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# AS GOOD AS IT GETS?

The adequacy of retirement income for current and future generations of pensioners

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### Executive Summary

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## Concern about the future retirement incomes of today's working age generations abound

The future living standards of today's working age adults when they retire from work are at the forefront of debates on fairness between the generations. The public ranks this as its second-highest area of concern in terms of the chances of young adults having a better life than their parents' generation – only home ownership attracts stronger pessimism. The opinion that young people today will 'never be able to retire' is one frequently volunteered when people are asked about their concerns for each generation's quality of life.

These public perceptions are a reflection of the economic backdrop. Over the course of the 21<sup>st</sup> Century, household incomes for pensioners have performed extremely well and pensioner poverty has fallen by one-third. These outcomes are welcome, but they are set against the stagnation of working age incomes. As a result, households of working age now typically have slightly lower incomes than pensioners. In the context of future pensions adequacy this is concerning, because weak incomes – and the very poor earnings performance that is the main driver of these – reduce people's ability to set money aside for later. Indeed, successive younger cohorts are currently accumulating less wealth at each age than their predecessors did.

Sitting alongside worrying income and wealth trends are cost pressures and a later retirement age due to rising longevity, and the long-term decline in generous 'defined benefit' (DB) pension provision. On this basis, it is no surprise that the mood on future retirement incomes is downbeat.

### A range of reforms to both state and private pensions is underway, set in motion by the Pensions Commission 15 years ago

With concerns about the demographic outlook and declining private pension coverage apparent at the turn of the century, 15 years ago the government established the Pensions Commission to conduct a wholesale review of systems for both state and private provision. In 2006 the Commission's final report made a range of recommendations, the key pillars of which were:

- A flat-rate State Pension uprated in line with earnings with wide coverage to provide an easy-to-communicate base income in retirement that would incentivise private saving; and,
- A national private pension saving scheme (or company alternatives) targeted at low to middle earners via a system of automatic enrolment with a right to opt-out and modest compulsion on employers to match contributions.

Reforms since 2006 have largely built on these recommendations. The new State Pension was introduced from 2016, and auto-enrolment into private pensions has been steadily rolled out and ramped up over the course of this decade. While not without areas of concern – particularly the effect of rising contributions on current living standards



at a time of weak income growth – this latter policy looks set to drastically improve private pension coverage, especially for women and low earners. For millennials (born 1981-2000), the policy has meant that almost two-thirds of private sector employees aged 30 are contributing to an occupational pension, compared to only half of baby boomers (born 1946-1965) at the same age. However, millennials are more likely to be contributing to less generous 'defined contribution' (DC) schemes, rather than the defined benefit pensions of old.

### A detailed assessment of past and future retirement income adequacy is essential for informing current intergenerational debates

With deep public pessimism regarding incomes for future pensioners, divergent outcomes in current living standards across the age range, and a policy system currently undergoing huge change, the case for an in-depth look at the adequacy of retirement incomes is clear. This is especially important for the Intergenerational Commission, which is considering what further policy changes – in a range of areas including but not limited to pensions – may be needed to renew the intergenerational contract and restart generational living standards progress.

That is the subject of this report, the  $12^{\rm th}$  for the Intergenerational Commission hosted by the Resolution Foundation. It presents detailed findings on the adequacy of retirement incomes for recent cohorts of retirees in Great Britain, along with projections of future adequacy both across and within generations for all of today's working age adults. When considering adequacy we focus on both:

- *Retirement income levels*, and the extent to which they fall below minimum acceptable standards; and,
- *Earnings replacement rates* (the extent to which post-retirement income replaces pre-retirement earnings) assessed against the benchmarks established by the Pensions Commission.

### Recent cohorts of retirees have experienced improving income levels, but earnings replacement rates have fallen short of adequacy benchmarks

Our analysis of retirement income adequacy for recent cohorts of retirees covers those retiring from work over the decade-and-a-half up to 2012, mainly younger members of the silent generation (born 1926-1945) and the oldest baby boomers. This group reached retirement before the full weight of current State Pension reforms had been felt, and missed out entirely on auto-enrolment. In this sense, this 'backward-looking' analysis provides a baseline against which to consider recent policy changes and allows us to review the justification for reforms.

Income levels at retirement have performed well across the distribution for recent retirees. Overall, individual gross state benefit and private pension income in the years immediately following retirement increased by 24 per cent in constantearnings terms between the 1927-29 and 1945-47 cohorts. This has been **driven** by growing private pension income, although increasing state benefit income in RF Intergenerational

relation to earnings has played more of a role for women. Despite these welcome trends, there remains a stubborn core of around one-fifth of recent retirees who fall short of the Minimum Income Standard.

The typical earnings replacement rate in the years immediately following retirement for those retiring from the turn of the century to 2012 was 54 per cent. The figure varied across the pre-retirement earnings distribution though, with higher replacement rates at the bottom of the pre-retirement distribution and lower replacement rates at the top. Such a shape mirrors the one targeted by Pensions Commission benchmarks, but it is worth noting that typical replacement rates fell short of benchmark adequacy levels (for example, a target of around 67 per cent for those in the middle of the pre-retirement earnings distribution) for all but the lowest pre-retirement earners. Overall, nearly three-quarters (73 per cent) of those retiring between 2000 and 2012 (mainly the tail-end of the silent generation and the oldest baby boomers) fell short of Pensions Commission adequacy benchmarks.

These findings must be contextualised by the fact that certain circumstances and choices – like early retirement and the option of taking a lump sum – have reduced replacement rates relative to those for adults following the typical trajectory assumed in projections, or when setting benchmarks. But the strong conclusion remains that despite improving income levels, the old system has not delivered adequate earnings replacement upon retirement for current pensioners, providing a clear case for the changes to private saving currently underway.

### Overall, future pensioners look set to experience similar levels of earnings replacement adequacy to recent retirees

Like our assessment for recent retirees, our projections of future retirement incomes are produced on an individual basis. We assume that beyond this parliament the new State Pension is uprated in line with average earnings growth, and account for the further roll-out of auto-enrolment.

At retirement age (assumed to be State Pension age) our modelling suggests that individual **pension incomes for millennial men retiring in the 2050s** (born largely in the 1980s) **will on average be at similar levels to incomes for younger baby boomer men retiring in the 2020s** (born 1955-1965), when expressed in constantearnings terms. However, we find that constant-earnings terms **pension incomes dip by around £25 a week for men in the younger half of generation X** (the overall generation spans 1966-1980) retiring in the mid-2040s.

Following a modest improvement in individual pension incomes for baby boomers retiring in the 2020s, our modelling suggests **incomes among women will remain broadly flat for successive cohorts of generation X and millennials to 2060**.

Consistent with our findings for current pensioners, we expect around one-fifth of new retirees to continue to enter retirement with an income below the level of

**the individual pensioner Minimum Income Standard**. The risk is higher for women (around 30 per cent) than for men (around 10 per cent). Other than for baby boomer men retiring after 2020 who do slightly better, this pattern is consistent across generations.

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Over the full duration of retirement, we expect a greater share of pensioners to fall below the individual pensioner Minimum Income Standard. That's because pension income – a mix of state and private pensions – increases by less than earnings each year. By 23 years into retirement, we could expect over half of pensioners to have fallen below the Minimum Income Standard.

Turning to replacement rates for both sexes combined, **we project that around threequarters (77 per cent) of all cohorts retiring from 2020 will fall below adequacy benchmarks** at their point in the pre-retirement earnings distribution, with the figure for generation X slightly worse. In all cohorts, those at the bottom of the pre-retirement earnings distribution are most likely to meet benchmark replacement rates. Including those close to meeting the adequacy measure (within 5 percentage points) improves the picture, reducing the share of 'at risk' adults to 60 per cent for younger baby boomers and millennials, and two-thirds for generation X.

While falling short of the Pensions Commission targets in the main, **our findings** suggest that typical replacement rates across the distribution for future generations will be broadly in line with those of current pensioners. Of course, caution should be taken when comparing actual outcomes in recent years to projections, given the inevitable simplification underpinning our input assumptions. But the common perception that future retirement income adequacy will be substantially worse than the current position appears wide of mark.

Within this overall picture, different patterns emerge for men and women. For women, replacement rates are broadly flat across generation X and millennials and within all pre-retirement income quintiles. But these outcomes represent a **step-change upwards from the replacement rates experienced by recent female** retirees – of around 10 percentage points in quintile 2, falling to around 5 percentage points in the top two quintiles of pre-retirement earnings. Again, caution should be taken when comparing actual outcomes to projections, but this step-change finding is consistent with the growth in private and state pension provision for women that has occurred in recent years.

**Replacement rates fall for men across the pre-retirement earnings distribution between the younger baby boomers and generation X**. They then rise through to the millennials, increasing by around 5 percentage points in quintiles 2 and 3 between the older members of generation X and the millennials. This pattern of change will partly reflect the fact that **auto-enrolment arrived too late to offset falling DB provision among older members of generation X** (who are due to retire in the 2030s). However, it will also be driven by the fact that generation X is likely to record stronger wage performance in its pre-retirement years than those who came before.

### The evolution of policy – and the performance of the economy – demonstrate the sensitivity of these outcomes

Of course, our projections are much too uncertain to be considered predictions of what will come. Instead we take them to provide an indication of the likely relative differentials in retirement income adequacy for future generations of pensioners. By way of considering how these differentials might react to alternative assumptions, we have also modelled the impact of other scenarios reflecting possible changes to either policy or the economy:

- A more generous State Pension: The continuation of the 'triple lock' (as opposed to our central assumption of a State Pension uprated with earnings) would have a significant upward effect on typical replacement rates. The effect is broadly consistent across sexes, boosting replacement rates of the lowest-earning millennials by around 7 percentage points, and by around 2 percentage points for the highest earners. Clearly a higher State Pension would improve adequacy, but that doesn't mean the triple lock is the best way of delivering such an improvement. In particular, the ratchet approach is not well targeted either inter- or intra-generationally. And it means that younger cohorts have to fund the rising cost throughout their working lives. Aside from the policy mechanism via which change occurs, the key point here is that increases or reductions in the value of the State Pension have a big impact on retirement income adequacy, particularly at the bottom of the earnings distribution.
- **Reduced auto-enrolment coverage**: Maintaining the high level of private pension contributions that auto-enrolment has so far achieved will be increasingly tough as minimum contributions rise. A significant fall in coverage we model the share of private sector workers outside of a scheme increasing from 20 per cent to 35 per cent would have the greatest effect on women and low to middle earners, potentially reducing typical replacement rates by 3 or 4 percentage points.
- **The performance of the economy**: If the recent poor performance of productivity growth were to persist over the longer term, we would expect the level of future retirement incomes (indeed the incomes of *all* households) to be around 30 per cent lower in constant price-terms compared to our central assumption, reflecting a more slowly expanding economy. However, the extent to which retirement incomes will replace pre-retirement earnings is little affected given a similar real rate of return on pension savings in relation to real earnings growth. It's also possible that investment returns might underperform absent sluggish earnings growth, which would bear down on both retirement income levels and earnings replacement rates. And it is important to note that only DC pensions expose the individual to such risks, so the move towards DC provision leaves future generations more exposed to shifts in the economy than compared to the largely DB system experienced by today's pensioners.

While these are scenarios around our central assumptions, they represent feasible examples of potential developments in the coming years that could derail future retirement income adequacy. These are among the areas in which policy attention ought to focus.

### Our analysis of current and future retirement income adequacy shows neither pessimism nor complacency is warranted

In contrast to other areas of intergenerational analysis, **the modelling we set out in this report suggests that retirement income adequacy has the potential to be fairly similar for future generations to the outcomes experienced by today's retirees**. In many respects this is due to action being taken over the past decade to prevent a deterioration in outcomes across future cohorts of pensioners. The outcomes we have projected remain at risk but, compared to areas such as our crises in housing and social care funding, there is a broad consensus and existing policy framework to, at a minimum, respond to future challenges.

Yet policy makers will and should still aspire to drive outcomes for future retirees closer to Pensions Commission adequacy benchmarks, particularly in the context of deeply concerning generational living standards trends in the labour and housing markets. The multiple ways in which policy changes in the coming years can boost living standards in retirement for future generations of pensioners remains a key consideration for the Intergenerational Commission.

### Section 1

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### Introduction

Recent strong growth in the incomes of pensioner households and reductions in pensioner poverty are to be welcomed. But set against much weaker incomes for working age households and the challenges younger generations are facing in accumulating wealth, anxiety is building that these outcomes may not be sustained for future generations of retirees. Their prospects are particularly uncertain given both the big shifts in pensions policy currently in train and the fiscal costs associated with rising longevity and the baby boomer generation entering retirement.

This  $12^{th}$  report for the Intergenerational Commission focuses on what these trends mean for pensions adequacy from an intergenerational perspective. In this introductory section we briefly set out this context. We then describe how our study seeks to build on past research in this area: by placing projections for the future in the context of current outcomes and by taking both an inter- and intra-generational perspective. Finally, we describe the dual approach we take to defining the adequacy of retirement incomes – with a focus on both income levels, and the degree to which post-retirement incomes replace pre-retirement earnings.

### Current living standards outcomes provide reason to be concerned about future generations of pensioners

Previous analysis for the Intergenerational Commission has brought the question of intergenerational differences in retirement outcomes to the fore. We have highlighted the very welcome strong performance of typical pensioner incomes over the past couple of decades, leaving them now slightly higher than typical working age household incomes, as Figure 1 shows.



Notes: 2016-17 nowcast shown as dotted lines. Incomes measured before accounting for housing costs are still higher for working age households than for pensioner households. However, the 'after housing costs' measure used here is generally preferred for describing pensioner incomes and isolating living standards trends after the relatively fixed cost of housing has been covered. The trends shown here differ somewhat from those published by DWP, due to different approaches to weighting and averaging across years. For more details see: A Corlett, S Clarke & D Tomlinson, *The living standards audit 2017*, Resolution Foundation, July 2017

Source: RF analysis of DWP, Households Below Average Income; RF nowcast

This strong performance reflects a number of factors. Those reaching State Pension age (SPA) in recent years have been increasingly likely both to still be in work and to have larger private pension pots than those who came before.<sup>1</sup> Pensioner benefits have also played a role, with the introduction of Pension Credit in the mid-2000s, and the relative protection of pensioner benefits during the post-crisis period, helping to reduce pensioner poverty by one-third during this century (from 24 per cent of pensioners sitting below 60 per cent of median incomes in 2002-03, to 16 per cent in 2015-16).<sup>2</sup>

As well as suggesting a divergence between the most recent cohorts of pensioners and their predecessors, this analysis raises the question of whether today's working age adults will be in a position to replicate these welcome outcomes when they reach retirement age.

Other analysis for the Intergenerational Commission provides cause for concern. For the first time in four decades today's young adults are failing to improve on the earnings

<sup>1</sup> A Corlett, As time goes by: Shifting incomes and inequality between and within generations, Resolution Foundation, February 2017

<sup>2</sup> Department for Work and Pensions, Households Below Average Income: An analysis of the UK income distribution: 1994/95-2015/16, March 2017



of predecessors at their age, with those born in the late 1980s earning slightly less in their mid-20s than those at that age 15 years before them.<sup>3</sup> Given private pension contributions are generally taken as a proportion of earnings (rather than as a cash figure), there are clear potential feed-through effects to net income in retirement.

Indeed, alongside this earnings picture we have found much lower levels of wealth accumulation at any given age for younger cohorts compared to those coming before them. For example, those born in the early 1980s had half the wealth at age 30 as those born in the late 1970s.<sup>4</sup> This outcome partly reflects changes in pension and financial wealth accumulation. But it is dominated by housing wealth trends; in particular the precipitous fall in home ownership among young adults during this century.<sup>5</sup> The prospect that some of these home ownership declines may never be recovered underscores the importance of considering the other resources – particularly state and private pensions – that provide security in retirement.

Mirroring this economic analysis, concern about whether future pensioners will be able to match or exceed the living standards today's pensioners experience is clearly present in public perceptions. Polling by Ipsos MORI for the Intergenerational Commission showed that across generations, young adults' ability to live comfortably when they retire from work is second only to home ownership as a way in which the public thinks generational progress has stalled. Around two-thirds of both millennials (born 1981-2000) and generation X (born 1966-1980) think that young people will live less comfortably during retirement than their parents' generation did.<sup>6</sup> Deep pessimism about the prospects for any kind of reasonable pension – either from the state or via private saving – was also exposed in the focus groups that formed part of this analysis:

"The [state] retirement age just keeps getting extended and extended. I still don't have a pension. It will just get to a stage where you just have to pay for your own retirement – there won't be anything from the government. We won't get anything – not by the time we get to 65 or 70."

#### Millennial

With widespread public pessimism about the retirement income prospects of today's working age adults, and generational earnings and wealth patterns supporting such concern, a full understanding of likely outcomes is essential.

