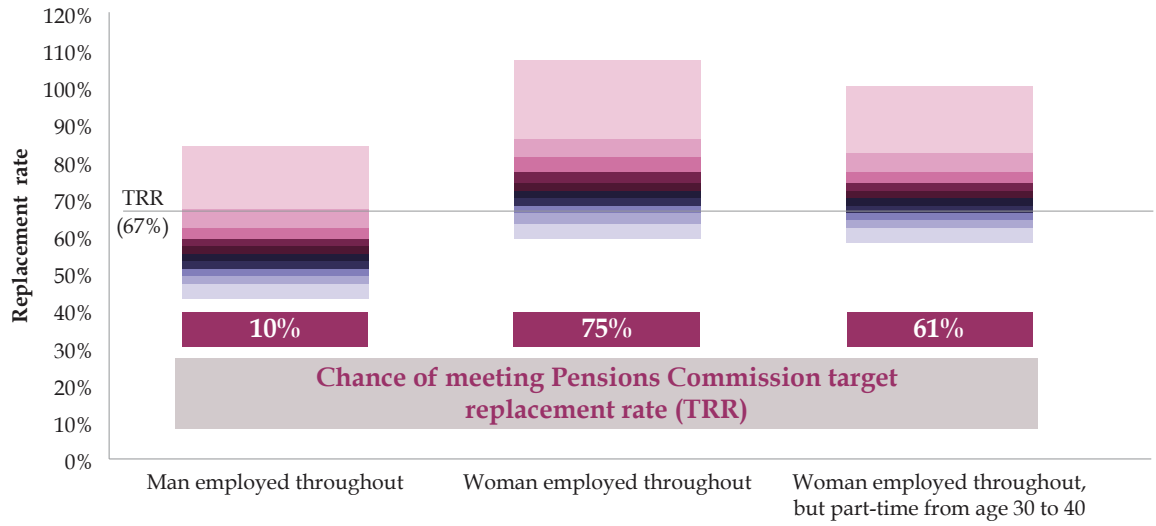
- The level at which the target replacement rate is set (which the Pensions Commission set out in salary bands);
- The amount of private pension contributions (contributions are expressed as a percentage of qualifying income);
- Lower earners may be able make up a larger portion of their replacement rate through the nSP.

Female employees

A woman under current policy may have a better chance of meeting a target replacement rate of 67% of pre-retirement income than a man. That is because median earnings for women are lower income than median earnings for men, so their target replacement income is lower. The level of income from the nSP does not depend on income, so the flat rate of the nSP is a higher proportion of women's pre-retirement income. This means that for a median earning woman the gap that needs to be filled to reach a target replacement income through private pension saving is smaller for a median earning woman than a median earning man (Chart 2).

Chart 2: Women are more likely than men to achieve target replacement rates

Distribution of replacement rate outcomes, for median earning men and women under current policy



Women are more likely than men to take time out of work (for example taking on the role of family carer). Taking time out of full time work reduces the contributions being made into the pension scheme making it more difficult to achieve the target replacement rate. Where the median earning woman works part-time for ten years, she achieves her target replacement rate in just over 60% of cases.

Chapter 3: Improving outcomes through policy

This chapter considers the impact that policy intervention may have upon projected retirement outcomes for those who are members of pension schemes at the minimum cost under automatic enrolment. Further results for all policy scenarios are included in Appendix three: Detailed results tables.

The policy scenarios cover:

- **The State Pension;**
- **Automatic enrolment policy;**
- **Increasing contribution rates.**

State Pension policy scenarios

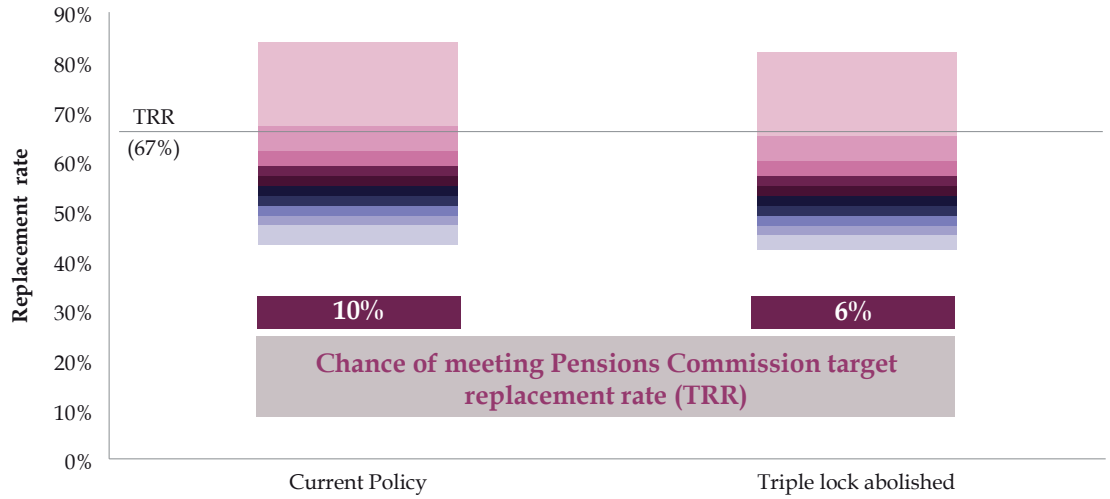
State Pension triple lock uprating to be replaced with an earnings link

The State Pension is currently increased in line with the triple lock, which uprates the State Pension in line with the greater of the growth in earnings, the growth in CPI, or 2.5%. The triple lock is not legislated, it is just current government policy, promised up until the end of the current parliament. Legislation only requires the State Pension to be increased in line with the growth in average earnings. Removing the triple-lock from 2022 will halt the growth of the State Pension in earnings terms. The current level of the new State Pension (nSP) in 2018-19 is £8,546, any growth above that level is due to the other guarantees of the triple lock biting between 2018 and 2022.

Changes to the State Pension do not directly impact private pension savings but affects the landscape that automatic enrolment operates in and may encourage individuals to take action to mitigate the effects on total retirement income. This behavioural response has not been reflected in the modelling.

Chart 3: Abolishing triple-lock reduces likelihood of achieving replacement rate

Distribution of replacement rate outcomes, for median earning male, comparing current policy with triple lock abolished from 2022



Comparing results under this scenario to the current policy, there is no change to private pension outcomes, but the State Pension is significantly lower. The total pension income is therefore lower, which is reflected in the lower replacement rate. Without increasing saving this individual is less likely to achieve their replacement rate under an earnings linked State Pension (Chart 3).

Automatic Enrolment policy scenarios

Removing the lower level of the automatic enrolment qualifying earnings

Automatic enrolment minimum contributions are paid on a band of salary. This means that not all the salary is considered, and the contribution rate, while being 8% of the qualifying earnings, is less than 8% of total salary. For example, the lower level of qualifying earnings is £6,136 in 2019, for an individual earning £20,000 a year, a contribution of 8% of qualifying salary would be £1,109, around 5.5% of their total salary, removing the lower level of qualifying earnings would increase the contribution to be 8% of their total salary, £1,600 (Table 1).

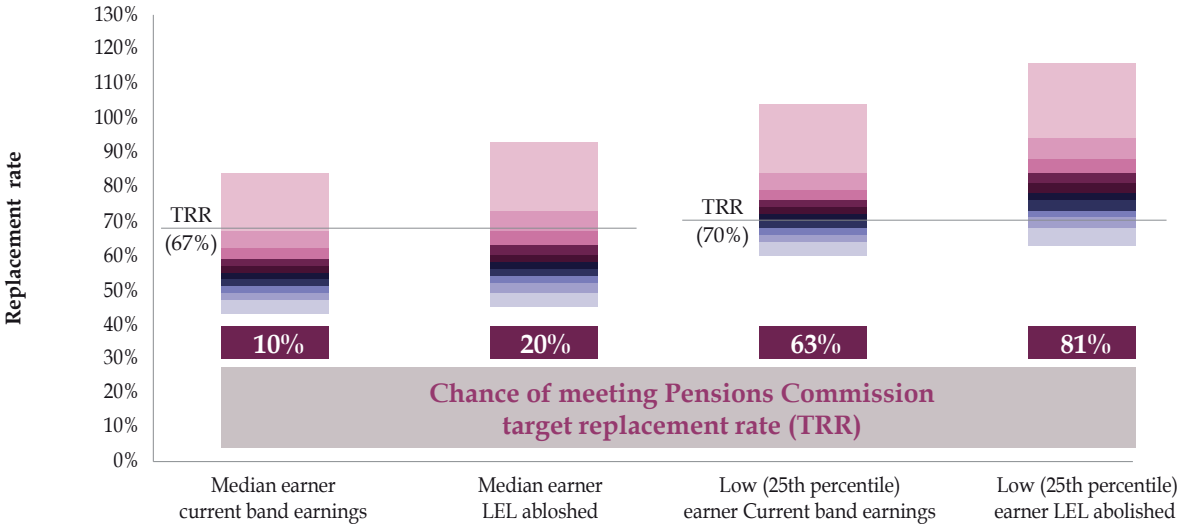
Removing the lower level of qualifying earnings, applicable to automatic enrolment minimum contributions, is a policy recommendation of the Department of Work and Pension's Automatic Enrolment Review in 2017.[7] It has been assumed that this recommendation would come into force from 2025.

Removing the lower level of qualifying earnings increases contribution rates and, therefore, private pension savings. This increases projected replacement rates for all individuals. For a median earner the whole of the highest decile of outcomes achieve the Pension Commission's target replacement rate. However, this means that there is still around an 80% chance that this higher amount of savings will still not be adequate to achieve the target replacement rate of 67% of pre-retirement income (Chart 4).

7. DWP (2017)

Chart 4: Removing the lower earnings limit increases likelihood of achieving replacement rate

Distribution of replacement rate outcomes, for males earnings at median and 25th percentile levels, comparing baseline scenario to abolishing lower earnings limit (LEL)



A man earning at the 25th percentile level has a pre-retirement income of around £16,500 in 2018 earnings terms. According to the Pension Commission benchmarks, he would have a target replacement rate of 70% of pre-retirement income, a target income of around £11,600. The State Pension can cover a significant amount of the target replacement amount, being upwards of £8,546 in 2018 earnings terms (depending on how often the triple-lock bites).

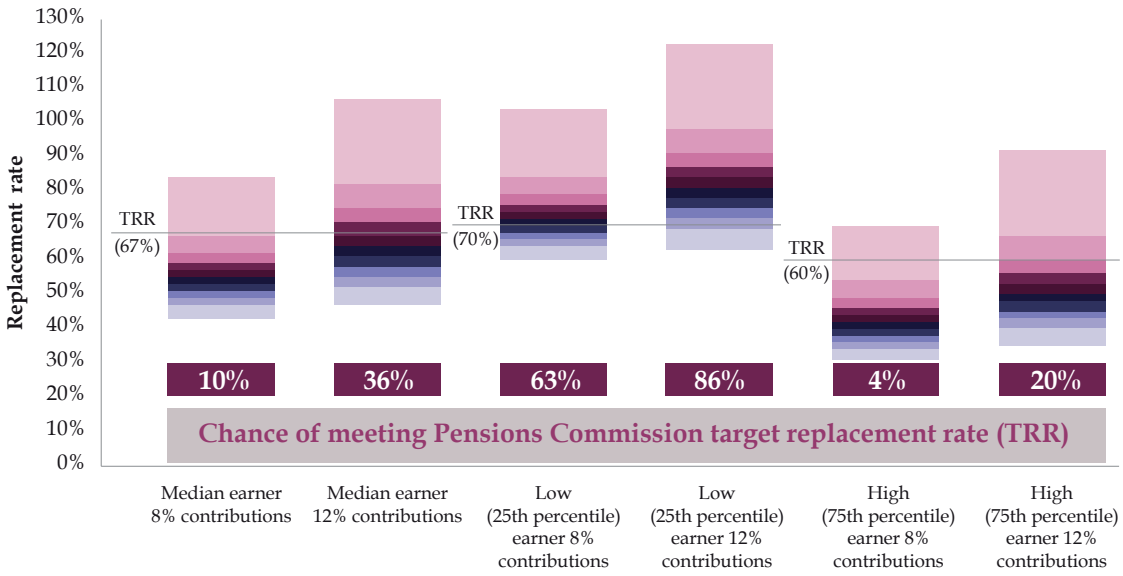
Removing the lower level of qualifying earnings has a very large effect on the 25th percentile earner, because this opens up a larger proportion of his income to pension contributions. With the lower level of qualifying earnings removed from 2025 onward, the 25th percentile earner has an 81% chance of achieving their target replacement rate. This is an increase above the baseline scenario under which he achieves his target replacement rate with only a 63% chance.

Contribution rate of 12% of qualifying earnings starting in 2019

Under the current legislation the long-term minimum automatic enrolment contributions are 8% of qualifying earnings, but that level is reached in April 2019. Increasing the long-term minimum automatic enrolment contribution rate to 12% could enable the employees to achieve a higher pension pot at retirement.

Chart 5: Higher contributions increase likelihood of achieving replacement rate

Distribution of replacement rate outcomes, for median earning male, comparing 8% contributions with 12% contributions on band earnings



Increasing the pension contribution rate on qualifying earnings to 12% increases the private pension savings by 50%. Under this scenario the probability of achieving target replacement rates increases due to the higher private pension saving (Chart 5):

- A median earning man has a 36% probability of meeting target replacement rates (up from 10%);
- A 25th percentile earner has a 86% probability of meeting target replacement rates (up from 36%);
- A 75th percentile earner has a 20% probability of meeting target replacement rates (up from 4%).

For the 25th percentile earner, increasing the contribution rate to 12% of qualifying earnings, leads to the target replacement rate being achieved in 82% of runs. This is significantly higher than a median earner as the majority of the target replacement rate is made up by State Pension income leaving a smaller gap to be filled by private pension saving.

Conversely, the 75th percentile earner has a larger gap between State Pension income and target retirement income that needs to be filled with private pension saving. According to the Pension Commission benchmarks, he would have a lower target replacement rate of 60% of pre-retirement income, a target income of around £22,000. The State Pension covers less than half of this, leaving a significant amount of the target replacement amount left to be covered by the private pension. However increasing contributions to 12% of qualifying earnings only enables the man earning at the 75th percentile level to achieve his target replacement rate in 20% of the runs.

Approaches to increasing contribution rates

While increasing contribution rates for those who participate in workplace pensions will improve their outcomes there is a risk that more people may opt out of pension saving. This is due to the immediate impact upon take home pay from increased employer contributions, however this comes with the risk of also missing out on employer contributions which would reduce their total remuneration. To mitigate this increased risk various strategies for increasing pension contribution rates have been considered which may reduce the likelihood of an employee opting out of a workplace pension.

Tiered marginal contribution rates

This scenario uses tiered contributions on bands of salary, starting at automatic enrolment minimum contributions on salary from the lower level of qualifying earnings to £19,500, and 12% on salary above this, up to the upper level of qualifying earnings:

Salary band	Below lower level of qualifying earnings	Lower level of qualifying earnings to £19,500	£19,500 to upper level of qualifying earnings	Above upper level of qualifying earnings
Marginal contribution rate	0%	8%	12%	0%

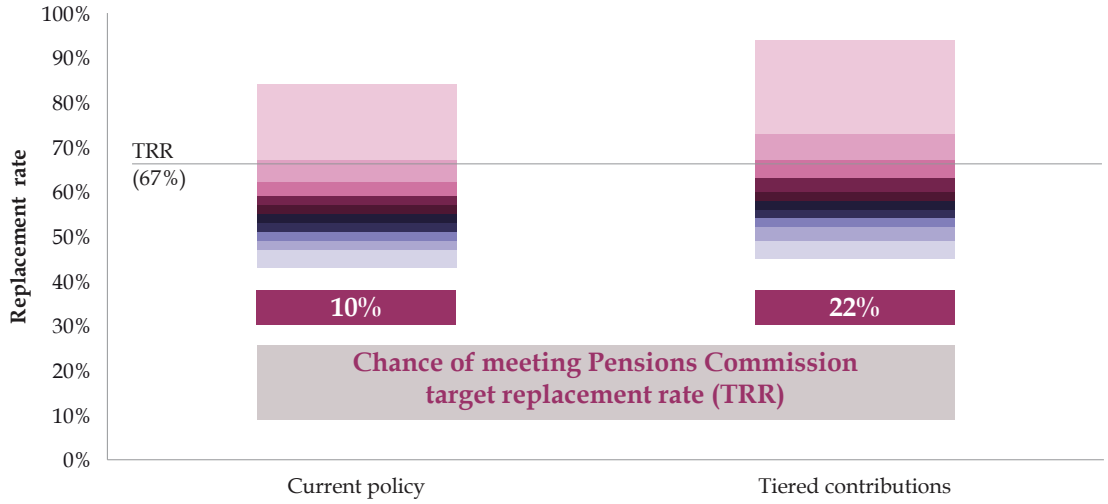
This increases the contribution rate for those who are more likely to be able to afford to make pension contributions and who will have a larger gap between State provision and their target retirement income.

For someone with a salary of £40,000 their current minimum contribution of £226 per month (based on 8% of 2019 qualifying earnings) would be raised to a contribution of £294 per month, a 30% increase. At a salary level of £25,000 (close to the median salary level) the increase in monthly contribution would only be £18 (15%).

Under this level of tiered contribution, at median earnings levels private pension saving does increase, but the increase is low. The likelihood of achieving the target replacement rate increases from 10% in the baseline scenario to 22% (Chart 6).

Chart 6: Tiered contributions have a small positive effect on replacement rate

Distribution of replacement rate outcomes, for median earning male, comparing current policy with tiered contributions on earnings



For the median earner the majority of their income is eligible for contributions at the current automatic enrolment minimum contribution rate. Tiered contribution rates only affect earnings over £19,500, so higher contributions are made on a small portion of his income. This means that the tiered contributions have only a small impact on his private pension.