#### 15 years on from the creation of the Pensions Commission, we are in the midst of a system in transition

At the turn of the 21<sup>st</sup> Century, a political consensus had formed that the UK's system of pension provision – both state and private – was in need of attention. The case for action was a mixture of rising longevity, a State Pension that had been falling in relation to earnings for two decades, and the decline of generous 'defined benefit' (DB) pension

<sup>3</sup> L Gardiner & P Gregg, Study, work, progress, repeat? How and why pay and progression outcomes have differed across cohorts, Resolution Foundation, February 2017

<sup>4</sup> C D'Arcy & L Gardiner, The generation of wealth: Asset accumulation across and within cohorts, Resolution Foundation, June 2017

<sup>5</sup> A Corlett & L Judge, Home affront: Housing across the generations, Resolution Foundation, September 2017

<sup>6</sup> H Shrimpton, G Skinner & S Hall, The millennial bug: Public attitudes on the living standards of different generations, Resolution Foundation, September 2017



schemes in private sector firms. These changes, alongside wider demographic shifts around coupling and divorce, particularly exposed differing outcomes across the sexes and essentially signalled the demise of a family-based system that largely relied on the private saving of men.

Against this backdrop the government established the Pensions Commission in 2002, chaired by Adair Turner. The Commission had the remit of reviewing the UK pensions landscape in the round, and in particular considering whether changes were needed to the existing 'voluntarist' approach to private saving. The Commission's final report in 2006 presented a range of recommendations, the key pillars of which were:

• A State Pension age rising in line with longevity;

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- Transition to an increasingly flat-rate State Pension that would maintain its value in relation to working age incomes, as a clear and understandable base to underpin greater private saving; and,
- Automatic enrolment of employees (with a right to opt out) into a new national scheme for private pension saving (or existing company schemes), and a modest level of compulsion on employers to match individual contributions.<sup>7</sup>

The Commission's recommendations were broadly accepted by the government of the day, and set in motion a range of reforms to the State Pension and private savings schemes that have subsequently been rolled out.

The following section of this report describes these changes and their early effects. But, before diving into this detail, it should be noted that such wholesale change almost by definition raises the prospect of different outcomes across generations. The Pensions Commission had at its heart issues of intergenerational fairness and a goal of ensuring adequacy for both current and future generations of pensioners. But transition periods are always hard to manage with equal account for all cohorts, and with reforms now well underway it is an opportune moment to once again take a generational lens on current and likely future outcomes.

#### The pensioner boom is now on, with the fiscal challenge this raises sitting at the heart of current intergenerational debates

A primary driver behind the Pensions Commission and the reforms that followed was the ageing of the UK population and the fiscal costs this implied. Over the coming decades, the impact of rising longevity is being supplemented by the transition of the large baby boomer generation (born 1946-1965) into retirement.

Despite the consensus built by the Pensions Commission on a range of policies, this demographic backdrop means the broader debate on state support in retirement – and which groups within society should pay for it – is far from closed. Questions include the long-term viability of the current 'triple lock' approach to uprating the State Pension,

<sup>7</sup> Pensions Commission, A New Pension Settlement for the Twenty-First Century: The Second Report of the Pensions Commission, 2005



and various 'universal' pensioner benefits; solutions to the pressing social care funding crisis; and the treatment of housing wealth and private pension contributions and receipts in the tax system.

These questions are at the heart of a renewal of the intergenerational contract that is the task of the Intergenerational Commission, as it seeks to maintain and build on the consensus created by the Pensions Commission.

### Building on past research, this analysis takes a multifaceted view on what adequacy means

With deep public pessimism regarding incomes for future pensioners; divergent outcomes in current living standards across the age range; a policy system in flux; and demographic pressures raising the prospect of further changes, the case for an in-depth look at the adequacy of retirement incomes is clear. We provide this in-depth look in this report.

We build on past analysis of the adequacy of incomes for future pensioners carried out by the Pensions Commission itself and, more recently, by the Department for Work and Pensions (DWP) and the Pensions and Lifetime Savings Association.<sup>8</sup> These latter two analyses both project significant levels of inadequacy for future pensioners. However, they also suggest that reforms currently in train will improve the picture relative to a counterfactual of no policy change; or at least have the potential to improve outcomes with further development along the lines of the current direction of travel.

Our analysis seeks to develop the current picture in various ways. First, for the first time since the Pensions Commission (and now with much richer data than it had at its disposal) we contextualise projections for future retirement income adequacy in Great Britain in outcomes for recent cohorts of pensioners. Second, in line with the DWP approach, we focus on the full distribution of outcomes within generations as well as differences between the average experiences of each. Finally, and in line with previous studies, our modelling of future outcomes considers their sensitivity to certain economic and policy scenarios.

In both our 'backward-looking' analysis of outcomes for recent cohorts of pensioners and our 'forward-looking' projections, we define adequacy from two perspectives:

- First we look at *retirement income levels*, adjusted by either prices or prevailing earnings in order to compare cohorts over a short and long time horizon. We also compare these levels to a commonly-used benchmark for a minimum acceptable standard of living the Minimum Income Standard (MIS). The MIS is based on what the public thinks is necessary for an adequate minimum standard of living and currently stands at £192 per week for a single pensioner (excluding housing costs).<sup>9</sup>
- Second, we look at *earnings replacement rates*. That is, individuals' (and in some instances families') gross state benefit and private pension income after retirement, as a share of gross earnings in the years prior to retirement. This approach reflects

<sup>8</sup> Department for Work and Pensions, Framework for the analysis of future pension incomes, September 2013; Pensions and Lifetime Savings Association, Retirement Income Adequacy: Generation by generation, November 2016

<sup>9</sup> Centre for Research in Social Policy, Budget summaries 2008-2017, 2017

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> the standard set by the Pensions Commission when defining adequacy. We use an updated version of their benchmark replacement rates to assess adequacy on this measure. These benchmarks were set to allow individuals to maintain pre-retirement living standards after retirement, and as such are higher for lower earners than higher earners. Box 1 details the benchmarks, noting that they were never designed to be definitive and should not be treated as such, but they nonetheless provide a well-evidenced and commonly-accepted guide.

In our view, this dual approach is essential to a rounded perspective on retirement incomes. A focus only on the former – income levels – ignores the fact that a system delivering very large changes in income (and therefore implicitly consumption and living standards) upon retirement would suggest that lifetime resources are not being used optimally due to under- (or over-) saving, or shifting state provision. A focus only on the latter – earnings replacement rates – can lead to perverse outcomes. For example, a cohort with the same pension income but lower later-life earnings than its predecessors would seem to have a more adequate outcome on a replacement rate basis. In addition, earnings replacement obscures pressing concerns around low incomes and deprivation in retirement for individuals, which can occur towards the bottom of the income distribution even when replacement rates are high and 'adequate'.

#### $m{i}$ $\,$ Box 1: Benchmark earnings replacement rates as defined by the Pensions Commission

After reviewing existing evidence on retirement income trends, the Pensions Commission established benchmark replacement rates – gross post-retirement income as a proportion of gross pre-retirement earnings – that would broadly allow the maintenance of living standards into retirement.

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Based on research into changing consumption patterns around retirement and illustrative modelling, benchmarks were established at less than 100 per cent (reflecting the fact that retirees pay less tax, save less and have lower costs for example in relation to travelling to work and raising children). The first report of the Pensions Commission suggested "benchmark replacement targets of 80 [per cent] of gross earnings for lowest earners, declining to 67 [per cent] for median earners and to 50 [per cent] for top earners."<sup>a</sup> Higher rates for lower earners were justified due to lower pre-retirement taxation, lower levels of pre-retirement saving and smaller drops in consumption upon retirement.

Figure 2 summarises these benchmarks in relation to contemporary earnings in 2004. In addition Figure 3 relates these pay bands to the pay distribution at the time, and smooths between bands, to summarise replacement rate benchmarks across percentiles of the pay distribution. These are the replacement rate adequacy benchmarks we use throughout this analysis.

It should be noted that during and since the Pensions Commission, the application of these benchmark replacement rates when judging future outcomes has differed. For example, the first report of Pensions Commission discussed replacement rates on an individual basis, whereas the Department for Work and Pensions has since applied them to families (for whom average replacement rates tend to be slightly higher, as discussed in Section 3).<sup>5</sup> And the time-

- I It should be noted that the first report of the Pensions Commission states that the suggested benchmark replacement rates were based on "us[ing] current actual replacement rates as a benchmark when assessing the adequacy of pension right accrual." However the proposed benchmarks relate to gross individual earnings, whereas the supporting analysis presented in this report generally referred to net household income (for which replacement rates are higher). As analysis in Section 3 will show, there is little evidence that these benchmark replacement rates have been achieved on average apart from for the lowest earners. As such, the justification of these benchmarks on the basis of maintaining living standards – which is what they are generally reported as being based on – appears more valid. See: Pensions Commission, *Pensions: Challenges and Choices: The First Report of the Pensions Commission*, 2004
- 2 Pensions Commission, Pensions: Challenges and Choices: The First Report of the Pensions Commission, 2004
- 3 Department for Work and Pensions, *Framework for the analy*sis of future pension incomes, September 2013

### Figure 2: Pensions Commission benchmark earnings replacement rates: 2004



Source: Pensions Commission, Pensions: Challenges and Choices: The First Report of the Pensions Commission, 2004

### Figure 3: Pensions Commission benchmark earnings replacement rates, by percentile of earnings



Source: RF analysis of Pensions Commission, Pensions: Challenges and Choices: The First Report of the Pensions Commission, 2004; ONS, Annual Survey of Hours and Earnings

periods over which pre-and post-retirement earnings/ income are captured also differ between these two analyses.<sup>4</sup>

In general, it is unlikely that the adequacy benchmarks suggested by the Pensions Commission were ever designed to be definitive. Our approach is to focus on individuals over a medium-to-long time period, while also on occasion showing outcomes on family-based measures and those covering a more limited time span. Throughout, we do so treating benchmark replacement rates as a guide – particularly in terms of the shape of outcomes across the earnings distribution – rather than the gold standard.

<sup>4</sup> These replacement rate benchmarks were applied to a very short time-series (the year before retirement to the year after) by the Pensions Commission, and to pensions/earnings between age 50 and death by the DWP.



Finally, due to rather different policy and economic drivers and data limitations, both our backward-looking and forward-looking analyses consider separately the questions of whether retirement incomes shortly after retirement are adequate, and the extent to which outcomes change over the course of retirement.

### The structure of this report

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The remainder of this report is set out as follows:

- **Section 2** provides further context for our new analysis, by setting out the **changing pensions policy environment**. It discusses reforms preceding and following the Pensions Commission and their early impacts on levels of state provision and private saving.
- Section 3 discusses the adequacy of retirement income for recent retirees, both across income and earnings distributions and for successive birth cohorts. We exploit long time-series longitudinal data (the *British Household Panel Survey* and *Understanding Society*) to conduct richer analysis than was possible at the time of the Pensions Commission, and we also reflect on the extent to which our results can be compared to our projections in the following section.
- Section 4 presents our projections for retirement income adequacy both across and within future cohorts of pensioners. As with our backward-looking analysis in Section 3, we assess both the level of incomes and the extent to which they replace past earnings. We also show the sensitivity of our projections to alternate economic and policy assumptions.
- Section 5 provides concluding remarks on this analysis.
- The **two annexes** provide methodological and analytical background to Sections 3 and 4 respectively.

### Section 2

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### **Building up pensions**

The long-term nature of pensions is sometimes forgotten. Regular government announcements give the impression of a policy landscape that frequently shifts, yet most changes will only have an impact on pension outcomes decades into the future. The UK pension system has two key pillars of state and private provision. Both are currently in the midst of change due to both reforms and broader shifts in demography and the labour market.

On the state side, the new structure of a wide-coverage, flat-rate and sustainable system is now in place. Despite some wrangling over just how fast the State Pension should be increased or having to wait longer to reach State Pension age, the recent reforms appear to enjoy broad political support.

On the private side, auto-enrolment into occupational pension schemes has significantly increased the share of employees saving into a pension, with the share of millennials saving outstripping that of baby boomers at the same age 20 years ago. The groundwork for future success is thus in place, though the greater risk and lower generosity of defined contribution pensions compared to the defined benefit schemes of old begs the question of whether they will provide adequate incomes in retirement. More immediately, increasing contribution rates for employees poses a challenge to the continued success of auto-enrolment.

### An era of public and private pension reform

Pensions are by their very nature a long-term endeavour, with what you put in, and what happens to it over the next decade, determining what you get out at the end. Accruals built up over the working lifetime determine the resources available to provide an income in retirement.

The UK pension system has three main components: private pensions, state pensions, and income-related support for the lowest-income pensioners. While many developed economies have a similar mix of private and state provision, the UK (along with the US and Australia) is unusual in the extent to which individuals are expected to rely on private provision to build an adequate income in retirement.

Much recent reform can be traced back to the Pensions Commission. Its core aim was to set out a pathway to a sustainable pension system that would provide an adequate income in retirement. For the state that has involved a move towards a system that provides widespread coverage, with a more generous entitlement but at a level that remains affordable over the longer term. Alongside an accelerated move towards a flat-rate individualised state system (the new State Pension), there has been a shift in relation to private pensions via the introduction of a widespread low-cost private pension savings vehicle aimed at low to middle earning employees (auto-enrolment).



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The Old Age Pension Act 1908 provided for the first UK state pensions under then-Chancellor David Lloyd George. It provided a means-tested pension of up to 5 shillings a week, equivalent today to around £23 a week, to people aged 70 plus – an age to which only 24 per cent of the population survived.<sup>10</sup>

Since these humble beginnings, UK state pensions have undergone a number of key reforms. The incarnations now in payment largely track back to reforms set out in the mid-1970s, which set the foundations for increased individual entitlements for women by recognising time spent out of work caring for children. These reforms are only starting to crystallise as entitlements today – some four decades on from their implementation.

#### Improving coverage

Policy prompted by the Pensions Commission sought to accelerate the reforms of the 1970s, bringing close to universal full entitlement to the basic State Pension for new retirees in this decade. This was achieved by reducing the number of contributing years needed to earn full entitlement, and rationalising crediting arrangements for activities beyond work, such as caring.

Alongside the basic State Pension, the Additional Pension has since 1978 provided an earnings-related top-up. The original incarnation of 'SERPS' has undergone various changes since its inception, in part aimed at reducing what proved to be a very generous return to lifetime earnings for the first cohorts to be entitled: a retiree in 1998 could receive a pension equivalent to one-quarter of their average earnings over the best 20 years of work. More recently reforms, such as the move to 'S2P' from 2002 followed by the new State Pension, gradually shifted us towards a largely flat-rate system with relatively larger accruals for lower-paid workers and crediting arrangements to recognise caring responsibilities.

These growing entitlements have helped to drive recent improvements in pensioner incomes. Women reaching State Pension age since 2010 have experienced significant improvements to their entitlements compared to older cohorts. Although for some, increased entitlement has come alongside an increase in the age at which the State Pension can be claimed (with the State Pension age for men and women being equalised at 65 and then increasing to 66 by 2020 for both sexes). For men, those cohorts with access to the most generous forms of earnings-related pension have already reached State Pension age.

#### A link to earnings

A key element of the reforms following the Pensions Commission was addressing the falling value of the basic State Pension. The basic State Pension had grown in line with inflation since 1975 (then RPI inflation) leading to a gradual deterioration in its value relative to earnings (the key driver of working age incomes), as shown in Figure 4.

<sup>10 &#</sup>x27;State Pension centenary', Department for Work and Pensions media centre, 1 August 2008





Figure 4: The value of the State Pension relative to earnings

Notes: For projections, we assume 4.3 per cent nominal earnings growth, 2 per cent CPI inflation and 3 per cent RPI inflation, in line with the January OBR Fiscal Sustainability Report. Source: DWP, Annual Abstract of Statistics, 2016; OBR, Economic and Fiscal Outlook, November 2017; OBR, Fiscal Sustainability Report, January 2017

Since April 2011 it has been linked to earnings growth and then some, with the 'triple lock' meaning it is uprated by the higher of inflation, earnings or 2.5 per cent (though as yet the triple lock is not government policy beyond this parliament). Taking a long view, if inflation uprating had continued to 2060 the basic State Pension would be two-thirds of its currently expected value, almost one-third if uprated by CPI. Such an outcome would prevent it being an effective underpin for private pension saving and place many pensioners into poverty during retirement. The new State Pension has been set at a level equivalent to its value in the late-1970s, which is also broadly the value of the current means-tested floor and also has a formal link to earnings.