Automatic escalation linked to earnings

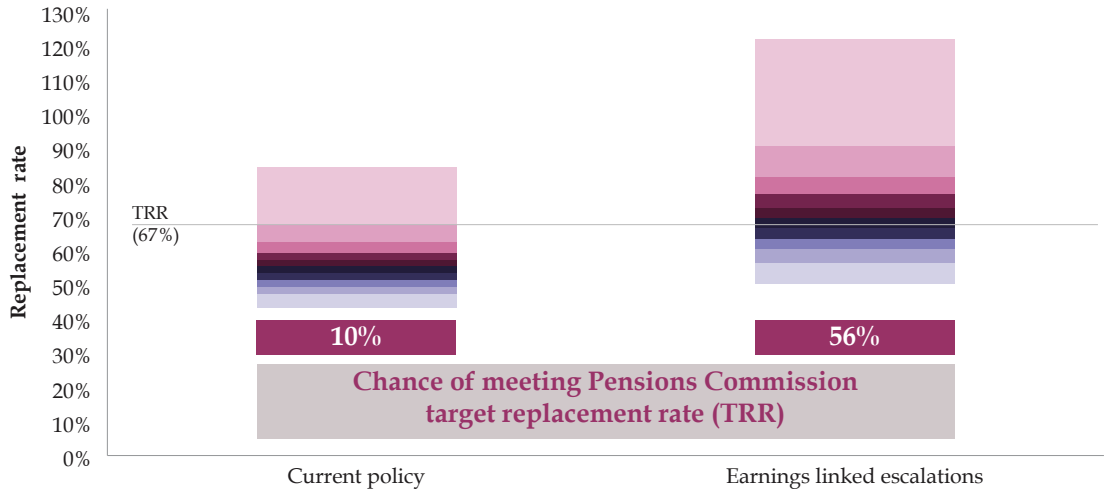
Under automatic escalation by earnings, each time an employee's income increases a portion of the increase goes to pension contributions. Increasing contributions in this manner means that an increase in contributions only occurs when an individual is receiving a pay rise. This might make a contribution increase more palatable to the individual, because an increase in the contribution doesn't appear to negatively affect take-home pay, as there is always large remaining portion of the pay rise that actually does improve take-home pay.

In the scenario modelled, the contribution increases by a quarter of any pay rise, with the total contribution capped at 15% of qualifying earnings. Age related pay profiles are derived from the Labour Force Survey. The resulting pattern of pay includes promotional increases and rapid increase in pay increases between ages 20 and 30.[8] Contributions increase from the minimum automatic enrolment contributions up to 15% of qualifying earnings very quickly in line with pay increases, reaching the maximum by age 25 in most cases.

With contributions of 15% of qualifying earnings for the majority of their working life, there is a greater probability (56%) of being able to achieve the target replacement rate (Chart 7).

Chart 7: Earnings linked automatic escalation can increase saving

Distribution of replacement rate outcomes, for median earning male, comparing current policy with automatic escalation linked to earnings



Automatic escalation linked to age

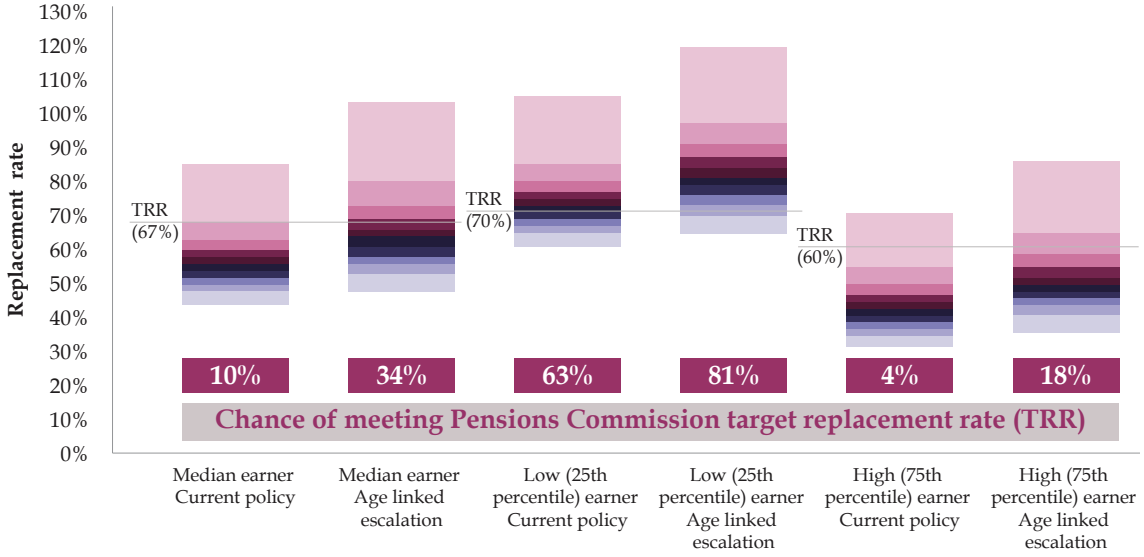
The level of contributions could be linked to age, this may help reflect individuals' financial prioritisation, as well as generally increasing when earnings are higher and they may have a greater capacity to save. In this scenario the total contribution rate is increased from the automatic enrolment minimum of 8% of qualifying earnings to 12% of qualifying earnings from age 35, and 15% of qualifying earnings from age 50:

Age (years)	Up to 34	35 to 49	50 onwards
Contribution rate *(qualifying earnings)*	8%	12%	15%

8. Pattern of earnings set out in Appendix 2

Chart 8: Age linked escalation could make it more likely for all earners to achieve their target replacement rate

Distribution of replacement rate outcomes, for men of different earning levels, comparing current policy with age linked contribution escalation



Under this age related escalation scenario, the target replacement rate is more likely to be achieved than under current policy:

- A median earning man has a 34% probability of meeting target replacement rates (up from 10%);
- A 25th percentile earner has a 81% probability of meeting target replacement rates (up from 63%);
- A 75th percentile earner has a 18% probability of meeting target replacement rates (up from 4%).

These are similar to the chance of meeting target replacement rates based upon a 12% contribution rate throughout working life, with the 8% contribution rate in early working life balancing with the 15% contribution rate in later working life.

Balancing the risk of contribution escalations

For each of the contribution escalation scenarios, the scale of the impact is driven by the highest rate of contributions, and for how long it is paid. However there may also be a balance to be struck in not making it too painful to the employee; potentially through engagement so they are happy about being in the pension scheme, or structuring increases in a way that does not have a large cliff-edge impact reducing take-home pay. For any escalation of contribution rates there is a risk that an employee may opt out of the pension scheme to preserve take home pay rather than increase their pension contribution.

The impact of opting out depends upon the balance between employer and employee contributions:

- The employee contribution level determines the impact upon take home pay;
- The employer contribution level determines the impact upon total remuneration.

This balance may influence the decision to opt out when the trade-off between take home pay and total remuneration is considered. Where total contributions largely comprise of employer contributions opting out may yield only a small increase in take home pay for a larger drop in total remuneration.

Any opt out would reduce pension saving, potentially leading to a lower income in retirement.

Chapter 4: Policy changes in a future landscape

This chapter considers the impact of how policy options may interact with one another when framed in a future pension landscape. The pension landscape has been assumed to change in two significant ways.

1. The triple lock is assumed to be replaced with an earnings link from 2022, the end of the current parliament. Government policy is to maintain the triple lock until the end of the current parliament, however beyond this date it is assumed that State Pension increases fall in line with the legislated approach, that is, increases to the new State Pension (nSP) are in line with earnings.
2. The lower level of qualifying earnings to define minimum contribution levels is removed so that contributions are paid from the first pound of earnings from 2025. This is based on the 2017 Automatic Enrolment Review recommendation allowing time for the implementation of necessary legislation.[9]

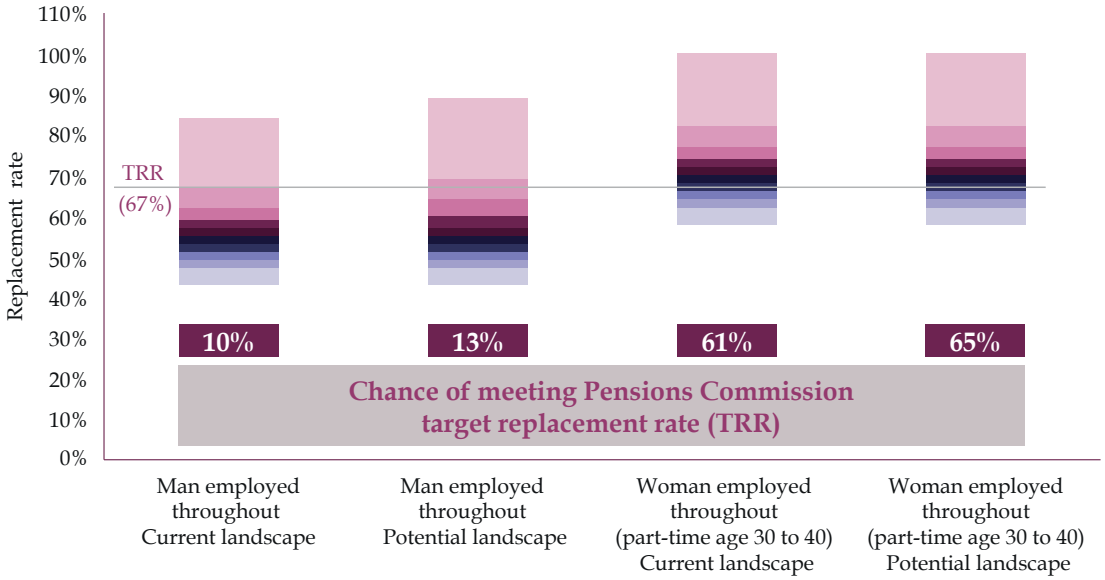
Results are considered in this chapter for a median earning male who works until retirement. Further results are available in Appendix three: Detailed results tables.

The impact of this potential pension landscape

At different earnings levels there is a consistent small net impact upon outcomes when comparing the current policy environment with this potential future environment (Chart 9).

Chart 9: The potential new landscape has little impact for median earners

Distribution of replacement rate outcomes, at median earning levels, comparing current policy with the potential new landscape



The impact is due to the increase of private pension saving resulting from the removal of the lower level of qualifying earnings generally balancing the impact of the abolition of the triple lock (see State Pension triple lock uprating to be replaced with an earnings link). However the balance of the cost is now more weighted towards the individual who must make up a higher proportion of their retirement income through private pension saving).