Throughout the 2000s, legislation for an earnings link met with significant political obstacles, not least from the then-Chancellor given the significant long-run cost.<sup>11</sup> As it turns out, since the earnings link was formally restored in legislation from April 2011, there has only been one year (2016-17) in which earnings growth has been used to increase the basic State Pension. Instead the triple lock has kicked in, adding an extra £4 billion to the pension bill relative to an earnings-uprated baseline from April 2012-13.<sup>12</sup>

<sup>11</sup> Institute for Government, Pensions reform: The Pensions Commission (2002-6), 2010

<sup>12</sup> It should be noted that relative to the historic practice of RPI uprating, the triple lock actually saved money. D Thurley & R Keen, *State Pension triple lock*, House of Commons library, June 2017.



This policy made some short-term political and economic sense when it appeared in 2010. Back then, the UK was in the midst of what was assumed to be a short-term earnings squeeze that would have fed through to a real-terms *reduction* in the basic State Pension in the absence of the triple lock. It has also helped to increase the value of the basic State Pension relative to earnings. The pay squeeze lasted until 2015 however, meaning the triple lock has lasted longer and had greater impact on the generosity of the State Pension relative to earnings than initially expected.

The earnings squeeze has since returned and the triple lock will apply again, with earnings growth in September 2017 (the month used as the basis for uprating the State Pension the following April) again falling short of inflation. The triple lock is projected to apply in April 2018 too. Figure 4 highlights the years in which the triple lock has applied so far (light pink bars) and is likely to do so (dark pink bar).

The triple lock has been fully committed to for the entirety of the current parliament,<sup>13</sup> with an estimated extra £1 billion a year by 2022-23 added to the bill. Looking longer term, the Office for Budget Responsibility (OBR) has estimated that the cost of the triple lock is equivalent to adding 0.9 per cent of GDP to the State Pension bill by 2066-67.

There is a clear trade-off between the generosity of the State Pension and the age at which people become entitled. As the *Cridland Review* of State Pension age<sup>14</sup> argued, a better approach would be to maintain the link to earnings so that the State Pension maintains its role as underpin while reducing the upward pressure on State Pension age that increasing costs could bring.

From an intergenerational perspective, the triple lock provides an interesting case study. Because the triple lock acts as a ratchet, making it more generous to future cohorts, it in one sense has the potential to be most generous to millennials and the generations that follow. This is of course on the strong assumption that it is maintained for the next 30 to 40 years. On the other hand however, it is future generations of pensioners – now of working age – who will primarily shoulder the burden of paying for the more generous pension. And for the generations that follow, that cost will be ever-growing relative to their earnings.

## Having been fixed for decades the State Pension age is now rising

The final element of the Commission reforms on the state side was to introduce a gradually rising State Pension age to take account of rising longevity. One of the key reasons for reviewing the pensions system at the beginning of this century was demographic change. The demographic pressures we are now experiencing were starting to build, and it was clear that the large baby boomer generation approaching pension age was set to leave a relatively smaller working age population in its wake.

This rising 'dependency ratio' (those aged 20 to 65 year olds as a share of those aged 65 plus) brings the risk of a growing financial burden for the working population associated with supporting those in retirement. We should bear in mind that dependency ratios are a simplification – failing to take into account shifts in heathy life expectancy, working longer or recognising wider social roles such as caring – but it is nonetheless instructive

<sup>13</sup> Rather than the 2020-21 commitment in the Conservative manifesto, following negotiations with the DUP.

<sup>14</sup> Independent review of the State Pension age, Smoothing the transition, March 2017

for considering the broad population changes. Figure 5 shows how this simple old age dependency ratio has increased over time, from one-in-five in the 1960s to one-in-three today. It is set to be close to one-in-two by 2060.

Figure 5: Old-age dependency ratios using different age threshold definitions for the older population: UK



Old-age dependency ratio (old age population/ages 20 to old age threshold)

Source: Resolution Foundation analysis using ONS, 2014-based mid-year population estimates; ONS, 2014-based population projections

Such a large demographic shift, caused not only by the baby boomer bulge but also by growing numbers of people living longer, prompted the government to move to a gradually rising State Pension age. Initial proposals set out an increase of one year a decade, so that it would rise to 68 by 2056. Given its fiscal benefits (and relatively modest near-term political consequences), raising the State Pension age has perhaps unsurprisingly been enthusiastically embraced by government. As such, the move to age 67 has been brought forward by a decade to 2028, and the increase to age 68 is now set for 2039 (two decades earlier than initially envisaged).

The recent Labour manifesto offered some resistance to this approach,<sup>15</sup> and it is certainly true that the precise timing of future rises can be debated. So too can the need for mitigation if *healthy* life expectancy fails to rise in line with overall life expectancy. But the general principle of raising the State Pension age in reaction to rising longevity appears widely established.

<sup>15</sup> The Labour Party, For the many not the few: The Labour Party Manifesto 2017, May 2017

One potential cause for reviewing the current framework comes, however, in the shape of what increasingly appears to be a slowdown in improvements in mortality rates in recent years, especially among the oldest in society. If this trend were to persist, which is by no means certain, then it could put at risk what has been a given in recent times – that successive cohorts are expected to live longer than their predecessors. This is a particular risk in certain local areas if the slowdown is linked to socio-economic factors, which is one possible explanation that have been advanced.<sup>16</sup>

### Fast-forwarding the provision of a flat-rate system benefits those retiring in the next two decades at the expense of those who retire later

With the groundwork in place, the latest round of reforms that led to the introduction of the new State Pension has gone a step further by attempting to introduce a more generous flat-rate system in which the vast majority of men and women receive the full amount from 2016. Doing so broadly means bringing forward outcomes we may otherwise have expected to see by the late-2050s. However, it will not be until at least the 2070s before a person retires having spent their entire working life as a member of the new system.<sup>17</sup>

The new State Pension raises the basic level of the State Pension to £156 a week, and in doing so is offset against any existing entitlements to Additional Pension that would have been paid on top of the basic State Pension. A lifelong low earner will gain in the early years of the scheme given they would have built up little earnings-related provision. A high earner would simply find a greater share of their State Pension income increased by earnings. However, a lifelong low earner retiring in the 2050s will receive less State Pension under the new scheme, because the flat-rate Additional Pension in the system that has now been replaced would have allowed them to build up a greater entitlement.

From an inter-generational perspective the design of the new State Pension will mean that baby boomers stand to have a more generous State Pension over their lifetime than under the previous pension system, while millennials will on average have a less generous pension from the state.<sup>18</sup> This is because the current reforms are expected to be cost neutral in each future financial year relative to the system they replace. Therefore the more generous pension it provides to people retiring in the next two decades, both at and over retirement, must reduce the entitlements of those retiring further into the future to balance the bill.

This trade-off is highlighted in the DWP's latest assessment of the impact of the new State Pension. It shows that, by 2060, over half (55 per cent) of new retirees will typically be paid £16 a week less (in constant-earnings terms) than they would have received under the old system. The average gain among the 45 per cent experiencing a higher payment would be £13 a week.

Looking over the full duration of life in retirement for these retirees in 2060, threequarters would find themselves an average of the equivalent of £15 a week worse off,

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<sup>16</sup> M Marmot, 'The rise of life expectancy in the UK is slowing', Institute for Health Equity blog, 19 July 2017

<sup>17</sup> Of course the large complication in the new State Pension system is its treatment of historic periods of contracting out. For reasons of brevity we do not discuss that here, but instead treat the entitlement to the new State Pension as notional.

<sup>18</sup> Department for Work and Pensions, Impact of New State Pension (nSP) on an Individual's Pension Entitlement – Longer Term Effects of nSP, January 2016

while one-quarter would gain by the equivalent of  $\pounds 7$  a week. The share of the cohort that is worse off grows over retirement because what will now be a greater amount of State Pension uprated by earnings fails to offset the loss of what would have been an overall larger State Pension payment part-uprated by inflation. Each year of uprating increases the wedge.

In this respect the new flat-rate pension represents a structural entitlement shift that re-allocates resources across generations, in contrast to the more mechanic ratchet effect of the triple lock.

#### **Private pensions**

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The two key forms of private pension accrual are 'defined benefit' (in which future pension payments are fixed in relation to salary) and 'defined contribution' (DC, where pension income is based on the value of invested funds at retirement). DB schemes tend to be considered more secure for workers, with retirement incomes based on years of service and salary, and the risk of funding those entitlements placed on the employer. DC schemes tend to place the risk on the employee. The individual is exposed to the risk of varying financial returns – which could mean similarly-paid employees have very different sized pension pots in retirement – and dependent on the general performance of the stock market.

The significant reforms to the State Pension system have led to cohorts reaching retirement since 2010 with improving entitlements. The same cannot be said for changes to private pension provision. While recent cohorts are retiring with historically high entitlements, those outcomes are not set to last into the next decade.

#### DB provision has been on a long-term downward trend

The UK has experienced a long-term decline in DB pension provision that goes back to the 1970s. In 2016 only 29 per cent of employees were contributing to a DB pension scheme, down from almost half (47 per cent) in 1997, and with higher figures still in the decades before. That decline has continued in part because of a growing realisation that the generous benefits on offer, coupled with rapidly rising life expectancy, were proving far more costly than initially envisaged.

Indeed, previous analysis for the Intergenerational Commission highlighted the impact of the increasing cost of funding pension schemes for employers on employee compensation.<sup>19</sup> A growing share of such compensation is funding pension deficits, resulting in a strongly significant negative effect on hourly pay at the level of the individual firm. For every increase in deficit payments equivalent to 1 per cent of the firm's total wage bill, the hourly pay of its workers is lowered by roughly 0.1 per cent.

Today the vast majority of DB schemes that remain open to new members operate in the public sector, and of 1.3 million active members of private sector DB pension schemes in 2014, only 0.5 million were in DB schemes open to new members.<sup>20</sup>

<sup>19</sup> B Bell & M Whittaker, The Pay Deficit: Measuring the effect of pension deficit payments on workers' wages, Resolution Foundation, May 2017

<sup>20</sup> Office for National Statistics, Occupational Pension Schemes Survey: UK, 2016, September 2017

Previous attempts to reinvigorate the private pension savings market have generally failed in one way or another. Be it the move to introduce personal pensions in the late-1980s, or stakeholder pensions in the 2000s. However, the implementation of auto-enrolment represents something of a sea-change. The policy takes its cue from 'nudge' theory pioneered by Richard Thaler, with the intention of utilising inertia among employees who may be unlikely to actively opt-in to a pension scheme but, on the other side of the coin, are also unlikely to opt-out.

Figure 6 shows the number of employees enrolled to date as part of the expansion of auto-enrolment. A total of 8.7 million employees had been enrolled by September 2017 and, perhaps surprisingly, the pace does not seem to have dropped off in any marked way as smaller businesses have been brought under the scheme. The DWP remains on track to meet the target of over 10 million in the next year. From April 2018 the minimum contribution an employee makes is set to rise from the current 1 per cent to 3 per cent (2 per cent for employers), then 5 per cent in April 2019 (3 per cent for employers).



Figure 6: Auto-enrolment staging plans and number enrolled to date

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Source: The Pensions Regulator, Automatic enrolment declaration of compliance: Monthly report, November 2017

Auto-enrolment has undoubtedly proved a significant policy success to date. And it is a policy having the greatest effect on groups of employees who have historically undersaved: women and the low paid.

In 2013, less than half of all employees were members of occupational pension schemes with DC provision, meaning that the decline in DB coverage discussed above was driving



an overall reduction in pension membership. By 2016 however, following auto-enrolment implementation, that share had increased to 68 per cent, with overall coverage continuing to rise.

Figure 7 sets out the share of employees who are members of an occupational pension scheme by age, pooling information from *Annual Survey of Hours and Earnings* datasets covering the period 1997 to 2016. Overall around 70 per cent were contributing to some form of pension at the prime working ages of 30-55. Two further key trends stand out:

- Significant upticks in the share of employees with membership among the oldest cohorts in generation X and among millennials, reflecting the effect of auto-enrolment (covered in more detail below); and,
- A significant decline in the share of successive generations who are members of DB schemes at each age. Over half of baby boomers were members of DB schemes in their early 30s, compared to less than 30 per cent of millennials.



Figure 7: Occupational pension scheme membership of employees, by generation: 1997-2016

Notes: Analysis covers Great Britain.

Source: RF analysis using ONS, Annual Survey of Hours and Earnings

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The picture is altered when we strip out employees in the public sector, and when we split by gender. Figure 8 presents occupational pension provision among women in the private sector for successive three-year age cohorts, over the period 2005-2016. DB membership is again shown separately, with the dotted lines highlighting the rapid decline in DB membership among women in the private sector.



Figure 8: Occupational pension scheme membership of female employees, by cohort: 2005-2016

Notes: Analysis covers Great Britain.

Source: RF analysis using ONS, Annual Survey of Hours and Earnings

The fact that the curves depicting overall scheme membership show such clear upticks *despite* the decline of DB emphasises the effect of auto-enrolment. Younger generations of women now have greater pension coverage than the generations that came before them at the same age. For example, almost two-thirds of female private sector employee millennials in their early 30s are contributing to an occupational pension compared to around half of baby boomers at the same age. However, four-in-five of those boomers were in a DB scheme, compared to only one-in-six of millennials.

We see a similar pattern among men in Figure 9. Two differences are worth commenting on though. First, overall coverage among male employees remains higher than among women (though the gap is smaller among younger generations and has narrowed among

younger baby boomers in the period shown). Second, baby boomer men have experienced a greater fall in DB provision than baby boomer women (with a broadly similar scale of fall among men and women in younger generations).



Figure 9: Occupational pension scheme membership of male employees, by cohort: 2005-2016

Notes: Analysis covers Great Britain.

Source: RF analysis using ONS, Annual Survey of Hours and Earnings

Using the same data, we can also show how the share of employees making contributions has changed across the pay scale. Figure 10 sets out the number of female employees with pension contributions within different birth cohorts in 2012 and 2016. In the earlier period, even at what would be prime working ages the number of employees in each three-year cohort contributing to a scheme only just topped 100,000. And the vast majority of those were paid over £14 an hour.

But jump forward to 2016 – the latest year for which data is available – and the situation is remarkably improved. Around 250,000 private sector employees are now contributing among millennials and generation X (the slight dip among younger generation X is likely to be due to motherhood). Importantly the greatest growth has been among the lowest-paid employees. That is the case across all ages, but particularly among millennials.



Figure 10: Defined contribution pension scheme membership of female employees, by cohort and hourly pay level: 2012 & 2016

Notes: Analysis covers Great Britain.

Source: RF analysis using ONS, Annual Survey of Hours and Earnings

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Figure 11 repeats the same analysis for men. Reflecting what we've already seen, a higher number of male employees were already contributing to an occupational pension in 2012. But, as with women, these contributors were highly concentrated among those earning more than £14 an hour. In 2016 there has again been considerable growth in the number contributing, and again the biggest increase is among the low paid and millennials.



Figure 11: Defined contribution pension scheme membership of male employees, by cohort and hourly pay level: 2012 & 2016

Notes: Analysis covers Great Britain.

Source: RF analysis using ONS, Annual Survey of Hours and Earnings

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While this analysis shows substantial improvement in coverage for private sector employees, not all people in employment fit the criteria to be auto-enrolled. The current eligibility threshold sits at £10,000 a year, meaning that many lower-paid and particularly part-time workers miss out. However, this lack of coverage should be balanced against what may be a greater need for disposable income in the short term and, for lifelong low earners, the likelihood that they may accrue little in the way of private pension income anyway in a DC scheme.

Self-employed workers are another big group who are largely left out. Looking at wider pension savings trends, the number of self-employed people saving into a personal pension has been falling even as the number of self-employed workers has risen. Some of that rise relates to older workers remaining in self-employment for longer, but there is also a significant increase in the number of lower-earing self-employed workers at younger ages not saving.<sup>21</sup> This is a group at particular risk of under-saving if they remain in such self-employment for the majority of their working life.

<sup>21</sup> A Corlett & D Tomlinson, A tough gig? The nature of self-employment in 21<sup>st</sup> Century Britain and policy implications, Resolution Foundation, February 2017

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So far then, the implementation of auto-enrolment appears to have been a great success. The 8.7 million auto-enrolled to date is within touching distance of the government's original estimate of 9 million, and on track towards the higher target of 10 million that was set last year.<sup>22</sup> It will take decades before the full effects of these changes feed through into the pockets of future pensioners, but the reform has clearly helped to address the decline of private saving.

There is, however, a coming challenge for auto-enrolment; namely increases in contribution rates from the current 1 per cent for employees to an eventual 5 per cent in 2019. So far pension contribution rates have only represented a small share of an employee's pay, but this share is set to increase rapidly over the next two years. Increasing contribution rates will be crucial if the policy is to truly spark a big rise in private savings behaviour. At present the vast majority of the increased number of contributors have been doing so at the minimum 1 per cent requirement.

However, increasing those rates is likely to be hard and risks a subsequent reduction in auto-enrolment coverage. In the short term at least, employees may view the reduction in disposable income as less attractive than the promise of far-off retirement income. That challenge becomes tougher still with the UK experiencing an ongoing period of weak nominal pay growth. Coupled with relatively high levels of inflation, employees may struggle to cope with what is an effective short-term cut in net pay.