9. DWP (2017)

The small impact is consistent across different earnings levels because the net impact of the balancing factors is largely independent of working age incomes, assuming pension contributions are made:

- State Pension income is paid at a flat rate;
- The increase of contribution from removing the lower level of qualifying earnings is the same for anyone earning above this level (it is simply 8% of the lower level of qualifying earnings).

If an individual does not make private pension contributions, (either through economic inactivity or opting out of private pension saving) then they stand to lose out in this potential new landscape as their State Pension income will be reduced and the effect will not be mitigated through higher private pension saving.

The impact of increased contribution strategies in this potential pension landscape

With a greater dependence on private pension saving in this potential landscape increasing private pension saving rates becomes more significant to retirement incomes.

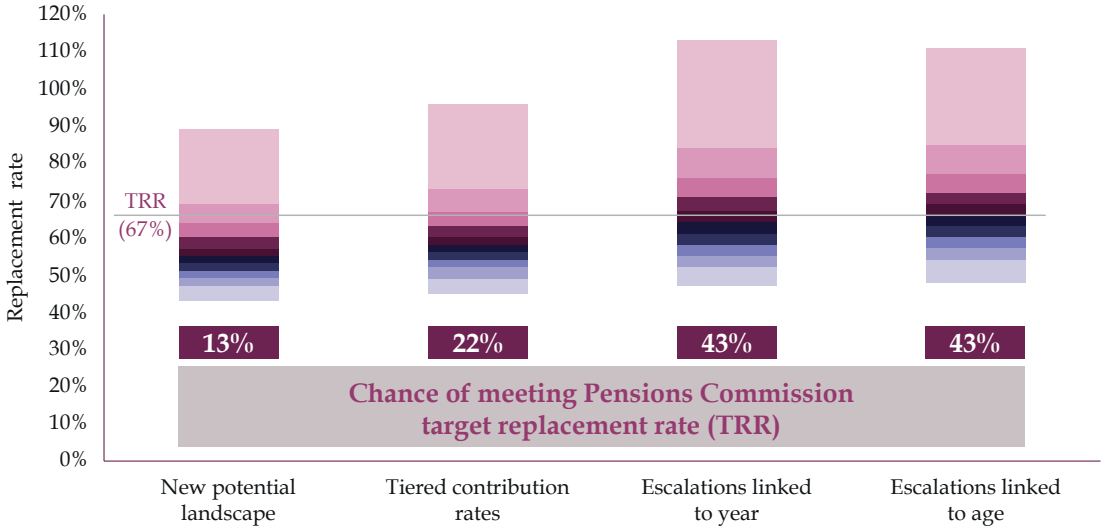
Three approaches to increasing pension contributions over working ages are considered:

1. Tiered contribution rates: 8% contributions on salary up to £19,500 and 12% of earnings above this threshold.
2. Escalation linked to age: 8% contributions, rising to 12% at age 35, rising to 15% at age 50.
3. Escalation linked to year: 8% contributions, increasing by 1% each year (capped by earnings increase), until contributions are equal to 12% of earnings.

All of these approaches increase contribution levels and so improve the probability of meeting target replacement rates (Chart 10).

Chart 10: Increasing contributions improves the likelihood of meeting target replacement rates

Distribution of replacement rate outcomes, for males earning at median levels, with different approaches to contribution rates



The greatest improvement of outcomes is based upon increasing contribution rates by as much as possible, as quickly as possible. However this may lead to a more people not participating in workplace pension saving as people find their immediate finances more heavily impacted. A careful balance would need to be sought to not jeopardise the impact that automatic enrolment has had upon the number of savers while ensuring that savers achieve a better income in retirement.

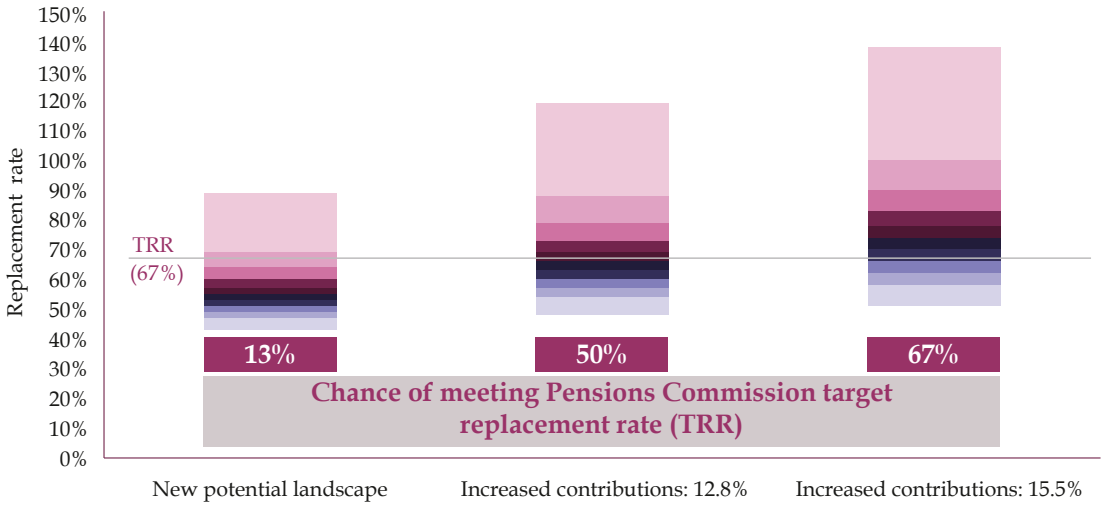
But how much do people need to save?

For people to have a greater chance of meeting a target replacement rate they are going to have to make contributions at a higher rate than currently mandated. To improve the chance of meeting a replacement rate of two thirds, a median earning will need to significantly increase their contributions. In the potential future landscape they have a 13% chance of meeting their target replacement rate. They would have to increase the total contribution

rate by over half to 12.8% to have a 50:50 chance of meeting their target replacement rate. This could necessitate nearly doubling their individual contribution if employer contributions remain at the 3% minimum. Further increasing total contributions to 15.5% would give a two thirds chance of meeting their target replacement rate (Chart 11).

Chart 11: Contribution rates need to increase to improve the chances of meeting target replacement rates

Distribution of replacement rate outcomes, for median earning men at different contribution rates



Savers will need to make pension contributions above the currently mandated minimum to have a more significant chance of attaining a retirement income that will not adversely affect their standard of living in later life.

Appendix one: Individuals and Scenarios modelled

Outcomes for illustrative individuals were modelled by the Pensions Policy Institute (PPI) using the PPI's Individual Model applying stochastic economic scenarios which illustrate the impact of uncertain future economic conditions. This was used to project occupational pension savings for representative individuals, reflecting their working patterns, earnings levels, the pensions and benefits system and their individual saving.

These scenarios are designed to be illustrative and allow for an understanding that the impact a certain policy lever may have rather than attempting to predict an absolute outcome under particular circumstances. The results from alternative scenarios should be compared to the counterfactual rather than considered in isolation.

The scenarios and individuals modelled:

The current policy scenario

Private pension scheme:

- While in employment the individual is automatically enrolled into a Defined Contribution (DC) workplace pension scheme;
- They make contributions at automatic enrolment minimum levels (5% of qualifying earnings in 2018, 8% of qualifying earnings from 2019);
- The pension fund generates investment returns based upon a portfolio split 60:40 (equities:bonds);
- The scheme is subject to an annual management charge of 0.5%.

State Pension system:

- As currently legislated with benefits and thresholds assumed to increase in line with appropriate inflation;
- With the exception that the new State Pension (nSP) continues to be increased by the triple lock indefinitely;
- Individuals are assumed to achieve full entitlement through National Insurance contributions when in employment or claiming qualifying benefits when not in employment.

Policy levers and alternative policy scenarios: These are all as the current policy scenario with the following changes:

State Pension policy scenarios

1. State Pension triple lock replaced with an earnings link from the end of the current parliament (2022).

Automatic enrolment policy scenarios

2. Removal of the lower level of qualifying earnings for automatic enrolment minimum contributions from 2025 (to reflect adoption in the mid-2020s of the Automatic Enrolment Review's recommendations).

3. 12% of qualifying earnings from 2019.

Automatic escalation of contribution scenarios

4. Tiered marginal contribution rates: minimum rate on earnings up to a threshold of £19,500; earnings between the threshold and the automatic enrolment upper level of qualifying earnings are subject to contributions at:
   i. 12% of qualifying earnings, or
   ii. 15% of qualifying earnings.

   The threshold is uplifted each year in line with average earnings growth.

   Tiered marginal contribution rates: minimum rate on earnings up to a lower threshold of £19,500; earnings between the lower threshold and an upper threshold of £33,000 are subject to contributions at 12% of qualifying earnings, earnings between the upper threshold and the automatic enrolment upper level of qualifying earnings are subject to contributions at 15% of qualifying earnings. The thresholds are uplifted each year in line with average earnings growth.

5. Auto-escalation by earnings: 25% of all nominal pay rises to be given over to pension contributions until a maximum contribution rate cap of:
   i. 12% of qualifying earnings, or
   ii. 15% of qualifying earnings is reached.

   The individual starts work at age 22, 25% of any increase in salary over the amount earned at age 22 in subsequent years are contributed to pension scheme, until the total contribution to the pension scheme is equal to the cap. Thereafter contributions are made at the rate of the cap.

6. Auto-escalation by earnings: Auto escalation of 1% of qualifying earnings every year (or increase capped at wage increase if lower than 1%), starting at the automatic enrolment minimum contribution levels (8%), capped at 12% of qualifying earnings.

7. Auto-escalation by age: 12% at age 35 and 15% at age 50. *Contribution changes* are *stepped up at each trigger age.*

Individuals modelled

The individual used as a baseline is:

- Aged 22 in 2018 (born 1996);
- Male;
- State Pension age (SPa) is 68 (as currently legislated);
- Who works:
  - Throughout their lifetime, aged 22 to SPa;
  - Earns at a median wage by age and gender in each year, i.e. the earnings in every year are at the expected 50th percentile.

Other individuals modelled:

- Alternative earnings levels[10] are considered:
  - A higher earner who earns at the 75th percentile level;
  - A lower earner who earns at the 25th percentile level.
- Women who work throughout working ages.
- Base case, but female and works 50% of full time equivalent hours for 10 years between ages 30 and 40.

Behaviour at retirement

Baseline behaviour at retirement

- The individual accesses their pension fund at State Pension age (SPa).
- They draw down to provide an income until the fund is exhausted.
- The income level is equal to 3.5% of the pension fund at SPa:
  - The amount drawn down increases with prices inflation (CPI).

Other retirement behaviours modelled

As the baseline behaviour except:

- Take 25% tax free lump sum at retirement, the remaining 75% is drawn down in the same manner as the whole pot in the baseline scenario;
- Retire 5 years before SPa – *it is assumed that an additional amount is taken from the pension fund until SPa in lieu of State Pension;*
- Drawdown at a higher rate of 5% of the pot in the first year, and the amount will rise in line with prices (CPI) thereafter.

10. Earnings are age and gender specific, derived from LFS.

Appendix two: Model assumptions and details

Model assumptions

The pension and benefits system

The pension system modelled is as currently legislated and as has historically operated. The triple lock is assumed to be maintained indefinitely unless an alternative uprating system is explicitly applied from the end of the current Parliamentary term in 2022. The taxation and benefits system are as they have historically operated and are projected as currently legislated. The decentralisation of means tested council tax and housing benefits are assumed to be neutral as well as the introduction of Universal Credit to these items.

Economic assumptions

Historical assumptions

Historical economic figures, including earnings growth and inflation are taken from ONS statistics.

Historical pension fund returns have been derived from equity and bond performance since 1960 published in the Barclay's equity gilt study.

Future economic assumptions

Future economic assumptions used in projection are taken from the Office for Budget Responsibility's (OBR) Economic and Fiscal Outlook (EFO) (for short-term assumptions) and Fiscal Sustainability Report (FSR) (for long-term assumptions).

Monte Carlo simulation, using the PPI's Economic Scenario Generator, is used to project the distribution of inflation and returns under uncertain future economic conditions.

Median long-term earnings growth is assumed to be 4.2%, and other economic assumptions are taken in line with OBR assumptions. The levels of qualifying earnings for automatic enrolment contributions and earnings trigger assumptions are assumed to grow with average earnings.

Fund charges are assumed to be 0.5% for DC/master trust schemes set up for automatic enrolment.[11]

The PPI's Economic Scenario Generator

The PPI's Economic Scenario Generator (ESG) is used to produce randomly generated future economic scenarios based upon historical returns and an assumption of the median long-term rates of return. It was developed by the financial mathematics department at King's College London. It is used to test how the distribution of outcomes is influenced by the uncertainty of future economic assumptions.

11. Equivalent Annual Management Charge for multi-employer/Master trust schemes such as Legal and General's Worksave, NEST and The People's Pension.

Key results
The model generates projected future inflation rates, and earnings growth

- Inflation rates:
  - Future CPI increases and earnings inflation rates.
- Investment returns:
  - Returns are produced for the major asset classes of equity, cash and gilts.

This produces nominal returns which can be combined to produce investment returns for a more complex portfolio.

Application of output
The output of the ESG is a number of economic scenarios which are employed by the PPI's other models to analyse the distribution of impacts on a stochastic economic basis.

Key data sources
The specification of the model is based upon historical information to determine a base volatility and future assumptions to determine a median future return:

- Historical returns: Historical yields and returns as well as inflation measures are used to determine the key attributes for the projected rates;
- Future returns: Future returns are generally taken from the OBR EFO to ensure consistency with other assumptions used in the model for which the economic scenarios are being generated. Volatility can also be scaled against historical levels.

Summary of modelling approach
The six identified risk factors modelled are:

G	Nominal GDP
P	CPI
W	Average weekly earnings
Y^l	Long-term yields
Y^s	Money market yields
S	Stock returns

Using these variables, a six dimensional process, 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 is modelled by the first order stochastic difference equation:

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

Where A is a by 6 matrix, a is a six dimensional vector and ε_t are independent multivariate Gaussian random variables with zero mean. The matrix A and the covariance ε_t matrix of the 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 below —2% in the simulations. This figure was selected to be twice the maximum rate of deflation ever found in the historical data.

The PPI's Individual Model

The Individual Model is the PPI's tool for modelling illustrative individuals' incomes 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.

This model can be used in conjunction with economic stochastic scenarios derived from the PPI's economic scenario generator to produce stochastic output.

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:

The individual

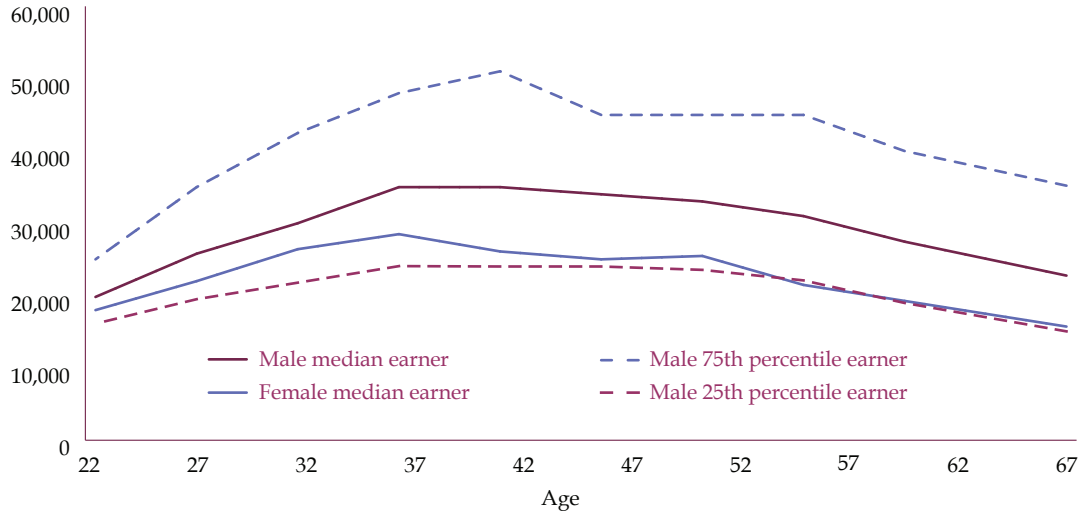
The individuals modelled are specified based upon an earnings and career profile. Saving behaviour for private pension accumulation is considered, as well as the behaviour at retirement.

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

Earnings levels used are age and gender specific rates taken from Office for National Statistics (ONS) Labour Force Survey (LFS) data.

Income distributions used in the model are age and gender based percentiles of earnings as analysed from PPI analysis of the Labour Force Survey (Chart A1)

Chart A1: Male and female median salaries are very different
Annual age and gender related incomes used in the individual model analysis (source Labour Force Survey 2018)



The individuals modelled are working and making pension contributions throughout a complete working lifetime unless otherwise stated in the scenarios.

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 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.

Economic assumptions and scenarios

The model is capable of running with either deterministic or stochastic economic assumptions.

The deterministic assumptions used are generally 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. Alternatively the model can be used in conjunction with the PPI's Economic Scenario Generator (ESG) to produce a distribution of outputs based upon potential future economic conditions.

Summary of individual modelling approach

The model projects the pension features of the individual, both in accumulation (pre-retirement) and decumulation (post retirement) phases.

It projects the pre-retirement features of the individual through the accumulation of pension entitlement, both state benefits and occupational Defined Benefit schemes.

This is done through the modelling of the career history of the individual, deriving pension contributions and entitlement from the projected earnings profile.

The entitlement to and the level of state benefits are projected such that from retirement their contribution to the income of the individual can be calculated. Private pension income is modelled and assumes a decision about the behaviour of the individual at retirement. This allows for the chosen decumulation path of any accrued private pension wealth.

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

Monte Carlo simulation 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.

Appendix three: Detailed results tables

The columns each table include the amount of the pension pot at retirement, the amount of pension that could achieve by drawing down, the amount of the State Pension, total pension income and replacement rate.

Each row of the table represents a particular point in the distribution of that data item. Rows may not sum to the total as each component is distributed differently.

Index of results tables

Results tables with baseline scenario parameters matching the current landscape (triple-lock maintained, current minimum automatic enrolment contributions and qualifying earnings maintained)

Tables based on the current pensions landscape, with the new State Pension uprated by the triple lock, and current minimum automatic enrolment contributions and qualifying earnings maintained

Median earning man

Tables 1 to 15 set out the percentile points for a man earning at the median level of earnings using a set of 3,000 runs for the economic projections.