Figure 12 describes the potential scale of the challenge. A median-earning employee in continuous employment not contributing to a pension at all could see take-home pay rise by £1700 over the next four years. But if they were contributing the auto-enrolment minimum then the increase in rates in 2018-19 and 2019-20, at a time of wider pay slowdown, would leave them with disposable earnings that are only £850 a year higher in 2020-21 than in 2016-17.

<sup>22 &#</sup>x27;The number of people saving as a result of automatic enrolment to hit 10 million', *Department for Work and Pensions press releases*, 13 October 2016



Figure 12: The impact of increasing pension contributions on disposable earnings for continuously-employed adults: UK

Notes: Minimum contribution rises from 1 per cent to 3 per cent in 2018-19 and then to 5 per cent in 2019-20. Assumes a £12,500 income tax threshold in 2020-21. Income tax relief is accounted for.

Source: RF analysis using ONS, Annual Survey of Hours and Earnings; OBR, Economic and Fiscal Outlook, November 2017

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We don't yet know what sort of effect the raising of the minimum contribution rates will have on opt-out rates: some decline may be in the offing. But coverage will almost certainly remain high – certainly higher than many anticipated before the policy was implemented.

## The shift towards DC provision brings with it an increased burden of risk to the individual

DB schemes base entitlements on an individual's earnings, and it is the employer who must carry the burden of risk that wider investment returns relative to earnings fall (or equally may benefit if they improve). It is the employer who is also at risk of having to cover the cost of unanticipated increases in longevity that would make a pension promise far more costly than originally anticipated. A member of a DC scheme carries such demographic or economic risks themselves.

Reform has been mooted in this area. 'Defined ambition' would aim for a greater collective of savers to pool risk, and potentially smooth incomes of members in adverse economic periods. Indeed, the Work and Pensions Select Committee has recently

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launched an inquiry into the development of policy in this area.<sup>23</sup> It is certainly reform worth considering again given the far greater share of employees now enrolled in DC provision and the path of interest rates and annuity rates in recent decades.

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#### Recent developments have added greater freedom and flexibility to the mix

More recently, private pension reforms have tended to focus on a shift towards more flexible savings products, such as Lifetime ISAs and freeing up an individual's choice as to how they access their savings. Pension freedoms, announced at the 2014 Budget, allow anyone aged 55 and over to take their entire pension pot as a lump sum and spend it as they choose. While greater choice is often considered a positive thing, such freedom to choose risks individuals making sub-optimal choices – particularly given the complexity of decisions to be made – that affect income over the entirety of retirement.

So far evidence on the impact of pension freedoms is mixed. For example, the Financial Conduct Authority found that 90 per cent of pots that have been accessed and drawn down in full were mostly small (below £30,000), and many of these individuals had other resources to call upon. However, over half such withdrawals were moved into other savings vehicles that could leave people paying more tax or receiving a lower investment return.<sup>24</sup> It is still too early to know exactly how this policy will change the pensions landscape. At the very least it adds a new dimension to considerations of pensions adequacy.

What's clear from the discussion in this section is that the combination of auto-enrolment and successive reforms to the State Pension should provide a reasonable basis for accumulating pensions in the coming years. How these trends will manifest as future retirement income is the focus of Section 4, but we turn next in Section 3 to an exploration of the extent to which past and present policy frameworks have provided adequate incomes in retirement for today's pensioners.

<sup>23 &#</sup>x27;New inquiry launched into "defined ambition" pension schemes', Work and Pensions Committee, 24 November 2017

<sup>24</sup> Financial Conduct Authority, Retirement outcomes review: Interim report, July 2017

### Section 3

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### Retirement income adequacy in recent years

Having set out the evolution of the pensions policy landscape in recent decades, in this section we take an in-depth look at the adequacy of retirement incomes for recent cohorts of retirees. The group we focus on – comprising younger members of the silent generation and the oldest baby boomers – reached retirement before the reforms to private and (most) state provision that followed the Pensions Commission had taken effect. In this sense, the analysis in this section provides a baseline against which to judge the effects of systemic reform on future cohorts.

Income levels for recent retirees have improved relative to both prices and earnings, with growth in private pension income being the main driver of this across the income distribution. Despite recent improvements however, around one-fifth of recent retirees continue to fall short of minimum acceptable income standards.

Focusing on earnings replacement rates, we find a similar shape of outcomes across the earnings distribution to the benchmarks set by the Pensions Commission – with the highest replacement rates for low earners and the lowest for those who earned the most when working. However replacement rates for recent retirees generally fall short of the benchmarks established by the Pensions Commission for all but the lowest earners: threequarters of those retiring in this century have retired onto incomes deemed 'inadequate'.

### Rich historical data means we can explore adequacy for those retiring in recent years, before most Pensions Commission-inspired policy changes bite

This section reviews the adequacy of pension incomes for recent cohorts of pensioners – those retiring from the mid-1990s to around 2012 in the case of our analysis of *income levels*, and a more limited group retiring from the early-2000s to 2012 for our analysis of *replacement rates*. These groups comprise mainly younger members of the silent generation (born 1926-1945) and the oldest baby boomers. For this purpose we now have available a longitudinal dataset spanning 1991-2015. This means we can assess earnings replacement and transitions into and through retirement far more comprehensively than was possible when the Pensions Commission conducted its analysis nearly 15 years ago.

While some Pensions Commission-inspired changes to state support affect some cohorts within the group of retirees our analysis covers, they retired well before the full weight of State Pension changes or any reforms to private saving took effect. In this respect, the analysis in this section forms a baseline against which to consider the potential effects of recent policy changes (particularly auto-enrolment), and allows us to review the case for the reforms that the Pensions Commission set in train.

The main data we use in this analysis is the *British Household Panel Survey* (BHPS) and *Understanding Society* (USoc), its successor. A summary of this and other datasets used and key methodological choices is provided in Box 2, with full details in Annex 1.

#### $oldsymbol{i}$ $\,$ Box 2: Data and methods for the analysis in this section

The analysis in this section makes some use of cross-sectional Household Below Average Income data, but mainly uses the longitudinal British Household Panel Survey (BHPS) and Understanding Society (USoc), its successor. Longitudinal data is essential for measuring incomes in the years after individuals have retired and benchmarking these against earnings for the same individuals in the pre-retirement period.

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BHPS and USoc span 1991-2015, giving us the opportunity to take a longer view of actual retirement transitions for individuals than has been possible in the past. Due to this much longer time-series and the fact that these surveys cover the whole of Great Britain rather than just England, we prefer them to the other main longitudinal survey of older people – the *English Longitudinal Study of Ageing* (ELSA). All the analysis in this section (and Section 4) refers to adults in Great Britain. In general we deflate incomes and earnings using average earnings series, rather than prices. This is to allow comparability with the long-term projections in Section 4 (over a long time horizon, deflating pension income by price projections moves it too far out of sync with earnings income), and is in line with other analyses of retirement income adequacy. This means that a central focus of our analysis is whether retirement outcomes are keeping pace with returns from the labour market.

A full description of our data and methods in this section is provided in Annex 1.

Department for Work and Pensions, Framework for the analysis of future pension incomes, September 2013

#### Retirement income levels for recent retirees

We begin with the first of our two key measures of retirement income adequacy – income levels – for cohorts entering retirement, defined both in terms of moving into State Pension age and retiring from work.

## The incomes of younger pensioners have grown faster than prices or earnings in recent years

Outcomes for those in a particular age range above the State Pension age are presented in Figure 13, which covers the entirety of the silent generation and the youngest quarter of baby boomers. This shows average net household income for the past two decades of cohorts aged 66-68, demonstrating significant increases in relation to both earnings and prices.



Notes: Cohorts defined by age of head of household. Earnings deflator based on ONS Average Weekly Wages series. Analysis covers Great Britain.

Source: RF analysis of DWP, Households Below Average Income

At both the mean and the median, we find that household incomes at age 66-68 grew consistently in relation to prices for the silent generation and for the earliest baby boomers. Income levels were initially flat in relation to earnings, but have improved over the past decade during which prices and earnings have been much more closely aligned.

Switching to gross family income, Figure 14 breaks these trends down into the components of income.


Notes: Cohorts defined by age of head of household. Earnings deflator based on ONS Average Weekly Wages series. Analysis covers Great Britain.

Source: RF analysis of DWP, Households Below Average Income

In line with previous analysis for the Intergenerational Commission,<sup>25</sup> we find that growing employment income has been a major driver of income improvements for pensioners in their late 60s, having nearly doubled in relation to average earnings between the youngest members of the silent generation and the youngest baby boomers. It should be remembered that this source of income will quickly decline for pensioners at older ages, as people don't tend to work for long beyond their State Pension age. However previous analysis for the Intergenerational Commission has shown that growth in employment income is an important driver of income growth across all pensioners, not just those age younger ages.<sup>26</sup> Private pension income has also grown by nearly half (43 per cent) in constant-earnings terms between these cohorts.

25 A Corlett, As time goes by: Shifting incomes and inequality between and within generations, Resolution Foundation, February 2017

26 A Corlett, As time goes by: Shifting incomes and inequality between and within generations, Resolution Foundation, February 2017

### Pension income for those recently retiring from work has also improved, driven by private pensions growth across the distribution

Our focus in this analysis is on the income sources people draw on in retirement – mainly state benefits and private pensions. As such, rather than defining pensioners in relation to their age (and therefore picking up the growing importance of working beyond State Pension age), Figure 15 switches to a focus on the years after individuals have entered 'retirement'. This means that when tracked over time in our longitudinal data, they have made their final transition from work (or other working age statuses like unemployment) to describing themselves as retired.



Figure 15: Real average income of recently-retired adults, by cohort and income component: 1995–2014-15

Mean incomes, earnings-adjusted to 2015 prices

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Notes 'Recently-retired adults' are those who have stopped working for the last time within the past three years, and for whom we have data across the years of this initial post-retirement period. Earnings deflator based on typical earnings growth as measured in the data. Analysis covers Great Britain.

Source: RF analysis of ISER, British Household Panel Survey / Understanding Society

We find similar patterns to those discussed above. Net household incomes in the years after retirement again rise in constant-earnings terms for recent cohorts. And private pensions are once more playing the dominant role in this increase at the individual level. Overall, individual gross state benefit and private pension income in the years immediately following retirement increased by 24 per cent (in relation to prevailing earnings) between the 1927-29 and 1945-47 cohorts. State benefit income largely



comprises the State Pension, but also includes other welfare for pensioners (particularly those on lower incomes), and some working age support for those who enter retirement before reaching their State Pension age (a group we return to later in this section).

Figure 16 breaks down these trends at the individual level by showing both the top half and the bottom half of the income distribution (individuals' average position in the net household income distribution for their cohort in the immediate post-retirement period). It shows that the major driver of net household income differences for recent retirees is clearly levels of private pension income. State benefits are a little higher for those in the bottom half of the distribution but the gap is relatively modest, and much smaller than the one which exists in the opposite direction in relation to private pension income.

Figure 16: Real average individual gross income of recently-retired adults, by cohort, income component and position in income distribution: 1995–2014-15



Notes: 'Recently-retired adults' are those who have stopped working for the last time within the past three years, and for whom we have data across the years of this initial post-retirement period. Earnings deflator based on typical earnings growth as measured in the data. Adults' position in the income distribution is calculated separately for each cohort, based on their average net household income over this immediate post-retirement period. Analysis covers Great Britain.

Source: RF analysis of ISER, British Household Panel Survey / Understanding Society

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However, growth in private pension income between the 1927-29 and 1945-47 cohorts has actually been stronger in the bottom half of the distribution than in the top half (86 per cent and 59 per cent increases relative to prevailing earnings, respectively). In sum, both overall and across the income distribution, rising private pension income has underpinned improving retirement income levels relative to earnings for recent cohorts of retirees. This means that, at retirement, the oldest baby boomers are surpassing the relative living standards experienced by the silent generation.

# Private pension growth has been strongest for men, whereas state benefit income has only risen for women

While trends at different points in the income distribution have been quite similar, outcomes across the sexes have diverged somewhat. Figure 17 shows the same patterns as those discussed above for men and women separately.





Mean incomes, earnings-adjusted to 2015 prices

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Notes: 'Recently-retired adults' are those who have stopped working for the last time within the past three years, and for whom we have data across the years of this initial post-retirement period. Earnings deflator based on typical earnings growth as measured in the data. Analysis covers Great Britain.

Source: RF analysis of ISER, British Household Panel Survey / Understanding Society

We find that private pension income is a much larger component of men's post retirement income than it is women's. In addition, growth over recent cohorts has been much stronger for men – an increase of 106 per cent between the 1927-29 and 1945-47 cohorts, compared to 61 per cent for women.

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Offsetting this effect somewhat is the fact that state benefit income has stayed flat in relation to earnings for men, but has risen by nearly one-fifth (18 per cent) for women. A number of factors are at play here. Women in the younger cohorts will have had higher contributions than their predecessors and so have qualified for more earnings-related top-ups; changes to the crediting of childcare activities during the 1970s have started to feed through over time; and a policy change to entitlements in 2010 has meant that more women have become entitled to a full State Pension.

# Across cohorts of recent retirees, around one-fifth fall below minimum income thresholds

Set against this picture of improving income levels for recent cohorts of retirees is the relative persistence – with some signs of *increase* across recent cohorts – in the share of this group who fall below the Minimum Income Standard. Figure 18 shows these patterns for both the age-related and retirement-from-work-related definitions of recent retirees that we have used so far in this section.



Figure 18: Proportion of adults with net household incomes below the Minimum Income Standard, by cohort: 2008–2015-16

Notes: 'Recently-retired adults' are those who have stopped working for the last time within the past three years, and for whom we have data across the years of this initial post-retirement period. Earnings deflator based on typical earnings growth as measured in the data. Cohorts defined by individual age in BHPS / USoc, and age of head of household in HBAI. Analysis covers Great Britain.

Source: RF analysis of ISER, British Household Panel Survey / Understanding Society; DWP, Households Below Average Income



Trends are somewhat volatile, but across these different datasets the pattern is of somewhere around one-fifth of younger retirees falling below this benchmark of a minimum acceptable standard of living. Below-MIS levels are flat or even worsening across cohorts – in contrast to average pensioner incomes improving relative to prices and earnings – because the MIS has risen faster than both earnings and prices in recent years. The suggestion is that a core of material hardship persists at the bottom of the new-retiree income distribution despite relative improvements at the average.

Having set out trends in income levels for recent cohorts entering retirement, the bulk of the remainder of this section focuses on the extent to which these incomes replace earnings in the pre-retirement period, as per the definition of adequacy established by the Pensions Commission.

#### Earnings replacement rates for recent retirees

Because we require data on the pre-retirement years as well as the years immediately after retirement, our analysis of replacement rates covers a more limited group of only the more recent retirees captured in the analysis of income levels above. Our earnings replacement rates predominantly capture the youngest third of the silent generation and the very oldest baby boomers.

As discussed in Box 1 in Section 1, different approaches can be taken to calculating and assessing earnings replacement rates. For example, measures can focus on individuals or families and can vary in terms of the pre- and post-retirement periods covered. Our approach in this section is intended to be broadly consistent with both Pensions Commission definitions of replacement rate benchmarks, and the projections of future outcomes we set out in Section 4. It is as follows:

- We define *retirement* in relation to *when individuals report retiring from work* (or other statuses), rather than in relation to their SPA. This distinction is not necessary when projecting future pension outcomes (because retirement from work is usually assumed to happen at State Pension age) On balance, we prefer the work-related definition of retirement because it accurately pinpoints the two components of replacement rates earnings on the one hand and private pension and state benefit income on the other without the confusion of how to treat post-SPA earnings. It is also consistent with previous replacement rate analysis.<sup>27</sup> The main caveat is that this approach means that some of those we capture will not yet be eligible for their State Pension, which will reduce average replacement rates in the early-retirement years. The discussion below details the impact that retirement before State Pension age has on earnings replacement rates, and Annex 1 provides a comparison of our results with an SPA-based definition of retirement.
- We focus on *individual* earnings replacement rates in the main, although we do also provide a comparison with the family-based measures preferred by the DWP in order to show the difference that this distinction makes. Our approach here is in line with both Pensions Commission analysis and our projections in Section 4.
- In general we measure earnings in the ten years prior to retirement and private pension and state benefit income in the three years after. This is not as long as the

<sup>27</sup> For example, see: R Blundell & S Tanner, Labour force participation and retirement in the UK, Institute for Fiscal Studies, December 1999; E Bardasi, S Jenkins & J Rigg, Retirement and the Economic Wellbeing of the Elderly: A British Perspective, ISER Working Papers, 2000

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> time period considered in our projections in the following section (which account for all earnings after the age of 50), but allows us to build a sample of sufficient size. The exception is our comparison of replacement rates across birth cohorts, in which (to capture a sufficient number of cohorts) we only measure earnings in the five years prior to retirement. The analysis in Annex 1 demonstrates that changing the time period prior to retirement considered doesn't affect average replacement rate levels very much, with patterns across groups and across the income distribution very similar.

Our approach and the limitations of the data we use mean we cannot calculate earnings replacement rates for all adults. To calculate individual earnings replacement rates that aren't overly affected by extreme cases, we require a minimum of three years of gross earnings above a minimum threshold in the pre-retirement period and at least a year of private pension or state benefit income above a minimum threshold in the post-retirement period (details of these thresholds in Annex 1).

On this basis, we exclude 38 per cent of the population of recent retirees that this analysis focuses on from our earnings replacement rate calculations. In the main this is because of no or very limited earnings in the pre-retirement period (due to patchy employment histories, worklessness or study), or very low private pension and state benefit income in the post-retirement period (for example due to entering retirement prior to State Pension eligibility). Similar limitations apply in terms of the group for whom we project future pension outcomes in the following section.

Figure 19 shows the distribution of those included in and excluded from our replacement rate analysis, by sex and position in the net household income distribution. It makes clear that only a small proportion of those at the bottom of the net household income distribution are included in our analysis. In addition, across the distribution men are more likely to have valid replacement rates than women (three-quarters do compared to half of women overall).

#### Figure 19: Earnings replacement rate calculation results, by income decile: 1991-2015

Individual earnings replacement rates based on average gross private pension and state benefit income in the three years after retirement as a proportion of average gross earnings in the ten years before



Notes: Income deciles are based on individuals' average position in the net household income distribution for those approaching or who have recently reached retirement. Analysis covers Great Britain. See Annex 1 for full methodological details.

Source: RF analysis of ISER, British Household Panel Survey / Understanding Society

Analysis of the net incomes of those not captured in our analysis of earnings replacement rates suggests that they are largely protected by a combination of state support (given their concentration towards the bottom of the net income distribution) and the resources of partners in the case of women in particular (70 per cent of women excluded from our sample are in couples, compared to 59 per cent of those with valid replacement rates).

Their average net household incomes are generally slightly higher than the incomes of those in the same income decile with a valid replacement rate. In addition, (in the post-2008 period) they are less likely to fall below the MIS than others in their income decile. Finally, comparison of net household incomes in the post-retirement period to those in the pre-retirement period shows that these adults excluded from our replacement rate analysis on average experience less of a reduction, even after controlling for their concentration towards the bottom of the income distribution.

On this basis, while it would clearly be preferable to have a more complete population, there is little suggestion that the group excluded from our replacement rate analysis represents a particularly concerning omission in terms of the conclusions we draw in relation to retirement income adequacy.

### Typically around half of gross pre-retirement earnings are replaced by income in retirement, with the figure slightly higher for women than men

Figure 20 summarises earning replacement rates across the sexes for adults retiring from the turn of the century to 2012 (comprising younger members of the silent generation and the very oldest baby boomers). Typical replacement rates are slightly higher for women, but for both sexes they stand at around 50 per cent – meaning that half of gross average earnings in the ten years prior to retirement are replaced by pensions and benefits in the early years of retirement.

#### Figure 20: Earnings replacement rates, by sex: 1991-2015

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Average gross private pension and state benefit income in the three years after retirement as a proportion of average gross earnings in the ten years before



Notes: Analysis covers Great Britain. See Annex 1 for full methodological details.

Source: RF analysis of ISER, British Household Panel Survey / Understanding Society

This analysis does not attempt to detail earnings replacement rates for all groups within society. But given concern about their pension provision,<sup>28</sup> a word on the self-employed is warranted. We find that those who have been self-employed for at least a minimum number of years of working life have a median earnings replacement rate of 53 per cent, very similar to the overall median of 54 per cent.<sup>29</sup> The changing nature

- 28 C D'Arcy, The self-employed and pensions, Resolution Foundation, May 2015
- 29 Our data tracks work histories over the whole of working lives, which means we can isolate those who spend at least a proportion of their working lives self-employed – we use a relatively low benchmark of 15 per cent to provide a sufficient sample. Sample sizes are too small to hone in on those who've been self-employed for the majority of working lives.



of self-employment in recent years and the shifting characteristics of those becoming self-employed raise the strong prospect that things will be different for future cohorts of pensioners.<sup>30</sup> However, on the limited evidence we have, there is little to suggest that those younger members of the silent generation and oldest baby boomers who spent some of their working time being self-employed have had significantly different earnings replacement experiences to date.

#### Earnings replacement rates are highest for the lowest earners, and typically fall short of adequacy benchmarks for everyone but this group

How have these typical outcomes differed for higher and lower earners? Earnings replacement rates across the pre-retirement earnings distribution are shown for both sexes in Figure 21.



Average gross private pension and state benefit income in the three years after retirement from work as a proportion of average gross earnings in the ten years before

Figure 21: Median earnings replacement rates, by sex and earnings quintile: 1991-2015

Notes: Earnings quintiles are based on individuals' average position in the gross earnings distribution of adults in the ten years before retirement. Analysis covers Great Britain. See Annex 1 for full methodological details.

Source: RF analysis of ISER, British Household Panel Survey / Understanding Society

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30 A Corlett & D Tomlinson, A tough gig? The nature of self-employment in 21<sup>st</sup> Century Britain and policy implications, Resolution Foundation, February 2017





The observed pattern of replacement rates across the earnings distribution mirrors the adequacy benchmarks set by the Pensions Commission in its shape, but typical outcomes fall short across the distribution for all but the bottom fifth of earners.

To explore these outcomes in more detail, Figure 22 shows the component parts that make up these headline individual earnings replacement rates across the earnings distribution. Big pre-retirement earnings differentials are the main driver of replacement rate differences between lower and higher earners. In addition, while private pension income increases with earnings, this is partially offset by falling state benefit income. This in turn is driven by fewer means-tested state benefits higher up the distribution and by the greater likelihood of higher earners entering retirement before State Pension age.



Figure 22: Average earnings and pension income, by earnings quintile: 1991-2015

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Notes: Earnings quintiles are based on individuals' average position in the gross earnings distribution of adults in the ten years before retirement. Analysis covers Great Britain. See Annex 1 for full methodological details.

Source: RF analysis of ISER, British Household Panel Survey / Understanding Society

### Only one-quarter of adults retiring during this century have so far achieved target earnings replacement rates in the early years of retirement

With earnings replacement rates appearing to fall short of Pensions Commission adequacy benchmarks across most of the distribution, the next question we must ask is how many people fall below them, and to what extent? Figure 23 shows the proportion of adults in each earnings quintile who are above and below benchmarks, and their distance from these benchmarks.

Figure 23: Distribution of replacement rates in comparison to Pensions Commission adequacy benchmarks, by earnings quintile: 1991-2015



Notes: The target replacement rates shown in Figure 3 in Section 1 are assigned to individuals according to their earnings percentile. Earnings quintiles are based on individuals' average position in the gross earnings distribution of adults in the ten years before retirement. Analysis covers Great Britain. See Annex 1 for full methodological details.

Source: RF analysis of ISER, British Household Panel Survey / Understanding Society

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We find that the majority of those with below-target replacement rates fall well below their benchmark. Overall, 73 per cent of adults retiring over the past decade or so have failed to achieve target earnings replacement rates. Of this group, more than threequarters (78 per cent) have fallen at least 10 percentage points short of the target. The suggestion is that the earnings replacement expectations established by the Pensions Commission are generally far from being achieved for a majority of mid- and higherearning adults retiring during this century. Indeed, even within the bottom fifth of



pre-retirement earners – where the replacement rate tops 100 per cent on average – more than one-in-four (28 per cent) fall more than 10 percentage points below the Pensions Commission benchmark.

Despite different typical replacement rates at different points in the earnings distribution, the share of men and women falling below their earnings-specific adequacy benchmark is similar: 71 per cent and 75 per cent respectively.

## Outcomes across recent cohorts of retirees have been fairly similar

Figure 24 demonstrates how these typical outcomes have differed across birth cohorts, necessarily switching to a more limited time period of pre-retirement earnings to allow cohort comparisons.<sup>31</sup>



Average gross private pension and state benefit income in the three years after retirement from work as a proportion of average gross earnings in the five years before



Notes: Analysis covers Great Britain. See Annex 1 for full methodological details.

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Source: RF analysis of ISER, British Household Panel Survey / Understanding Society

31 See Annex 1 for a discussion of the minimal difference that the time period captured makes to average replacement rates.



Overall, typical replacement rates have been similar across these recent cohorts of retirees, although there is some evidence of falling typical levels of earnings replacement for men and women separately. Analysis of the components of income that make up the replacement rate calculation suggests that this has mainly been driven by particularly strong earnings performance in the final years of work for the younger cohorts. Private pension income improved for these cohorts relative to earlier cohorts, but to a lesser extent than earnings, and state benefits remained fairly flat.

With typical replacement rates at the cohort level for different sexes quite volatile, the most reasonable conclusion is that there have been no definitive differences in terms of replacement rate outcomes across this short-time span of recently-retiring cohorts. This is in contrast to changes in income levels discussed earlier in this section, which were rising (relative to prevailing earnings in the working population) up to and through these cohorts.

#### Early retirement, the pooling of resources within families, and pension drawdown choices have all reduced earnings replacement rates for recent retirees

The modelling of future retirement income adequacy in Section 4 considers outcomes on a 'standard trajectory', which is necessarily simplified and therefore different from the actual outcomes recorded among recent retirees and discussed above.

For example, in the next Section we assume that retirement from work coincides with State Pension age and that private pension pots are annuitised in their entirety when pensions are drawn down. In addition, our projections only consider outcomes from an individual perspective, whereas we know that people make decisions about work and retirement within families. The benchmark replacement rates set by the Pensions Commission are also likely to have been affected by such standard assumptions – with the assumption of retirement coinciding with State Pension receipt particularly at odds with what has followed.

To contextualise the differences between the analysis in this section and the projections in the following one, here we discuss the impact that different choices and circumstances such as these have on individual earnings replacement rates.

We look first at the co-incidence of retirement and State Pension age. Two-fifths of the adults in our sample with valid replacement rates have retired from work before their State Pension age. But, despite representing a sizeable proportion of the sample population, the effect on our overall findings of excluding those retiring before their State Pension age is not huge.

Focusing just on those retiring at or after their State Pension age, we find a median replacement rate in the middle quintile of 55 per cent; that compares with a figure for the overall population in our sample of 54 per cent (and the scale of change in other quintiles is in the range of a percentage point or two).

The early-retiring group has lower replacement rates in general, with an equivalent median replacement rate standing at 48 per cent. A big driver of this outcome will be that those retiring prior to their State Pension age tend to have higher earnings than



those who retire later, but don't have access to the State Pension in the early years of their retirement. In addition, those retiring early may not drawdown all of their private pension(s) in the initial post-retirement period.

The effects on average replacement rates across the distribution of excluding this group of early retirees are relatively small. But it remains important to note that because our (and others') modelling of future outcomes assumes that retirement from work and the SPA coincide, there is none of this effect in the projections in the following section. This means that they can be seen to somewhat overstate earnings replacement in comparison to past cohorts of pensioners.

Looking next at our approach to annuitisation, analysis of a subset of our sample<sup>32</sup> shows that nearly half (46 per cent) of those with valid replacement rates have drawn down some of their pension as a lump sum. And these lump sums are sizable: the typical total value of lump sums for those who have had at least one is £20,000 (in 2015 earnings-terms).

In essence, taking some of a pension as a lump sum is a choice to reduce the amount that is received as a regular income. To assess the effect such choices have had on replacement rates for recent cohorts of retirees, we can estimate the additional annual pension income that individuals would have received each year had they instead annuitised their lump sum income at retirement.<sup>33</sup> It must be noted that this exercise should only be considered a rough and illustrative experiment, both because of a limited sample and the assumptions it necessitates. But the effects are marked. For this subset of our sample we estimate that the typical earnings replacement rate would rise from 54 per cent to 60 per cent.

Again, this is an area where the choices that recent retirees have made can be said to bias down earnings replacement rates relative to the standard assumptions we apply to future cohorts of retirees in Section 4.

As a final test, we can compare our individual-based outcomes to the replacement rates generated when calculated on a family basis (see Annex 1 for details on this measure, and further analysis of family earnings replacement rates). Figure 25 presents the results.

32 Information on pension lump sums is only available in the *British Household Panel Survey* (1991-2008), not *Understanding Society* (2009-10–2014-15).

<sup>33</sup> We take total lump sum income in retirement-age-price-terms, and calculate the value of annuity this would buy on the market at the time, using annuity factors supplied by Retirement IQ. We then add this to private pension and state benefit income for those with lump sums, and re-calculate replacement rates for everyone to estimate the impact on average outcomes.

#### Figure 25: Median individual and family earnings replacement rates, by family type: 1991-2015

Average gross private pension and state benefit income in the three years after retirement from work as a proportion of average gross earnings in the ten years before



Notes: Family earnings replacement rates are only calculated for couples in which neither adult has earnings in the post-retirement period. Analysis covers Great Britain. See Annex 1 for full methodological details.

Source: RF analysis of ISER, British Household Panel Survey / Understanding Society

We find that that members of couples have lower typical replacement rates than single people. This will partly be driven by their position higher up the income distribution. But it will also relate to the fact that some plan their earnings or their private pension saving levels on the basis that they also have the resources of a partner to rely on – typical family earnings replacement rates are higher within couples than individual ones.<sup>34</sup>

This suggests that apparently-lower individual earnings replacement rates of individuals in couples are partly due to the pooling of resources between partners. We do not account for the sharing of resources within families in the following section (which could bias comparison to outcomes for recent retirees in one direction or the other – it's not immediately clear which).

Modelled future outcomes will never entirely match the variety of experiences captured by averages for actual populations, and nor, for that matter, will standard benchmarks such as those set by the Pensions Commission. The analysis presented here should therefore serve as a caution against making overly firm judgements based on the

34 Annex 1 describes how we calculate these family earnings replacement rates, and provides further analysis of how they compare to individual earnings replacement rates.



differences between actual and projected outcomes (or actual outcomes and standard benchmarks). In particular, individuals' circumstances and choices would appear to reduce average replacement rates for recent retirees, relative to the circumstances and choices implied by our assumptions for projected future outcomes.

#### Adequacy over the course of retirement

The analysis throughout this section has focused on retirement income levels and replacement rates soon after retiring. However, just as important is the question of how retirement income develops over the course of retirement. This is an issue that we discuss in more detail in the projections in Section 4. In terms of experiences to date though, our data allows us to track a slightly earlier cohort than the group we have discussed so far – made up mainly of older members of the silent generation retiring over the course of the 1990s – over the decade and a half after they retire. Average private pension and state benefit income for this group of adults present in the data throughout the first 15 years of their retirement is shown in Figure 26.



Figure 26: Mean private pension and benefit income over the course of retirement: 1991-2015

Notes: Based on a balanced sample that only includes adults present in all of the 15 years following retirement. Analysis covers Great Britain. See Annex 1 for full methodological details. Source: RF analysis of ISER, British Household Panel Survey / Understanding Society



We observe quite different trends in relation to private pension and state benefit income. Private pension income for this group falls in relation to earnings over the course of retirement, an outcome we might expect given DB pension income is usually a cash award, and the vast majority of annuities sold are 'level' products rather than products linked to earnings or inflation.<sup>35</sup>

In contrast, state benefit income has risen rapidly in relation to earnings over the course of retirement for those retiring in the 1990s. This will be partly driven by retirement before State Pension age (discussed above) reducing state benefits in the immediate post-retirement years for some adults. In addition, various changes to pensioner benefits – including the introduction of Pension Credit in the 2000s and changes to State Pension uprating – will have pushed up the value of state benefits over the course of retirement for this cohort of pensioners.

Importantly, it's by no means a given that this direction of travel in relation to state benefits over the course of retirement will be repeated for future cohorts of retirees, as the following section discusses. In the absence of such a pattern, it's worth noting that the fall in private pension income over time would have the effect of lowering overall pension income and reducing replacement rates relative to pre-retirement earnings.

#### Conclusion – a baseline of adequacy?

While some changes to the State Pension were starting to affect the youngest cohorts in this analysis, the group we have focused on in this section reached retirement before the full weight of current State Pension reforms had been felt, and missed out entirely on auto-enrolment. In this sense, the analysis in this section provides a baseline against which to consider recent policy changes, and allows us to review the justification for Pensions Commission reforms.

We have shown that income levels have performed well across the distribution for recent cohorts, due primarily to growth in private pension income. This is good news in terms of individual outcomes. However, there remains a stubborn core of recent retirees who fall short of minimum acceptable income standards.