Table A1: Distribution of pension outcomes for a median earner: baseline scenario

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£68,000	£2,400	£8,700	£11,500	47%
20%	£80,000	£2,800	£8,900	£12,000	49%
30%	£92,000	£3,200	£9,000	£12,500	51%
40%	£103,000	£3,600	£9,100	£13,000	53%
50%	£114,000	£4,000	£9,300	£13,400	55%
60%	£127,000	£4,400	£9,400	£13,900	57%
70%	£142,000	£5,000	£9,600	£14,500	59%
80%	£163,000	£5,700	£9,900	£15,300	62%
90%	£195,000	£6,800	£10,400	£16,500	67%

Table A2: Distribution of pension outcomes for median earner: triple-lock replaced with an earnings link from 2022

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£68,000	£2,400	£8,500	£11,000	45%
20%	£80,000	£2,800	£8,500	£11,400	47%
30%	£92,000	£3,200	£8,500	£11,800	48%
40%	£103,000	£3,600	£8,600	£12,300	50%
50%	£114,000	£4,000	£8,600	£12,700	52%
60%	£127,000	£4,400	£8,600	£13,100	53%
70%	£142,000	£5,000	£8,700	£13,600	56%
80%	£163,000	£5,700	£8,700	£14,300	58%
90%	£195,000	£6,800	£8,800	£15,500	63%

Table A3: Distribution of pension outcomes for a median earner: Remove lower level of qualifying earnings

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£83,000	£2,900	£8,700	£12,100	49%
20%	£97,000	£3,400	£8,900	£12,700	52%
30%	£111,000	£3,900	£9,000	£13,200	54%
40%	£125,000	£4,400	£9,100	£13,800	56%
50%	£138,000	£4,800	£9,300	£14,300	58%
60%	£154,000	£5,400	£9,400	£14,800	60%
70%	£171,000	£6,000	£9,600	£15,500	63%
80%	£196,000	£6,900	£9,900	£16,400	67%
90%	£234,000	£8,200	£10,400	£17,900	73%

Table A4: Distribution of pension outcomes for a median earner: increase pension contribution rate to 12% on qualifying earnings

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£102,000	£3,600	£8,700	£12,700	52%
20%	£120,000	£4,200	£8,900	£13,500	55%
30%	£137,000	£4,800	£9,000	£14,100	58%
40%	£154,000	£5,400	£9,100	£14,800	60%
50%	£171,000	£6,000	£9,300	£15,500	63%
60%	£190,000	£6,600	£9,400	£16,100	66%
70%	£212,000	£7,400	£9,600	£17,000	69%
80%	£243,000	£8,500	£9,900	£18,100	74%
90%	£291,000	£10,200	£10,400	£19,800	81%

Table A5: Distribution of pension outcomes for a median earner: Tiered marginal contribution rates (12% of earnings over £19,500)

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£83,000	£2,900	£8,700	£12,100	49%
20%	£98,000	£3,400	£8,900	£12,700	52%
30%	£112,000	£3,900	£9,000	£13,200	54%
40%	£126,000	£4,400	£9,100	£13,800	56%
50%	£140,000	£4,900	£9,300	£14,400	59%
60%	£155,000	£5,400	£9,400	£14,900	61%
70%	£173,000	£6,100	£9,600	£15,600	64%
80%	£199,000	£7,000	£9,900	£16,500	67%
90%	£238,000	£8,300	£10,400	£18,000	73%

Table A6: Distribution of pension outcomes for a median earner: Tiered marginal contribution rates (15% of qualifying earnings over £19,500)

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£92,000	£3,200	£8,700	£12,400	50%
20%	£109,000	£3,800	£8,900	£13,100	53%
30%	£124,000	£4,400	£9,000	£13,700	56%
40%	£140,000	£4,900	£9,100	£14,300	58%
50%	£155,000	£5,400	£9,300	£14,900	61%
60%	£173,000	£6,000	£9,400	£15,500	63%
70%	£192,000	£6,700	£9,600	£16,300	66%
80%	£220,000	£7,700	£9,900	£17,300	70%
90%	£264,000	£9,200	£10,400	£18,900	77%

Table A7: Distribution of pension outcomes for a median earner: Tiered marginal contribution rates (12% of earnings over £19,500 to £33,000, 15% of earnings over £33,000 up to the upper level of qualifying earnings)

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£84,000	£2,900	£8,700	£12,100	49%
20%	£98,000	£3,400	£8,900	£12,700	52%
30%	£113,000	£3,900	£9,000	£13,300	54%
40%	£127,000	£4,400	£9,100	£13,800	56%
50%	£141,000	£4,900	£9,300	£14,400	59%
60%	£156,000	£5,500	£9,400	£14,900	61%
70%	£174,000	£6,100	£9,600	£15,700	64%
80%	£200,000	£7,000	£9,900	£16,600	68%
90%	£240,000	£8,400	£10,400	£18,000	74%

Table A8: Distribution of pension outcomes for a median earner: Automatic escalation of contributions: 25% of pay increases, capped at 15%

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£127,000	£4,400	£8,700	£13,600	55%
20%	£149,000	£5,200	£8,900	£14,500	59%
30%	£170,000	£6,000	£9,000	£15,300	62%
40%	£191,000	£6,700	£9,100	£16,100	66%
50%	£212,000	£7,400	£9,300	£16,900	69%
60%	£236,000	£8,300	£9,400	£17,700	72%
70%	£263,000	£9,200	£9,600	£18,800	77%
80%	£301,000	£10,500	£9,900	£20,100	82%
90%	£361,000	£12,600	£10,400	£22,200	91%

Table A9: Distribution of pension outcomes for a median earner: Automatic escalation of contributions: 25% of pay increases, capped at 12%

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£102,000	£3,600	£8,700	£12,700	52%
20%	£120,000	£4,200	£8,900	£13,500	55%
30%	£137,000	£4,800	£9,000	£14,100	58%
40%	£154,000	£5,400	£9,100	£14,800	60%
50%	£171,000	£6,000	£9,300	£15,400	63%
60%	£190,000	£6,600	£9,400	£16,100	66%
70%	£212,000	£7,400	£9,600	£17,000	69%
80%	£243,000	£8,500	£9,900	£18,100	74%
90%	£291,000	£10,200	£10,400	£19,800	81%

Table A10: Distribution of pension outcomes for a median earner: Automatic escalation of contributions: lesser of 1% of qualifying earnings each year or growth in pay, capped at 12%

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£102,000	£3,600	£8,700	£12,700	52%
20%	£120,000	£4,200	£8,900	£13,500	55%
30%	£137,000	£4,800	£9,000	£14,100	58%
40%	£154,000	£5,400	£9,100	£14,800	60%
50%	£171,000	£6,000	£9,300	£15,400	63%
60%	£190,000	£6,600	£9,400	£16,100	66%
70%	£212,000	£7,400	£9,600	£17,000	69%
80%	£243,000	£8,500	£9,900	£18,100	74%
90%	£291,000	£10,200	£10,400	£19,800	81%

Table A11: Distribution of pension outcomes for a median earner: Automatic escalation based on age. Age escalation of 12% of qualifying earnings from age 35, then 15% of qualifying earnings from age 50

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£105,000	£3,700	£8,700	£12,800	52%
20%	£122,000	£4,300	£8,900	£13,600	55%
30%	£139,000	£4,900	£9,000	£14,200	58%
40%	£154,000	£5,400	£9,100	£14,800	60%
50%	£170,000	£5,900	£9,300	£15,400	63%
60%	£188,000	£6,600	£9,400	£16,000	65%
70%	£207,000	£7,300	£9,600	£16,800	69%
80%	£235,000	£8,200	£9,900	£17,800	73%
90%	£281,000	£9,800	£10,400	£19,500	79%

Table A12: Distribution of pension outcomes for a median earner: Take a 25% lump sum at retirement rather than use whole fund for income

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£68,000	£1,800	£8,700	£10,900	44%
20%	£80,000	£2,100	£8,900	£11,300	46%
30%	£92,000	£2,400	£9,000	£11,700	48%
40%	£103,000	£2,700	£9,100	£12,100	49%
50%	£114,000	£3,000	£9,300	£12,400	51%
60%	£127,000	£3,300	£9,400	£12,800	52%
70%	£142,000	£3,700	£9,600	£13,300	54%
80%	£163,000	£4,300	£9,900	£13,900	57%
90%	£195,000	£5,100	£10,400	£14,800	61%

Table A13: Distribution of pension outcomes for a median earner: Retire 5 years before SPA (using Private Pension to replace State pension)

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£62,000	£11,300	£0	£11,300	41%
20%	£73,000	£11,700	£0	£11,700	43%
30%	£83,000	£12,100	£0	£12,100	44%
40%	£91,000	£12,500	£0	£12,500	45%
50%	£100,000	£12,900	£0	£12,900	47%
60%	£111,000	£13,300	£0	£13,300	48%
70%	£123,000	£13,800	£0	£13,800	50%
80%	£139,000	£14,300	£0	£14,300	52%
90%	£164,000	£15,300	£0	£15,300	56%

Table A14: Distribution of pension outcomes for a median earner: Draw down from pension scheme at 5%

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£68,000	£3,400	£8,700	£12,500	51%
20%	£80,000	£4,000	£8,900	£13,300	54%
30%	£92,000	£4,600	£9,000	£13,900	57%
40%	£103,000	£5,200	£9,100	£14,600	59%
50%	£114,000	£5,700	£9,300	£15,200	62%
60%	£127,000	£6,400	£9,400	£15,800	64%
70%	£142,000	£7,100	£9,600	£16,700	68%
80%	£163,000	£8,100	£9,900	£17,700	72%
90%	£195,000	£9,700	£10,400	£19,400	79%

Man earning at the 25th percentile

Tables 15 to 18 set out the percentile points for a man earning at the 25th percentile level of earnings using the same set of 3,000 runs for the economic projections.