Despite the generally good news on income *levels*, we find that all but the lowest earners retiring during this century have fallen short of Pensions Commission benchmarks for replacement rates. To some extent, these empirical outcomes may fail to meet the Pensions Commission's targets because they capture real-life complexities like early retirement and lump sum drawdowns which were absent from the Commission's modelling. Nevertheless, our conclusion that the system has not delivered adequate earnings replacement for current pensioners stands.

This would appear to be a clear case for precisely the changes to private saving and state provision that the Pensions Commission set in motion. What these changes will mean for the retirement income adequacy of future cohorts of pensioners who will be affected by them is the focus of the following section.

<sup>35</sup> Department for Work and Pensions, Framework for the analysis of future pension incomes, September 2013

## Section 4

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## Future retirement income adequacy

Despite strong income performance for today's pensioners, younger generations question whether they will have a pension at retirement at all. So are current outcomes for retirees as good as it gets, or are those concerns overdone? Our assessment of the adequacy of future retirement incomes in this section shows how overall pensioner incomes over the next four decades are far from falling off a cliff – in part due to the underpinning role played by the new State Pension.

Among men it is members of generation X who are most at risk of a dip in retirement income levels, driven by the gap in private sector provision during their working lives. Higher lifetime earnings go some way to helping offset this decline in the generosity of schemes however. For women, pensioner incomes are gradually improving over the period, with more women in work for longer and auto-enrolment increasing coverage.

In terms of the extent to which they replace earnings, future retirement incomes are expected to roughly match the adequacy levels of the past (set out in Section 3), with around three-quarters of adults in today's working age generations expected to fall short of Pensions Commission adequacy benchmarks. Reforms now in train will in large part maintain replacement rates in the wake of DB decline, but significant further increases in private saving will be needed if targets for adequacy are to be met.

### Projecting future adequacy

As discussed in Section 1, the typical living standards of current pensioners are at an all-time high. Yet this strong performance has been underpinned in part by growth in private wealth accumulation and access to DB pension schemes – trends which are less evident among younger generations. As such, many have suggested that current pensioner outcomes will come to be viewed as something of a high water mark.

Any attempt to understand the shape of future pensions adequacy inevitably wrestles with the fact that, even with strong income performance, current pensioners are failing to meet Pensions Commission benchmarks. The pensions system they have experienced has failed to translate the lifetime earnings of many into a pension income considered by that metric to be 'adequate'.

In this context, the analysis in this section judges future retirement incomes – among adults in Great Britain retiring from 2020 onwards – in relation to the adequacy benchmarks established by the Pensions Commission, and (as far as is possible given different data sources and methods) the outcomes we have observed for current pensioners.

As in the previous section, we consider both how income levels compare across generations for future cohorts of pensioners, and the extent to which they replace pre-retirement earnings. This is important because simply 'replacing' earnings in retirement does not equate to a high or even decent living standard. This is of particular concern when millennials have experienced a particularly tight squeeze on their pay at ages associated with career development.



Modelling future pension outcomes has historically largely been done via a case study approach – considering outcomes for different hypothetical individuals with varying life histories. Within the DWP this approach has been supplemented over a number of years by the development of the Pensim2 model for projecting future pension entitlements across the distribution.

Here we make a substantial improvement on the case study approach that organisations outside government have previously taken, by developing a model based on actual earnings trajectories of a sample of individual employees in the *Annual Survey of Hours and Earnings* (ASHE) and their accompanying pension contribution history. Future pay trajectories for individuals are then estimated by drawing on historic year-to-year transitions in and out of work, and between different levels of earnings, in a separate panel going back to 1975.<sup>36</sup> These are then used to calculate future pension entitlements.

Further detail of the method is set out in Annex 2, but here we highlight the key assumptions made in our central scenario:

- The new State Pension is assumed to be uprated by the triple lock until the end of the parliament, but beyond that point uprated by earnings.
- DC pension pots are assumed to grow at an average long-term rate of 5.6 per cent a year. This compares to the DWP assumption of 6.6 per cent (the impact of using this higher rate of return is set out below).
- The distribution of private pension contributions (both coverage and rates) for employers and employees taken direct from ASHE underpins the forward projection, but with the added assumption that 80 per cent of private sector employees will be covered by a DC scheme from 2018 when auto-enrolment is completely rolled-out. Minimum total contribution rates rise to the combined 8 per cent planned under auto-enrolment, with a differential included to maintain the current proportion already contributing above that rate and some additional boost to those close to the 8 per cent minimum.
- We do not include entitlements built via personal pension schemes. These would be likely to boost pension entitlements of those with already high pension resources, because it is likely they are held by those with relatively high lifetime earnings.
- Pension pots are converted fully into income to provide a representation of the resources an individual can access, recognising the reality that individuals may well choose to distribute those resources differently by, for example, taking a lump sum.

By the very nature of such work, our analysis makes important assumptions about the future. Inevitably the future is likely to be different, and alternative assumptions would lead to altered outcomes. However, we view these projections as presenting a reasonable picture of the outcomes we might expect. Where relevant, comparisons to other scenarios are included in this section, with further sensitivity analysis shown in Annex 2.

In basing our modelling on the lives of employees, we have excluded those who spend the vast majority of their lives not being an employee due to worklessness (for various

<sup>36</sup> The New Earnings Survey / Annual Survey of Hours and Earnings panel dataset, a one per cent sample of employee pay records extending back to 1975.



reasons) or self-employment. However, our approach takes account of all but a relatively small minority of people who have ever worked in the UK, while capturing the outcomes relevant to those most likely to building a consequential amount of private pension saving.

For example, analysis of the *English Longitudinal Study of Ageing* suggests that less than 1 per cent of men and women who reached State Pension age in the last five years had never worked. At the same time around 15 per cent of recently-retired men and just over one-third (35 per cent) of recently retired women report no private pension income.<sup>37</sup> In some cases this may be due to small pots that are simply converted to cash at retirement.

What's more, the dangers of people being excluded from our forward-looking analysis are lower than these backward-looking figures imply. As Section 2 showed, a much higher share of women employees (around 70 per cent in the private sector) contributed to an occupational pension in 2016. At the same time, employment rates of women in particular have increased significantly for the baby boomer generation now entering retirement, with the biggest increases among those reaching State Pension age at the end of this decade. The combination of these two trends suggests that in future the share of women retiring with at least some private pension income will increase to be much closer to that of men.

The implication is that our approach provides an indication of the likely occupational pension outcomes of the large majority of employees reaching retirement in future in the UK. Groups we miss will either have spent significant periods out of the UK, be mostly self-employed throughout their working life or have spent most of their time with caring responsibilities or disability preventing them from working. For most in this group the new State Pension will, in replacement rate terms, provide an adequate retirement income.

Throughout this section, 'at retirement' refers to the year at which a person reaches State Pension age. Cohorts included in our projections reach State Pension age from 2020 (covering the youngest ten birth years of baby boomers) to 2060 (covering the oldest ten birth years of millennials). This starting point leaves a gap of around eight single-year birth cohorts from those covered in our backward-looking analysis in Section 3. However, 2020 represents a clear point of change at which the new State Pension has greater coverage and an equal State Pension age has been reached for men and women.

#### **Future pension incomes**

A large part of the income gains made by pensioners in recent years comes from people working for longer, but pension incomes have been improving in their own right too. To understand the adequacy of provision for future generations it is important to understand how the level of their incomes compare across future cohorts.

Figure 27 shows how average pension income, presented in constant-earnings terms, is projected to evolve for men at retirement through to 2060. Overall, mean pension incomes are projected to dip by around £25 a week, from around £310 a week in 2020 to £285 a week in the mid-2040s, before building again to around £300 a week by the end of the 2050s.

<sup>37</sup> RF analysis of UCL et al., English Longitudinal Study of Ageing, waves 3 and 7



#### Figure 27: Projections of mean income at retirement, by source and birth cohort: Men, 2020-2060

Notes: Analysis covers Great Britain. See Annex 2 for full assumptions

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Source: RF analysis using the RF lifetime model, ONS, ASHENESPD 1975-2016 and the Pensions Policy Institute dynamic model

Within this overall trend, State Pension income is expected to remain steady at around  $\pounds 160$  a week – as we might expect given high coverage and expectations of a steady 85 per cent to 90 per cent of future cohorts being entitled to the full rate of the new State Pension.<sup>38</sup> Instead it is private pension income that is the source of change over time. DB pension income is set to fall – almost halving over the next 40 years – reflecting the decline in private sector coverage of the last two decades. DC pension income gradually helps to offset the fall in DB income, an outcome we would expect given our sample is limited to those with consistent work histories, and working throughout a person's 20s and 30s is likely to frontload DC contributions and help pots grow. But it is not until the cohorts retiring in the 2050s that people will have spent the majority of their working life under the auto-enrolment regime

The final feature of Figure 27 is the inclusion of a hollow bar that represents the difference in DC income in our projections when using a one percentage point higher nominal rate of return for DC pension accumulation. This scenario is in line with assumptions previously used by DWP in their Pensim2 modelling for growth outside of NEST. In this instance, the compound effect adds an additional £25 a week onto the mean DC pension income by the end of the 2050s – a 26 per cent boost to the average level in 40 years' time.

As good as it gets?

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<sup>38</sup> Department for Work and Pensions, Impact of New State Pension (nSP) on an Individual's Pension Entitlement – Longer Term Effects of nSP, January 2016

Turning to women, Figure 28 shows our projections of average pension income at retirement (again presented in constant-earnings terms) for women. Overall, mean pension incomes are projected to be lower than for men but to gradually improve over time, starting at around £225 a week on average, increasing to around £235 a week by the mid-2030s and remaining at around that level until the late-2050s.





Notes: Analysis covers Great Britain. See Annex 2 for full assumptions

Source: RF analysis using the RF lifetime model, ONS, ASHENESPD 1975-2016 and the Pensions Policy Institute dynamic model

State pension income is similarly expected to remain steady at around £160 a week, with the greatest gains in State Pension having already happened for women by the mid-2020s. Private pension income is once again the key source of change, with declining DB income and a rising income from DC schemes: although for women this is driven more by a greater coverage of pension provision and that type happening to be DC, rather than the switch in provision we project for men.

Again we include the impact of a higher rate of return for DC investments. For women this higher assumption equates to around an additional £15 a week of DC income, or a 28 per cent boost.

Despite the large fall in DB pension income, the overall picture for pension income is a positive one. In the long term at least we expect DC provision to play an increasing



role in bringing incomes for men back toward baby boomer levels for millennials, and to increasingly improve provision for women. Of course though, the projections above are averages and important shifts are happening beneath them.

First, there is the distributional effects of public pension reform. While overall State Pension income remains at a similar level over time, the newly-introduced State Pension is a more generous flat-rate scheme than the one it replaced. For baby boomers and women in particular, that will mean a more even distribution of State Pension income within generations.

Second, the timing of the shift from DB to DC over recent years creates a specific generational difference for men. The length of the transition from more generous DB pension entitlements to DC provision leaves men in generation X at risk of being squeezed in the middle. With a greater share of men historically contributing (and indeed working) in the private sector, their private pension income is more exposed to the shift between systems for private saving.

Third – and in contrast to the picture for men – we see a gradual but steady build-up in private pension entitlements among women. In part that is due to a greater share of successive cohorts being in work and spending more years in work. But it is also the fast increasing coverage of women making contributions to schemes discussed in Section 2. A further factor is the greater share of women who work in the public sector and so building up some DB entitlements.

Finally, it is also worth noting that while we do not project a dip in average pensioner income in the 2020s, we do expect a fall in pension income for higher earners reaching State Pension age in the early period of our projection. Historically higher earners have enjoyed access to both an earnings-related State Pension scheme and more generous DB schemes, but those factors begin to unwind in the early years of our projection.

#### Providing an income above the minimum income standard

Averages also do not tell us how the lowest-income pensioners are expected to fare. As in Section 3 we also compare incomes at retirement to the Minimum Income Standard, a test that incomes provide a minimum level of adequacy.

The new State Pension and Pension Credit mean that by and large the state provides a safety net that ensures the lowest pensioner incomes do not fall behind those of working age. Indeed reflecting the low chances of boosting incomes by other means (such as working), the lowest level of provision for pensioners is higher than that of working age income (£73 a week on Universal Credit versus £159.35 on the Guarantee Credit element of Pension Credit, or £159.55 on a full new State Pension). But that does not mean there are no poor pensioners, despite progress over the last two decades, 16 per cent of pensioners remain in relative income poverty.

However it is difficult to compare pensioner income in the long term to a relative measure of poverty, depending as it does on the relative position of working age households in the income distribution. Instead we make use of the MIS. For a single pensioner, MIS is currently £192 per week,<sup>39</sup> compared to a poverty line of £150 per week in 2017-18 prices<sup>40</sup> (both measures exclude housing costs). We use MIS in part because it can more intuitively be compared to earnings over time than a relative poverty measure.

<sup>39</sup> Centre for Research in Social Policy, Budget summaries 2008-2017, 2017

<sup>40</sup> DWP, Households Below Average Income 2015-16, May 2017



Figure 29 shows the share of each generation (at retirement) that we estimate to have an income that is below the MIS threshold. The share of men falling below MIS is low, with at most 13 per cent of generation X falling below the threshold. However, in line with our projected pattern of income for generation X, men are more likely than members of other generations to have income below MIS. For women there is a more consistent picture, with around 30 per cent of each generation below the MIS threshold. It should also be noted that the picture for men and women would be likely to improve if living and assessed against MIS as couples.

35%	Men	Women	
30%		30% 31%	
25%		28%	
20%			
15%	4.40/		
10%	11%		
5%	6%		
0%	Baby boomers Generation X Millennials	Baby boomers Generation X Millennials	

Figure 29: Proportion above individual pensioner Minimum Income Standard at retirement, by sex and generation: 2020-2060

Notes: Analysis covers Great Britain. See Annex 2 for full assumptions.

Source: RF analysis using the RF lifetime model, ONS, ASHENESPD 1975-2016 and the Pensions Policy Institute dynamic modell; Centre for Research in Social Policy, Budget summaries 2008-2017, 2017

# Typical replacement rates broadly follow the pattern of the past

#### Replacement rates for all future pensioners

From pensioner *income* we can move to look at *replacement rates* for our projected future cohorts. We begin by looking at replacement rates across all pensioners by

generation in Figure 30. We split the generations in order to provide roughly evenly spaced cohorts in terms of number of birth years covered. As such, we can refer to 'older' baby boomers, 'older' and 'younger' members of generation X and 'younger' millennials. Typical replacement rates are shown for each cohort by quintile of the average of their last 15 years of pre-retirement earnings.



Figure 30: Median individual replacement rates, by half-generation and earnings quintile: 2020-2060

Average gross private pension and state benefit income at retirement as a proportion of average gross earnings in the 15 years before retirement

Notes: Earnings quintiles are calculated by ranking the average of positive earnings 15 years before State Pension age and in constant-earnings terms. Analysis covers Great Britain. See Annex 2 for full assumptions

Source: RF analysis using the RF lifetime model, ONS, ASHENESPD 1975-2016 and the Pensions Policy Institute dynamic model

Three findings stand out from this comparison. First, the overall pattern of replacement rates matches well against that of the experience of current pensioners discussed in the previous section (the red line on the chart). Of course it must be remembered that we are unable to make a straight like-for-like comparison. Early retirement and the taking of lump sums were likely to bias down our results for current retirees somewhat. On the other hand, the exclusion of other sources of income in these projections, such as personal pension income which was captured in the results in Section 3, would work in the opposite direction. On balance, comparisons between results in the two sections are helpful but should be considered as indicative only.



Second, there remain substantial gaps in all but the bottom quintile between the recorded replacement rates and those set as adequacy benchmarks by the Pensions Commission. The gap widens from around 10 percentage points in the second quintile to as much as 20 percentage points in the fourth.

Third, when we look across the generations we see very little change in the replacement rates recorded. There is a small U-shape pattern in evidence – with slight reductions in replacement rates for generation X relative to baby boomers, but subsequent improvements among millennials – but the changes are minimal.

#### Replacement rates for future pensioner men

These patterns differ when viewed separately from men and women, as we might expect given their different projected pension income profiles. For men, Figure 31 presents a similar overall pattern of replacement rates across income quintiles.



Average gross private pension and state benefit income at retirement as a proportion of average gross earnings in the 15 years before retirement



Notes: Earnings quintiles are calculated by ranking the average of positive earnings 15 years before State Pension age and in constant-earnings terms. Analysis covers Great Britain. See Annex 2 for full assumptions.

Source: RF analysis using the RF lifetime model, ONS, ASHENESPD 1975-2016 and the Pensions Policy Institute dynamic model



In this instance, future replacement rates either fall below or only just meet the outturns recorded among recent retirees. In addition, the U-shaped generational pattern is much more marked among men. Relative to the overall pattern, replacement rates dip further below the baby boomers before displaying a stronger recovery for younger members of generation X and older millennials. Yet while replacement rates are at their lowest among older members of generation X, we expect pension *incomes* to bottom out for younger members of the generation. So what is driving this counter-intuitive finding?

Figure 32 presents the answer. It sets out the underlying components of the replacements rates in the middle three income quintiles: mean pension income and the average of gross pay in the 15 years before retirement.<sup>41</sup>



Mean gross earnings in the fifteen years before retirement from work, and mean private pension and state benefit income at retirement (earnings-deflated to 2017-18 prices)



Notes: Earnings quintiles are calculated by ranking the average of positive earnings 15 years before State Pension age and in constant-earnings terms. Analysis covers Great Britain. See Annex 2 for full assumptions.

Source: RF analysis using the RF lifetime model, ONS, ASHENESPD 1975-2016 and the Pensions Policy Institute dynamic model

41 We focus on the middle three quintiles because we expect the lowest earners to have a high replacement rate derived from State Pension entitlement and the highest earners to not only have a significantly higher occupational pension income than pensioners in lower earnings quintiles, but to also have access to wider resources.



The chart shows that older members of generation X record both higher pre-retirement incomes and lower pension incomes (driven by the fact that they fall between the decline of DB and the rise of DC associated with auto-enrolment) than those coming before them – affecting both parts of the replacement rate calculation. But pre-retirement earnings among younger members of generation X drop back significantly (reflecting the impact of the financial crisis on their earnings trajectories). As such, even though this cohort records slightly lower pension income than the one preceding it, its replacement ratio appears a little higher.

Older millennial men then end up with a much improved replacement rate, but this is driven by both lower earnings and higher private pension entitlement than for the previous cohort. Their earnings struggle to recover from the current stagnation of pay, but they benefit from an almost entire lifetime within the auto-enrolment system.

#### Replacement rates for future pensioner women

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Turning to women, Figure 33 shows that we again see a familiar pattern of replacement rates across quintiles in relation to past experience and Pensions Commission benchmarks. In this instance however, there is a general improvement in replacement rates across all quintiles for future cohorts. The bottom quintile typically exceeds both Pensions Commission benchmarks and the past outturn.

Figure 33: Median individual replacement rates for women, by half-generation and earnings quintile: 2020-2060

Average gross private pension and state benefit income at retirement as a proportion of average gross earnings in the 15 years before retirement



Notes: Earnings quintiles are calculated by ranking the average of positive earnings 15 years before State Pension age and in constant-earnings terms. Analysis covers Great Britain. See Annex 2 for full assumptions.

Source: RF analysis using the RF lifetime model, ONS, ASHENESPD 1975-2016 and the Pensions Policy Institute dynamic model



If we compare how replacement rates in quintiles two and three evolve between generations we see that there is first a drop-off in the replacement rate compared to baby boomers, followed by generally flat replacement rates. In the top two quintiles however, replacement rates remain flat across generations.

As with men, we can again consider the underlying components of these replacement rates: mean pension income and average pre-retirement earnings. Figure 34 presents the results. As before, we find a pick-up in pre-retirement earnings among older members of generation X which isn't fully reflected in higher pension income – generating the dip in replacement rates displayed in quintiles 2 to 4 in Figure 33. That dip is much less pronounced than among men, however.

## Figure 34: Projections of mean earnings and pension income for women, by half-generation and earnings quintile: 2020-2060



Mean gross earnings in the fifteen years before retirement from work, and mean private pension and state benefit income at retirement (earnings-deflated to 2017-18 prices)

Notes: Earnings quintiles are calculated by ranking the average of positive earnings 15 years before State Pension age and in constant-earnings terms. Analysis covers Great Britain. See Annex 2 for full assumptions.

Source: RF analysis using the RF lifetime model, ONS, ASHENESPD 1975-2016 and the Pensions Policy Institute dynamic model

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## An adequacy gap

From the perspective of typical replacement rates we clearly expect the vast majority of pensioners at retirement to fail to meet the targets set out by the Pensions Commission. But crucially, as best we can compare the two this is not because of reductions in adequacy levels for future generations compared to recent retirees – who are themselves not typically meeting those targets.

Figure 35 sets out the distribution of replacement rates around the Pensions Commission benchmarks across earnings quintiles. We group results by earnings quintiles having translated the replacement rate earnings bands that the Pensions Commission set out in line with the approach described in the introduction and used throughout Section 3.

Figure 35: Distribution of replacement rates in comparison to Pensions Commission adequacy benchmarks, by generation and earnings quintile: 2020-2060



Notes: Earnings quintiles are calculated by ranking the average of positive earnings 15 years before State Pension age and in constant-earnings terms. Analysis covers Great Britain. See Annex 2 for full assumptions.

Source: RF analysis using the RF lifetime model, ONS, ASHENESPD 1975-2016 and the Pensions Policy Institute dynamic model

#### We can see that:

• Overall the vast majority of our future pensioners – 77 per cent – are at risk of failing to meet the Pensions Commission thresholds: the figure is 85 per cent of men and 65 per cent for women (partly driven by the fact that men are more likely to be higher earners pre-retirement).



- Only one-fifth (22 per cent) of those in the bottom earnings quintile will fail to meet the target replacement rate, and only one in eight (12 per cent) would be more than 5 percentage points away from the 80 per cent target replacement rate.
- Largely driven by men, there is a clear pattern of improving adequacy for younger generations. Even among millennials though, only one-quarter (25 per cent) are expected to meet the adequacy threshold in the second earnings quintile; falling to 10 per cent in the third and fourth quintiles.
- Members of generation X are the least likely to meet the adequacy threshold, with only one-fifth (22 per cent) projected to do so overall compared to one-quarter of baby boomers (25 per cent) and millennials (27 per cent). As discussed above, this in part reflect the higher pre-retirement earnings of this generation.

The share expected to fail to meet the adequacy threshold is greater among men than among women. In part this is due to the greater share of men with middle levels of pay working outside of the public sector, and therefore increasingly having greater reliance on DC pension rather than more generous DB pension. It is also the case that the higher quintiles, where we might expect replacement rates to be lower, contain a disproportionate share of men.

If the Pensions Commission targets are to be met, substantial improvement in pension incomes – largely from private saving – will be necessary. The State Pension performs an important role at the bottom of the earnings distribution, but it is clear that a far greater level of voluntary private saving would be required.

Indeed that was the intent of the Pensions Commission: that the final 17 percentage points of a replacement rate is met through saving on top of State Pension and the minimum auto-enrolment levels. That saving is clearly not happening at present. Given the economic outlook, it is hard to anticipate a sudden significant jump in voluntary saving. Indeed, as discussed in Section 2, there is a risk that people start opting-out of private pension saving as minimum contribution rates increase in the coming years.

We consider in further detail later in this section the extent to which different scenarios would improve or worsen the projections set out above, but first we assess the extent to which pension saving will support living standards across the whole of retirement – not just in the first year.

#### Maintaining living standards over retirement

The more years beyond State Pension age we move, the greater the share of future pensioners we can expect to fall below earnings replacement rate benchmarks. That is because, for the most part, private pension income will grow by no more than the rate of inflation, if at all. That's clearly a concern, perhaps especially so for millennials whom we expect to be less likely to have access to housing wealth.

Arguably, a better way of capturing pensioner living standards beyond the first few years of retirement is to compare their incomes to changes in prices. Keeping pace with earnings ensures they do not fall behind working age families; but keeping pace with inflation ensures their purchasing power is maintained.

But which is the appropriate comparison? On one hand it could be argued that once in retirement, maintaining living standards is a question of retaining the same level of consumption year on year. Indeed it is on this basis that our replacement rate targets at

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retirement have been set. However, if pension incomes fail to keep pace with earnings growth, the living standards of pensioners in retirement will fall behind those of working age. With an expected average 24 years of life above State Pension age, that may be a problem. On the other hand, it can be argued that as we age it is, for non-health related consumption needs at least, better to front-load resources so that they can be enjoyed at younger, healthier ages.

Figure 36 sets out just how far we would expect our future generations, split by quintile of their last 15 years of earnings, to fall behind the working age population over an average life in retirement. Over that timeframe we could expect up to around a 45 percentage point fall in the value of income relative to earnings. Pensioners from all pre-retirement earnings quintiles across generations would experience a drop in constant-earnings terms retirement income relative to the first year of their retirement. Lower earners are likely to fall behind the least, given the greater share of their income derived from the earnings-related State Pension. We can also see that even the highest earners manage to have incomes at least maintained in line with prices over retirement.

Figure 36: Mean pension income over the course of retirement as a share of mean income at retirement, by years after retirement, generation and earnings quintile: 1991-2015



Constant-earnings terms private pension and state benefit income over retirement as a share of income at retirement

Notes: Earnings quintiles are calculated by ranking the average of positive earnings 15 years before State Pension age and in constant-earnings terms. Analysis covers Great Britain. See Annex 2 for full assumptions.

Source: RF analysis using the RF lifetime model, ONS, ASHENESPD 1975-2016 and the Pensions Policy Institute dynamic model



Improving this situation would mean increasing pensions by more over retirement. We have already discussed the long-term consequences of persisting with a triple lock to the State Pension, and in a cost neutral world we could imagine that any increased level or more generous uprating would be offset by a shorter retirement period – a higher State Pension age. A similar trade-off is exactly what we would expect if people seek an uprated annuity; the level of the pension will be lower from the start to offset the expected future rises in prices (virtually no annuities taken on the market today uprate in earnings terms, and would be extremely expensive if they were).

However we think it best to apportion income over retirement, what remains clear is that people should be able to choose the shape of provision that best suits their needs while not falling below a minimum standard of income.

As with incomes at pension age, we now compare incomes across retirement against the Minimum Income Standard. We would expect a far greater share of pensioners to be above the threshold, and that is exactly what we find, as shown in

Figure 37. Here we show the share of pensioners by generation expected to fall below the MIS threshold in their first year of retirement, and compare this to each following year of life in retirement.



Figure 37: Proportion above individual pensioner Minimum Income Standard over the course of retirement, by sex and generation: 2020-2060

Notes: State pension income is increased in line with earnings growth of 4.3 per cent relative to CPI growth of 2 per cent and a cash private pension income. Analysis covers Great Britain. See Annex 2 for full assumptions.

Source: RF analysis using the RF lifetime model, ONS, ASHENESPD 1975-2016 and the Pensions Policy Institute dynamic model; Centre for Research in Social Policy, Budget summaries 2008-2017, 2017



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Women (around three-in-ten) are more likely than men (around one-in-ten) to fall below MIS when they first retire. As cohorts age however, we see a faster increase in the share of men falling below the MIS (rising to 40 per cent 26 years into retirement). This is because men have a larger amount of private pension income, which gradually reduces relative to MIS across retirement.

The share of women falling below the MIS is broadly similar across generations (shown by the very similar profile of the solid lines); in large part reflecting the role the State Pension plays in providing a basic underpinning level of income. In contrast, we see sizeable movements for men across the generations; with a sharp deterioration between baby boomers and generation X being partially (but not entirely) reversed for millennials.

Given we anticipate cohorts to spend a typical 24 years in retirement<sup>42</sup> it will be a decreasing share of the initial cohort that actually lives to fall below the threshold.

#### Risks and policy changes for future pensioners

We have assessed the extent to which current policies projected into the future are expected to lead to adequate incomes in retirement. However, it is also important to test the extent to which our findings are sensitive to alternative policy and economic scenarios, which represent real-world risks risks. We test three scenarios: the impact of maintaining a triple lock on the new State Pension; a fall in DC coverage in reaction to higher contribution rates; and a continuation of current low pay growth.

#### A more generous State Pension

We turn first to perhaps one of the most live pension policy debates; the triple lock. We have already discussed the potential impact on spend and associated trade-offs of a continued above-earnings increase in the rate of the State Pension (be it basic or new). Here we focus on the impact on replacement rates of an increasingly generous State Pension via the continued ratchet effect of the triple lock.

We assume, in line with the past OBR assumptions, that the new State Pension will grow on average by 0.34 percentage points a year faster than earnings growth if the triple lock is maintained. This additional growth accounts for the likelihood that earnings in some years will be lower than either inflation or the 2.5 per cent underpin.

Figure 38 shows the impact on median replacement rates across generations and earnings quintiles. As we might expect, with the triple lock having a compound effect on the generosity of the State Pension, it is millennials who benefit the most in retirement. And with the State Pension representing a greater share of income among lower earners, it has the greatest effect in at the bottom of the distribution – adding around 8 percentage points to typical replacement rates for women and 6 percentage points for men in the bottom quintile.

<sup>42</sup> An average across men and women taking account of the State Pension age rising in line with longevity.



Figure 38: Change in median replacement rates in triple lock scenario, by half-generation and earnings quintile: 2020-2060

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Notes: Earnings quintiles are calculated by ranking the average of positive earnings 15 years before State Pension age and in constant-earnings terms. Analysis covers Great Britain. See Annex 2 for full assumptions.

Source: RF analysis using the RF lifetime model, ONS, ASHENESPD 1975-2016 and the Pensions Policy Institute dynamic model

Measured against the Pensions Commission benchmarks for adequacy, the triple lock overall has a relatively small effect across all pensioners. It reduces the share of future pensioners below the adequacy threshold from 77 per cent to 70 per cent of future pensioners. More strikingly, it reduces the share below target from 74 per cent to 63 per cent among millennials. The greatest impact among millennials occurs in the bottom two quintiles or pre-retirement earnings, with the triple lock moving almost all millennials in the bottom quintile, and over two-thirds of the second quintile, within 5 percentage points of the adequacy threshold.

While it is clear that the triple lock could have a more substantial effect on retirement outcomes for millennials, overall it remains a poorly-targeted policy. The analysis we have set out above shows it is generation X facing the greatest squeeze on adequacy – not millennials. The triple lock would also provide a boost to incomes of all pensioners, including baby boomers already in retirement. It would therefore be an expensive way of boosting replacement rates, adding an estimated extra 0.9 per cent of GDP to the cost of the State Pension spend by the 2060s.
#### Lower auto-enrolment coverage

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A potential risk discussed in Section 2 is the extent to which the higher contribution rates that are ultimately expected of employees who have been auto-enrolled into pension saving (set to increase from the current minimum one per cent to a future five per cent with tax relief for employees) will prompt a large number of employees to opt-out. This is a risk made more significant in the short term by the period of weak pay growth we anticipate to persist through the early part of the next decade. With incomes already squeezed by economic conditions, higher contribution rates might be considered a step too far for some employees.

To illustrate the potential scale of this impact we assume that, rather than 80 per cent of private sector employees contributing to a private pension, the share falls to 65 per cent. That would be broadly in line with the mid-point between pre-auto enrolment rates and the long run 80 per cent. We assume also that the opt-out rate is higher among lower earners, falling to little or no effect among the highest third of earners.

Figure 39 sets out the impact on median replacement rates across generations and pre-retirement earnings quintiles of lower auto-enrolment coverage. As we would expect given our assumptions, the impact is greater for younger cohorts. There is little effect on baby boomers, but one-in-eight of generation X and one-fifth of millennials are estimated to experience lower replacement rates.



Figure 39: Change in median replacement rates in low auto-enrolment coverage scenario, by half-generation and earnings quintile: 2020-2060

Notes: Earnings quintiles are calculated by ranking the average of positive earnings 15 years before State Pension age and in constant-earnings terms. Analysis covers Great Britain. See Annex 2 for full assumptions.

Source: RF analysis using the RF lifetime model, ONS, ASHENESPD 1975-2016 and the Pensions Policy Institute dynamic model

The overall scale of the change shown is lower than under the triple lock scenario (and acts in the opposite direction), and so has very little effect on the share of pensioners meeting the Pensions Commission adequacy benchmarks. Many lower earners who become auto-enrolled may only build relatively small pots, leading to small amounts of private pension income. Perhaps most importantly, this scenario highlights the wider risk that – even with an overall eight per cent contribution rate – DC pension provision for lower earners will not provide a substantial amount of income in retirement.

### Low future growth

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In our scenarios so far, we have assumed that earnings growth will meet the long run assumption provide by the OBR in its last long-run assessment of the public finances.<sup>43</sup> That means assuming that earnings grow at a real rate of 2.3 per cent (relative to CPI inflation). However, the near-term forecasts presented by the OBR alongside the Autumn Budget included a downward revision in its assessment of potential growth by around one percentage point. To understand the potential implications of this low growth persisting into the long term, we model a more pessimistic (though potentially more realistic) 'low growth' scenario.

We assume that earnings will grow by an estimated 1.3 per cent a year in real terms, with an equivalent reduction in our assumptions about returns to DC pension pots (the real return is around 2 per cent instead 3.6 per cent a year). Running these assumptions through our model and comparing to the central scenario shows that earnings replacement rates. That is because pension income is a function of earnings and our real return on DC pensions is a ratio to real earnings growth; hence the two move together.