Table A15: Distribution of pension outcomes for a 25th percentile earning man: Baseline scenario

Percentile point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£43,000	£1,500	£8,700	£10,600	64%
20%	£51,000	£1,800	£8,900	£11,000	66%
30%	£59,000	£2,000	£9,000	£11,300	69%
40%	£66,000	£2,300	£9,100	£11,600	70%
50%	£73,000	£2,600	£9,300	£12,000	72%
60%	£81,000	£2,800	£9,400	£12,400	75%
70%	£91,000	£3,200	£9,600	£12,800	77%
80%	£105,000	£3,700	£9,900	£13,300	81%
90%	£125,000	£4,400	£10,400	£14,100	85%

Table A16: Distribution of pension outcomes for a 25th percentile earning man: Removal of the lower level of qualifying earnings

Percentile point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£58,000	£2,000	£8,700	£11,200	68%
20%	£68,000	£2,400	£8,900	£11,600	70%
30%	£78,000	£2,700	£9,000	£12,000	73%
40%	£88,000	£3,100	£9,100	£12,400	75%
50%	£97,000	£3,400	£9,300	£12,900	78%
60%	£108,000	£3,800	£9,400	£13,300	80%
70%	£120,000	£4,200	£9,600	£13,800	83%
80%	£138,000	£4,800	£9,900	£14,400	87%
90%	£165,000	£5,800	£10,400	£15,500	94%

Table A17: Distribution of pension outcomes for a 25th percentile earning man: Contributions increased to 12% of qualifying salary from 2019

Percentile point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£65,000	£2,300	£8,700	£11,400	69%
20%	£76,000	£2,700	£8,900	£11,900	72%
30%	£88,000	£3,100	£9,000	£12,400	75%
40%	£98,000	£3,400	£9,100	£12,800	78%
50%	£109,000	£3,800	£9,300	£13,300	80%
60%	£121,000	£4,200	£9,400	£13,700	83%
70%	£136,000	£4,800	£9,600	£14,300	87%
80%	£156,000	£5,500	£9,900	£15,100	91%
90%	£187,000	£6,500	£10,400	£16,300	98%

Table A18: Distribution of pension outcomes for a 25th percentile earning man: With age escalation 12% of qualifying earnings from age 35, then 15% of qualifying earnings from age 50

Percentile point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£66,000	£2,300	£8,700	£11,400	69%
20%	£77,000	£2,700	£8,900	£11,900	72%
30%	£88,000	£3,100	£9,000	£12,400	75%
40%	£97,000	£3,400	£9,100	£12,800	78%
50%	£108,000	£3,800	£9,300	£13,200	80%
60%	£120,000	£4,200	£9,400	£13,700	83%
70%	£132,000	£4,600	£9,600	£14,200	86%
80%	£150,000	£5,200	£9,900	£14,900	90%
90%	£179,000	£6,300	£10,400	£16,000	97%

Man earning at the 75th percentile

Tables 19 to 21 set out the percentile points for a man earning at the 75th percentile level of earnings using the same set of 3,000 runs for the economic projections.

Table A19: Distribution of pension outcomes for a 75th percentile earning man: As in the baseline scenario

Percentile point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£101,000	£3,600	£8,700	£12,700	34%
20%	£119,000	£4,200	£8,900	£13,500	36%
30%	£136,000	£4,800	£9,000	£14,100	38%
40%	£153,000	£5,300	£9,100	£14,800	40%
50%	£169,000	£5,900	£9,300	£15,400	42%
60%	£188,000	£6,600	£9,400	£16,000	43%
70%	£209,000	£7,300	£9,600	£16,900	46%
80%	£240,000	£8,400	£9,900	£18,000	49%
90%	£286,000	£10,000	£10,400	£19,700	53%

Table A20: Distribution of pension outcomes for a 75th percentile earning man: Contributions increased to 12% of qualifying earnings from 2019

Percentile point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£153,000	£5,400	£8,700	£14,500	39%
20%	£179,000	£6,300	£8,900	£15,600	42%
30%	£205,000	£7,200	£9,000	£16,500	45%
40%	£230,000	£8,100	£9,100	£17,500	47%
50%	£255,000	£8,900	£9,300	£18,400	50%
60%	£283,000	£9,900	£9,400	£19,300	52%
70%	£316,000	£11,000	£9,600	£20,600	56%
80%	£362,000	£12,700	£9,900	£22,200	60%
90%	£433,000	£15,100	£10,400	£24,700	67%

Table A21: Distribution of pension outcomes for a 75th percentile earning man: With age-related contribution escalation 12% of qualifying earnings from age 35, then 15% of qualifying earnings from age 50

Percentile point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£157,000	£5,500	£8,700	£14,700	40%
20%	£182,000	£6,400	£8,900	£15,700	43%
30%	£206,000	£7,200	£9,000	£16,500	45%
40%	£229,000	£8,000	£9,100	£17,400	47%
50%	£251,000	£8,800	£9,300	£18,300	49%
60%	£278,000	£9,700	£9,400	£19,200	52%
70%	£307,000	£10,700	£9,600	£20,200	55%
80%	£346,000	£12,100	£9,900	£21,700	59%
90%	£413,000	£14,400	£10,400	£24,100	65%

Table A22: Distribution of pension outcomes for a 75th percentile earning man: Tiered marginal contribution rates (12% of earnings over £19,500)

Percentile point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£133,000	£4,700	£8,700	£13,800	37%
20%	£156,000	£5,500	£8,900	£14,800	40%
30%	£179,000	£6,300	£9,000	£15,600	42%
40%	£200,000	£7,000	£9,100	£16,500	44%
50%	£222,000	£7,800	£9,300	£17,300	47%
60%	£247,000	£8,600	£9,400	£18,100	49%
70%	£275,000	£9,600	£9,600	£19,200	52%
80%	£315,000	£11,000	£9,900	£20,600	56%
90%	£376,000	£13,200	£10,400	£22,800	62%

Table A23: Distribution of pension outcomes for a 75th percentile earning man: Tiered marginal contribution rates (12% of earnings over £19,500 to £33,000, 15% of earnings over £33,000 up to the upper level of qualifying earnings)

Percentile point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£143,000	£5,000	£8,700	£14,200	38%
20%	£168,000	£5,900	£8,900	£15,200	41%
30%	£192,000	£6,700	£9,000	£16,000	43%
40%	£215,000	£7,500	£9,100	£17,000	46%
50%	£238,000	£8,300	£9,300	£17,800	48%
60%	£265,000	£9,300	£9,400	£18,700	51%
70%	£294,000	£10,300	£9,600	£19,900	54%
80%	£337,000	£11,800	£9,900	£21,400	58%
90%	£404,000	£14,100	£10,400	£23,700	64%

Woman earning at the median level

Tables 22 to 23 set out the percentile points for a woman earning at the median level of earnings using the same set of 3,000 runs for the economic projections.

Table A24: Distribution of pension outcomes for a Median earning woman: Baseline scenario

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£49,000	£1,700	£8,700	£10,800	63%
20%	£57,000	£2,000	£8,900	£11,200	66%
30%	£66,000	£2,300	£9,000	£11,600	68%
40%	£74,000	£2,600	£9,100	£12,000	70%
50%	£83,000	£2,900	£9,300	£12,400	72%
60%	£93,000	£3,200	£9,400	£12,800	75%
70%	£104,000	£3,600	£9,600	£13,200	78%
80%	£120,000	£4,200	£9,900	£13,900	81%
90%	£144,000	£5,000	£10,400	£14,800	87%

Table A25: Distribution of pension outcomes for a Median earning woman: Working part-time (half weekly hours) for ten years between ages 30 and 39 inclusive

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£41,000	£1,400	£8,700	£10,500	61%
20%	£48,000	£1,700	£8,900	£10,900	64%
30%	£55,000	£1,900	£9,000	£11,200	66%
40%	£61,000	£2,100	£9,100	£11,500	67%
50%	£68,000	£2,400	£9,300	£11,800	69%
60%	£75,000	£2,600	£9,400	£12,100	71%
70%	£83,000	£2,900	£9,600	£12,500	73%
80%	£95,000	£3,300	£9,900	£13,000	76%
90%	£114,000	£4,000	£10,400	£13,800	81%

Table A26: Distribution of pension outcomes for a Median earning woman: Working part-time (half weekly hours) for ten years between ages 30 and 39 inclusive with a one off extra contribution of £1,000 made at age 30

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£41,000	£1,500	£8,700	£10,500	62%
20%	£49,000	£1,700	£8,900	£10,900	64%
30%	£56,000	£1,900	£9,000	£11,200	66%
40%	£62,000	£2,200	£9,100	£11,500	68%
50%	£69,000	£2,400	£9,300	£11,800	69%
60%	£77,000	£2,700	£9,400	£12,200	71%
70%	£85,000	£3,000	£9,600	£12,600	74%
80%	£98,000	£3,400	£9,900	£13,100	77%
90%	£117,000	£4,100	£10,400	£13,900	82%

Tables based on an underlying landscape wherein the new State Pension is uprated in line with earnings growth from 2022, and the automatic enrolment lower level of qualifying earnings is removed from 2025

Median earning man

Tables 27 to 34 set out the percentile points for a man earning at the median level of earnings using the same 3,000 runs for the economic projections.