But what *has* changed is the overall level of that income in nominal terms and in relation to price-growth. With the economy growing in real terms at a rate that is 1 percentage point a year lower than in our central scenario, we anticipate that overall incomes for pensioners at retirement would be 30 per cent lower in nominal terms by 2060.

This highlights the importance of assessing adequacy in the round. Relative to earnings the architecture of the pension system remains stable. However the level of income would be much lower, as would living standards across the whole population – not just for pensioners. From an intergenerational perspective, it will of course be younger cohorts who experience the greater real reduction in lifetime incomes, with older cohorts having enjoyed stronger growth in the past.

We can also consider the greater DC pension income projected at the start of this section under an assumption of a higher rate of return for DC investments (the hollow bars in Figure 27and Figure 28). Clearly, typical replacement rates under such a scenario would be higher. This highlights just one of the greater upward and downward risks that people reliant on DC pensions must bear – how investment returns (in the long run driven by interest rates) vary relative to earnings. Additionally our projections assume a range of returns across the employee population, the average masks greater variation in outcomes for similarly-paid employees under DC than would occur under a DB scheme. It is therefore important to remember that the growing role of DC provision for future cohorts of pensioners entails a more uncertain outlook for individuals, even if central income levels and replacement rates are projected to be similar to outcomes for today's pensioners.

<sup>43</sup> Office for Budget Responsibility, Fiscal Sustainability Report, January 2017, 2017

### An inadequate future

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In summary, our modelling – inevitably imperfect, but nevertheless illustrative – suggests that future generations of retirees are unlikely to meet Pensions Commission adequacy benchmarks. But in relation to historical outturn for pensioners on a replacement rate basis – as far as they can be compared – future pensioners look set to fare at least as well. Women are likely to benefit the most relative to previous generations; men are likely to benefit the most relative to a world without auto-enrolment (given that without it they would fall behind the outcomes of past cohorts).

Future pension incomes are expected to hold steady, rather than improve, for successive cohorts. Over the lifetime we expect overall incomes to actually be lower. That's driven by the long-run effect of weak earnings growth in recent years that has affected millennials in particular.

The fact that younger generations look less well-placed than baby boomers to accumulate other forms of wealth (especially housing wealth), means sufficient pension provision for future cohorts appears more important than ever. Even if millennials reach the same home ownership rates – which would be a significant stretch – it is very unlikely that they will experience the same large increases in wealth that baby boomers and the silent generation have been fortunate enough to experience.

Pensions is perhaps the one policy area where forward-thinking policy development and political consensus have led to a system that is at least seeking to put in place structures to help ensure intergenerational parity. However, given the length of time it takes for pension reforms to take effect, there is no space for government to take a pause. Short periods of under-saving now have long-term ramifications as generation X might all too soon find out. Simply carrying on with the current path of auto-enrolment will not be enough if the Pensions Commission benchmarks of adequacy remain the aspiration. The UK will require a step-change in its saving to ensure an adequate retirement for all.

# Section 5

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# Conclusion

Concerns about the living standards of today's working age adults when they retire from work are at the forefront of people's minds whenever the topic of fairness between the generations comes up. Young adults' ability to live comfortably in retirement is second only to home ownership in terms of the areas in which the public think generational progress has stalled. With working age incomes having fallen behind pensioner incomes in recent years, and younger generations failing to accumulate anything like as much wealth as predecessors at their age, these perceptions appear warranted by the economic backdrop. Rising longevity and the much-publicised decline of generous DB pensions in recent years add to the sense of pessimism concerning young adults' retirement income prospects.

With some of these trends becoming apparent at the turn of the century, the government established the Pensions Commission to explore wholesale changes to the system of both state and private pension provision. The recommendations contained in the Commission's final report in 2006 formed the basis of policy changes over the past decade, including the move towards a largely flat-rate State Pension and the introduction of auto-enrolment into private pensions. This means we are in the midst of a policy transition that makes this the perfect time to reconsider the outcomes the new system is likely deliver, and how these compare to outcomes for past and current retirees.

Our analysis has shown that income levels for recent retirees have improved relative to earnings within the working population. However earnings replacement rates – the measure that the Pensions Commission established to benchmark retirement income adequacy – have fallen short of the target for all but the lowest earners. Around threequarters of adults retiring during this century – mainly comprising the youngest members of the silent generation and the oldest baby boomers – have had replacement rates below the adequacy benchmark for their level of earnings.

While it is not possible to directly compare these outcomes with our projections for future pensioners, our results suggest that future cohorts of pensioners look set to achieve fairly similar levels of earnings replacement to those we have observed in recent years. Across earnings distributions, projected replacement rates for the younger baby boomers through to the millennials are certainly not the disaster that public perceptions would suggest. They remain, however, far from the adequacy benchmarks that the Pensions Commission set in its sights.

Of course, projections this far out into the future are hugely dependent on the assumptions used, and as such our analysis demonstrates how the pattern of outcomes might shift under different economic and policy scenarios. The replacement rates we project in our central scenario are clearly dependent upon the level of the future State Pension and the degree of auto-enrolment coverage (which might change, for example



in response to rising minimum contribution rates or poorly performing pay). And, while not directly affecting earnings replacement rates, the performance of the economy will be the dominant driver of income levels for future cohorts of pensioners.

In sum, our analysis of current and future retirement income adequacy shows that neither pessimism nor complacency is warranted. Policies currently being implemented have prevented a deterioration in outcomes across future cohorts of pensioners, but our ambitions for adequacy on an earnings replacement basis appear to remain quite far out of reach. In the coming months the Intergenerational Commission will reflect on this analysis alongside the range of other evidence on generational living standards outcomes, and consider how recent policy progress can be bolstered and what further changes may be needed.

# Annex 1

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# Methodology and supplementary analysis for the assessment of earnings replacement rates for recent retirees

In this annex we provide more detail on the methods for the analysis of earnings replacement rates for recent retirees in Section 3 of this report.

### Methodology

We use the *British Household Panel Survey* (BHPS), and *Understanding Society* (USoc), its successor. This longitudinal dataset captures a range of information on households in Great Britain over the time period 1991-2015. Longitudinal data is used so that we can measure incomes in the years after individuals have retired, and benchmark these against earnings for the same individuals in the pre-retirement period. Due to the much longer time-series and the fact that the surveys we use cover the whole of Great Britain rather than just England, we prefer them to the other main longitudinal survey of older people – the *English Longitudinal Study of Ageing*.

For our central measure of earnings replacement rates we focus on individuals. Our sample includes adults that we observe as having moved into retirement. This means that when tracked over time, they have made their final transition from work (or other working age statuses like unemployment) to describing themselves as retired. We then refine our sample to adults for whom we have records that capture their earnings ten years before they enter retirement, and private pension and state benefit income three years after retiring.

Our calculation of earning-based replacement rates cannot be applied to all individuals: some do not have any positive earnings in the period prior to pensioner age, while others don't appear have any private pension or state benefit income in the period after. To calculate individual earnings replacement rates that aren't overly affected by extreme cases, we additionally require a minimum of three years of gross earnings above a minimum threshold of £6,000 (in 2015 earnings terms, roughly equivalent to 16 hours per week on the minimum wage) in the pre-retirement period; and at least a year in which individuals have private pension or state benefit income above  $\pounds$ 5,000 (uprated to 2015 using average earnings) in the post-retirement period.

We deflate incomes and earnings using average earnings (the median for the whole working population in our dataset in each year), rather than prices. This is to allow comparability with the long-term projections in Section 4 (over a long time horizon, deflating pension income by price projections moves it too far out of sync with earnings income), and is in line with other analyses of retirement income adequacy.<sup>44</sup> This means

<sup>44</sup> Department for Work and Pensions, Framework for the analysis of future pension incomes, September 2013. This analysis in fact takes a slightly different approach – deflating earnings between age 50 and retirement to retirement-age prices using average earnings series, and deflating private pension and state benefit income from retirement until death back to retirement age using CPI. Because we only capture private pension and



that a central focus of our analysis is whether retirement outcomes are keeping pace with returns from the labour market. All cash figures are reported in 2015-earnings terms.

Earnings replacement rates for each individual in this sample are calculated by dividing average state benefit and private pension income in the three years following retirement by average earnings income in the ten years prior to retirement.

Our results are weighted using cross-sectional survey weights in the last year that adults appear in our sample (three years after they have retired). Because our sample is longitudinal, however, we adjust these weights to account for attrition and non-response excluding adults from our analysis. We do this by running probit regressions on whether an adult in the same age range as members of our sample in the relevant survey years is in our sample or not, on a range of characteristics including income, age, employment status and household type. We adjust published cross-sectional weights by multiplying them by the inverse of the predicted values from these regressions. This is the same as the longitudinal weighting method used in previous analysis for the Intergenerational Commission.<sup>45</sup>

### **Supplementary analysis**

In the process of settling on the definitions set out above for our central earnings replacement rate measure, we tested a number of different alternative approaches. Here we briefly describe some of the main alternatives, and show the impact that these different definitions have on earnings replacement rates.

#### The time period before retirement covered

In the main, we measure earnings in the ten years prior to retirement, apart from when comparing outcomes for different birth cohorts when we necessarily capture a shorter time period (five years before retirement) to allow a large-enough sample in each cohort. Figure 40 shows how replacement rates on these two measures and a third (earnings captured 14 years prior to retirement, very close to the time period we capture in Section 4) differ across the pre-retirement earnings distribution. We find that outside the bottom quintile, there is relatively little difference between these three measures.

state benefit income in the three years immediately after retirement, our simplified approach using earnings deflation throughout is extremely similar to this in practice.

<sup>45</sup> C D'Arcy & L Gardiner, *The generation of wealth: Asset accumulation across and within cohorts*, Resolution Foundation, June 2017



Figure 40: Median earnings replacement rates, by earnings quintile and time-period covered: 1991-2015



Average gross private pension and state benefit income in the three years after retirement from work as a proportion of average gross earnings in the years before

Notes: Earnings quintiles are based on individuals' average position in the gross earnings distribution of adults in the years before retirement. Analysis covers Great Britain. Source: RF analysis of ISER, British Household Panel Survey / Understanding Society

## The definition of retirement

In line with previous research on income replacement,<sup>46</sup> we define retirement as when an individual retires from work. An alternative would be to define retirement in relation to when individuals reach State Pension age. As we have said, when modelling future outcomes this distinction is often unnecessary because most approaches assume that retirement from work coincides with State Pension receipt. Because actual outcomes are much more varied, to define retirement in relation to the State Pension age we have to impose further restrictions on our sample – excluding those with earnings income after State Pension age, for example. Alongside the fact that it more accurately pinpoints the two components of the replacement rate calculation, this is why we prefer a retirement-from-work-based definition.

46 For example, see: R Blundell & S Tanner, Labour force participation and retirement in the UK, Institute for Fiscal Studies, December 1999; E Bardasi, S Jenkins & J Rigg, Retirement and the Economic Wellbeing of the Elderly: A British Perspective, ISER Working Papers, 2000 Figure 41 shows the difference between average replacement rates for men and women using these two definitions of pensioner age. There are some discrepancies – with replacement rates defined in relation to the State Pension age slightly lower in most cases – but overall the results are fairly similar.



Average gross private pension and state benefit income in the three years after entering pensioner age as a proportion of average gross earnings in the ten years before



Notes: Analysis covers Great Britain.

Source: RF analysis of ISER, British Household Panel Survey / Understanding Society

# The unit of analysis – individuals or families

We measure earnings replacement at the individual level to be consistent with our projections for earnings replacement rates in Section 4. However the discussion in Section 3 highlighted that such a measure can be limited, because members of couples often pool resources within families. For comparison we also calculate family-based replacement rates, in line with the approach taken by the DWP.<sup>47</sup>

We showed in Section 3 that overall the median earnings replacement rate is higher on an individual basis than on a family basis (59 per cent compared to 54 per cent). Figure

<sup>47</sup> Department for Work and Pensions, *Framework for the analysis of future pension incomes*, September 2013



42 shows that these differences are less evident across the earnings distribution, with individual and family-based replacement rates very similar in each pre-retirement earnings quintile



Average gross private pension and state benefit income in the three years after retirement from work as a proportion of average gross earnings in the ten years before



Notes: Earnings quintiles (calculated separately for individuals and families) are based on individuals' average position in the gross earnings distribution of adults in the years before retirement. Analysis covers Great Britain.

Source: RF analysis of ISER, British Household Panel Survey / Understanding Society

# Annex 2

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# Methods and approach for the analysis of future retirement income adequacy

### **RF lifetime model**

For this report the Resolution Foundation has developed a new model that allows the projection of individual earnings trajectories based on panel data on employee pay, the *New Earnings Survey / Annual Survey of Hours and Earnings* (NESASHE) panel dataset. This data provides longitudinal information on a 1 per cent sample of employees in Great Britain since 1975.

### Data

There are some limitations of this dataset, such as the data including employees who spend only a portion of their working life in Great Britain, and a higher-than-expected prevalence of gaps in what appear to be otherwise-consistent employment histories. We conduct interpolation to fill those gaps, and we restrict the data to include only those who spend at least twenty per cent of their working life in employment. A further limitation is that employers are also only required to submit information for employees earning enough to pay National Insurance, although large employers may submit information about employees with lower rates of pay.<sup>48</sup>

NESASHE provides different levels of detail regarding occupational pensions in different years of the survey. It allows the identification of the type of scheme since 1997, but only provides information about contribution rates since 2005. Employee pension coverage and contribution rates are aligned with data from the historic series of the *Occupational Pension Scheme Survey* in years before 2005.

### Projections of pay and pension saving

Future earnings trajectories are calculated by applying a range of transition probabilities calculated from a series of logit regressions. The first step involves predicting whether an individual will be in work or not based on their age, birth year and past work history. If in work, or moving back into work, they are then allocated to an earnings quintile based on similar historical information. These transition probabilities are then applied to individuals to project forward an earnings path in each future year to retirement. In each year, individuals are ranked within quintiles and assigned a level of pay based on their overall position in the earnings distribution and the equivalent rate of pay in the 2016 data. These earnings levels are later uprated in line with a given overall earnings growth assumption (4.3 per cent nominal in our central scenario).

Future occupational pension coverage and contribution rates are projected forward from the 2016 data. An individual's saving pattern only changes when they move job in

<sup>48</sup> More detail on this dataset's quality and methodology is provided in: Office for National Statistics, *Annual Survey of Hours and Earnings, Low Pay and Annual Survey of Hours and Earnings Pension Results QMI*, September 2014



the projection period. As auto-enrolment rolls out both coverage and contribution rates are assumed to rise, with a differential applied so that higher-than-minimum contributors keep doing so in future years. This lifetime earnings and pensions contribution information is then summarised and provided to the Pensions Policy Institute (PPI) to produce a projection of retirement income.

### PPI dynamic model

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The PPI dynamic model projects retirement cash flow outcomes for individuals. For this project, it has been used with a deterministic retirement approach, assuming that individuals retire at their State Pension age.

The model is usually applied to *English Longitudinal Study of Ageing* data, but has been amended to allow profiles derived from NESASHE data by the Resolution Foundation to be projected through their retirement. Here we provide an overview of modelling approach.

Economic assumptions are derived from those published by the OBR in their *Economic* and *Fiscal Outlook* and *Fiscal Sustainability Report*. The model is capable of projecting variations on the current pension system framework, and incorporating behavioural assumptions.

The projection of an individual takes in:

- Private pension accrual to State Pension age;
- Retirement income from private pension(s);
- Retirement income from the State Pension;
- Means-tested benefits in retirement, including Pension Credit; and,
- Individual taxation.

#### Private pension accrual to State Pension age

An individual's current pension wealth is derived from the NESASHE data, and projected to their State Pension age. For DC entitlement, this is subject to economic assumptions taken from the OBR, and an assumed portfolio composition as well as deductions due to charges (including an assumed annual management charge of 0.5 per cent).

### Retirement income from private pension

It is assumed that individuals do not access private pension saving until their SPA. Those with DC pensions are assumed to purchase a single-life level annuity. No tax-free lump sums are assumed for either DB or DC pensions.

#### Retirement income from State Pension

Individuals receive their State Pension at their SPA as currently announced and legislated for. It is assumed that the individuals qualify for a full single-tier pension if they retire after April 2016. A foundation pension based on the basic State Pension





and Additional Pension is calculated for those who reach their SPA after this date. If the foundation amount is greater than the new State Pension level, the individual is assumed to receive a CPI-linked "protected amount".

Beyond the current parliament, both the basic State Pension and the new State Pension are uprated in line with average earnings.

# Resolution Foundation



Resolution Foundation is an independent research and policy organisation. Our goal is to improve the lives of people with low to middle incomes by delivering change in areas where they are currently disadvantaged. We do this by:

undertaking research and economic analysis to understand the challenges facing people on a low to middle income;

 $developing\ practical\ and\ effective\ policy\ proposals;$  and

engaging with policy makers and stakeholders to influence decision-making and bring about change.

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