Table A27: Distribution of pension outcomes for a median earner: triple lock removed from 2022 and lower level of qualifying earnings removed from 2025

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£83,000	£2,900	£8,500	£11,500	47%
20%	£97,000	£3,400	£8,500	£12,100	49%
30%	£111,000	£3,900	£8,500	£12,500	51%
40%	£125,000	£4,400	£8,600	£13,000	53%
50%	£138,000	£4,800	£8,600	£13,500	55%
60%	£154,000	£5,400	£8,600	£14,000	57%
70%	£171,000	£6,000	£8,700	£14,600	60%
80%	£196,000	£6,900	£8,700	£15,500	63%
90%	£234,000	£8,200	£8,800	£16,800	69%

Table A28: Distribution of pension outcomes for a median earner: increase pension contribution rate to 12% on qualifying earnings

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£124,000	£4,400	£8,500	£13,000	53%
20%	£146,000	£5,100	£8,500	£13,700	56%
30%	£167,000	£5,800	£8,500	£14,500	59%
40%	£187,000	£6,500	£8,600	£15,200	62%
50%	£207,000	£7,200	£8,600	£15,900	65%
60%	£230,000	£8,000	£8,600	£16,700	68%
70%	£256,000	£9,000	£8,700	£17,600	72%
80%	£293,000	£10,200	£8,700	£18,900	77%
90%	£350,000	£12,300	£8,800	£20,900	85%

Table A29: Distribution of pension outcomes for a median earner: increase pension contribution rate to 12.8% on qualifying earnings

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£133,000	£4,600	£8,500	£13,300	54%
20%	£156,000	£5,400	£8,500	£14,100	57%
30%	£178,000	£6,200	£8,500	£14,900	61%
40%	£199,000	£7,000	£8,600	£15,600	64%
50%	£221,000	£7,700	£8,600	£16,400	67%
60%	£245,000	£8,600	£8,600	£17,200	70%
70%	£273,000	£9,500	£8,700	£18,200	74%
80%	£312,000	£10,900	£8,700	£19,600	80%
90%	£374,000	£13,100	£8,800	£21,700	88%

Table A30: Distribution of pension outcomes for a median earner: increase pension contribution rate to 15.5% on qualifying earnings

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£161,000	£5,600	£8,500	£14,300	58%
20%	£188,000	£6,600	£8,500	£15,200	62%
30%	£215,000	£7,500	£8,500	£16,200	66%
40%	£241,000	£8,400	£8,600	£17,100	70%
50%	£267,000	£9,300	£8,600	£18,000	73%
60%	£296,000	£10,400	£8,600	£19,000	77%
70%	£330,000	£11,500	£8,700	£20,200	82%
80%	£378,000	£13,200	£8,700	£21,900	89%
90%	£452,000	£15,800	£8,800	£24,400	100%

Table A31: Distribution of pension outcomes for a median earner: Tiered marginal contribution rates (automatic enrolment minimum up to £19,500, 12% of earnings over £19,500 to upper level of qualifying earnings)

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£97,000	£3,400	£8,500	£12,000	49%
20%	£114,000	£4,000	£8,500	£12,600	51%
30%	£130,000	£4,600	£8,500	£13,200	54%
40%	£146,000	£5,100	£8,600	£13,800	56%
50%	£162,000	£5,700	£8,600	£14,300	58%
60%	£179,000	£6,300	£8,600	£14,900	61%
70%	£200,000	£7,000	£8,700	£15,600	64%
80%	£229,000	£8,000	£8,700	£16,700	68%
90%	£274,000	£9,600	£8,800	£18,200	74%

Table A32: Distribution of pension outcomes for a median earner: Tiered marginal contribution rates (automatic enrolment minimum up to £19,500, 15% of earnings over £19,500 to upper level of qualifying earnings)

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£107,000	£3,700	£8,500	£12,400	50%
20%	£126,000	£4,400	£8,500	£13,100	53%
30%	£144,000	£5,000	£8,500	£13,700	56%
40%	£161,000	£5,600	£8,600	£14,300	58%
50%	£179,000	£6,300	£8,600	£14,900	61%
60%	£199,000	£7,000	£8,600	£15,600	64%
70%	£221,000	£7,700	£8,700	£16,400	67%
80%	£254,000	£8,900	£8,700	£17,500	72%
90%	£304,000	£10,600	£8,800	£19,200	78%

Table A33: Distribution of pension outcomes for a median earner: Automatic escalation of contributions: lesser of 1% of qualifying earnings each year or growth in pay, capped at 12%

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£124,000	£4,300	£8,500	£13,000	53%
20%	£145,000	£5,100	£8,500	£13,700	56%
30%	£166,000	£5,800	£8,500	£14,400	59%
40%	£185,000	£6,500	£8,600	£15,200	62%
50%	£205,000	£7,200	£8,600	£15,800	65%
60%	£228,000	£8,000	£8,600	£16,600	68%
70%	£254,000	£8,900	£8,700	£17,500	71%
80%	£290,000	£10,200	£8,700	£18,800	77%
90%	£348,000	£12,200	£8,800	£20,800	85%

Table A34: Distribution of pension outcomes for a median earner: Automatic escalation based on age. Age escalation of 12% of qualifying earnings from age 35, then 15% of qualifying earnings from age 50

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£129,000	£4,500	£8,500	£13,100	54%
20%	£150,000	£5,200	£8,500	£13,900	57%
30%	£170,000	£5,900	£8,500	£14,600	59%
40%	£188,000	£6,600	£8,600	£15,300	62%
50%	£207,000	£7,200	£8,600	£15,900	65%
60%	£229,000	£8,000	£8,600	£16,700	68%
70%	£252,000	£8,800	£8,700	£17,400	71%
80%	£285,000	£10,000	£8,700	£18,600	76%
90%	£340,000	£11,900	£8,800	£20,500	84%

Woman earning at the median level

Tables 35 to 39 set out the percentile points for a woman earning at the median level of earnings using the same set of 3,000 runs for the economic projections.

Table A35: Distribution of pension outcomes for a Median earning woman: Working part-time (half weekly hours) for ten years between ages 30 and 39 inclusive

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£56,000	£1,900	£8,500	£10,600	62%
20%	£65,000	£2,300	£8,500	£10,900	64%
30%	£74,000	£2,600	£8,500	£11,200	66%
40%	£83,000	£2,900	£8,600	£11,600	68%
50%	£92,000	£3,200	£8,600	£11,900	70%
60%	£102,000	£3,600	£8,600	£12,200	72%
70%	£112,000	£3,900	£8,700	£12,600	74%
80%	£128,000	£4,500	£8,700	£13,100	77%
90%	£153,000	£5,300	£8,800	£14,000	82%

Table A36: Distribution of pension outcomes for a Median earning woman: Working part-time (half weekly hours) for ten years between ages 30 and 39 inclusive with a one off extra contribution of £1,000 made at age 30

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£56,000	£1,900	£8,500	£10,600	62%
20%	£65,000	£2,300	£8,500	£10,900	64%
30%	£74,000	£2,600	£8,500	£11,200	66%
40%	£83,000	£2,900	£8,600	£11,600	68%
50%	£92,000	£3,200	£8,600	£11,900	70%
60%	£102,000	£3,600	£8,600	£12,200	72%
70%	£112,000	£3,900	£8,700	£12,600	74%
80%	£128,000	£4,500	£8,700	£13,100	77%
90%	£153,000	£5,300	£8,800	£14,000	82%

Table A37: Distribution of pension outcomes for a Median earning woman: Working part-time (half weekly hours) for ten years between ages 30 and 39 inclusive with a one off extra contribution of £2,000 made at age 30

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£57,000	£2,000	£8,500	£10,600	62%
20%	£67,000	£2,300	£8,500	£11,000	64%
30%	£77,000	£2,700	£8,500	£11,300	66%
40%	£85,000	£3,000	£8,600	£11,700	68%
50%	£94,000	£3,300	£8,600	£12,000	70%
60%	£105,000	£3,700	£8,600	£12,300	72%
70%	£117,000	£4,100	£8,700	£12,700	75%
80%	£133,000	£4,700	£8,700	£13,300	78%
90%	£159,000	£5,600	£8,800	£14,200	83%

Table A38: Distribution of pension outcomes for a Median earning woman: Working part-time (half weekly hours) for ten years between ages 30 and 39 inclusive with a one off extra contribution of £5,000 made at age 30

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£60,000	£2,100	£8,500	£10,700	63%
20%	£70,000	£2,500	£8,500	£11,100	65%
30%	£80,000	£2,800	£8,500	£11,400	67%
40%	£89,000	£3,100	£8,600	£11,800	69%
50%	£99,000	£3,500	£8,600	£12,100	71%
60%	£110,000	£3,900	£8,600	£12,500	73%
70%	£123,000	£4,300	£8,700	£13,000	76%
80%	£141,000	£4,900	£8,700	£13,600	80%
90%	£169,000	£5,900	£8,800	£14,600	85%

Table A39: Distribution of pension outcomes for a Median earning woman: Working part-time (half weekly hours) for ten years between ages 30 and 39 inclusive with a one off extra contribution of £10,000 made at age 30

Percentile Point	Pension Pot at Retirement	Private Pension Income	State Pension Income	Total Pension income	Replacement Rate
10%	£63,000	£2,200	£8,500	£10,800	64%
20%	£75,000	£2,600	£8,500	£11,300	66%
30%	£85,000	£3,000	£8,500	£11,600	68%
40%	£96,000	£3,400	£8,600	£12,000	71%
50%	£108,000	£3,800	£8,600	£12,400	73%
60%	£119,000	£4,200	£8,600	£12,800	75%
70%	£133,000	£4,700	£8,700	£13,300	78%
80%	£153,000	£5,400	£8,700	£14,000	82%
90%	£184,000	£6,400	£8,800	£15,100	89%

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