

How and why might the wealth of different generations be expected to differ?

IFS Briefing Note BN257

Rowena Crawford
David Sturrock

How and why might the wealth of different generations be expected to differ?

Rowena Crawford and David Sturrock

Copy-edited by Judith Payne

Published by

The Institute for Fiscal Studies, October 2019

ISBN 978-1-912805-32-7

The authors would like to thank Carl Emmerson and Cormac O’Dea for helpful comments and suggestions, and Jonathan Cribb for assistance with empirical analysis using the Wealth and Assets Survey. The analysis in this briefing note has drawn on data from the British Household Panel Survey, Understanding Society, and the Wealth and Assets Survey. These data are distributed by the UK Data Service. Funding for this work is gratefully acknowledged from the Economic and Social Research Council (Secondary Data Analysis grant reference ES/N011872/1 and the Centre for Microeconomic Analysis of Public Policy, RES-544-28-50001).

Executive summary

While those born between the 1930s and 1950s have seen generation-on-generation increases in wealth levels, those born more recently look to have accumulated no more wealth than their predecessors had done by the same age. This has prompted concerns, and debate as to whether later-born generations are just frivolous with their money or have faced a harsher economic environment that is less conducive to accumulating wealth.

We use an economic model to illustrate how different circumstances – in terms of earnings, the tax system, the state pension system, rates of return, the number and timing of children, longevity and retirement timing – could be expected to affect wealth accumulation. We then bring these circumstances together to illustrate how we might expect the wealth of different generations to differ, even if fundamental attitudes towards saving were the same. In doing so, we provide a new, and important, frame of reference for those comparing empirical data on wealth holdings between generations.

Key findings

The economic circumstances that individuals face are an important determinant of wealth levels and saving behaviour. Our modelling illustrates that different earnings levels, state pension systems, tax systems, rates of return, longevity and retirement timing all have important impacts on individuals' expected wealth accumulation. Given these differ between generations, we should not necessarily expect each generation to accumulate the same level of wealth.

Understanding the drivers of differences (or lack of differences) in wealth levels is important in order to understand the extent to which they are a concern, and what policy action – if any – might be warranted. For example, the response to differences in wealth arising from different earnings levels might not be the same as the response to differences in wealth arising from different rates of return.

Changes in the economic and demographic conditions that we model would be expected to lead to generation-on-generation increases in the levels of wealth held by retirement. These are largely driven by increased earnings, and also by falling state pension generosity and falling average tax rates, that are not completely offset by falling rates of return. However, at younger ages, the picture is complicated by particular periods of high/low rates of return affecting generations at different ages, and it is not the case that younger generations are consistently simulated to hold more wealth than their predecessors.

Comparisons of saving rates and replacement rates are 'safer', but should still be made with care. Saving rates and (expected) replacement rates are more robust metrics for comparing financial preparedness for retirement between generations, as these are not affected by differences in earnings. However, there are still reasons for these to differ between generations – in particular, different rates of return and state pension generosity. The income replacement rates achieved in retirement by older generations therefore perhaps ought not to be taken as a target to be achieved by generations born more recently. This may be holding younger generations to an inappropriately high ideal.

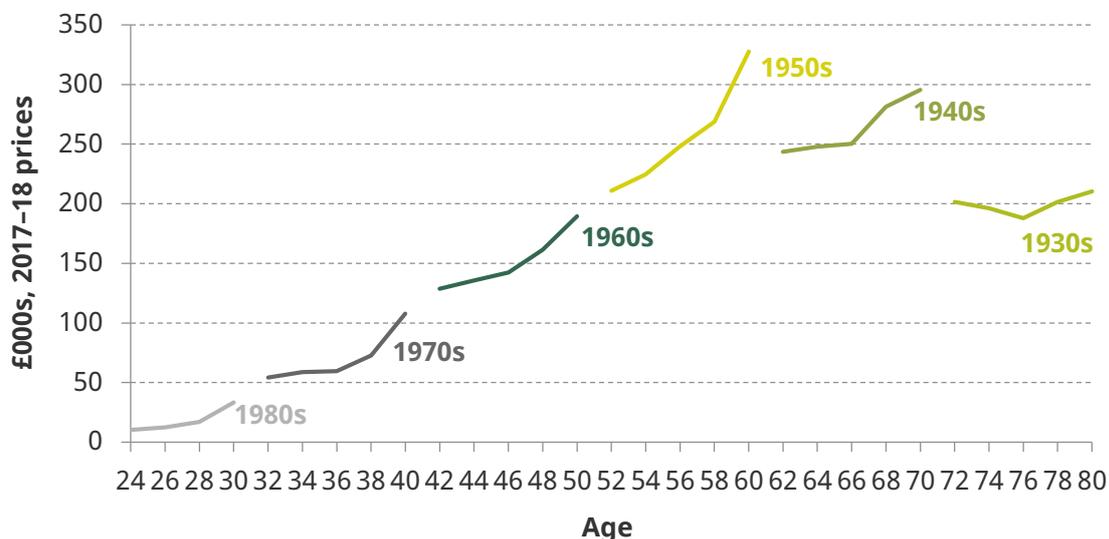
1. Introduction

The wealth holdings of different generations have received increased attention in recent years.¹ In part this is driven by issues of intergenerational fairness rising up the political agenda. In part it is due to particular concern about the adequacy of retirement saving by younger generations, in the context of declining state and defined benefit pension provision. It is also due to an increase in data availability meaning it is at last possible to start comparing consistent measures of wealth holdings over time and between generations.²

Figure 1 gives a high-level overview of how average net household wealth per adult compares for those born in different generations. Between those born in the 1930s and those born in the 1950s, each generation has accumulated more wealth on average than its predecessors did. However, among generations born more recently there is little evidence of increased wealth. This has prompted concerns in some quarters.³

While it is now possible to compare wealth holdings of consecutive generations, these comparisons should be interpreted with care. Wealth accumulation is the result of individuals' saving choices in response to the circumstances they find themselves in. Given that circumstances differ between generations, we should not necessarily expect wealth holdings to be the same. To establish whether generations' wealth levels are a cause for concern, what matters are the causes, and consequences, of any differences in wealth, rather than whether or not such differences exist.

Figure 1. Median net household wealth per adult, by age and generation



Source: Cribb (2019) and Wealth and Assets Survey, various years.

¹ See, for example, Hood and Joyce (2013), Crawford, Innes and O’Dea (2015), Cribb, Hood and Joyce (2016), Resolution Foundation (2019) and Financial Conduct Authority (2019).

² The Wealth and Assets Survey has provided data on household wealth for each year since 2006.

³ For example, a House of Lords select committee on Intergenerational Fairness and Provision was established in May 2018, the Financial Conduct Authority held a conference to discuss intergenerational differences in July 2019, and the Department for Work and Pensions monitors the progress of pension saving (e.g. Department for Work and Pensions, 2017).

In this work, we use an economic model to illustrate how the wealth of different generations might be expected to vary, given the different circumstances they find themselves in. In particular, we examine the effects of different levels of earnings, different life expectancies, different rates of return on assets, different tax rates, different state pension systems, different numbers and timing of children, and different lengths of working life on simulated saving and wealth accumulation.

The model we use is necessarily a simplified version of reality and, at its core, assumes individuals are rational and willing to trade off spending today with spending tomorrow at a given rate in order to smooth their standard of living over time – in particular, between working life and retirement. They have access only to one simple (risk-free) savings vehicle (in addition to a tax-funded state pension). In practice, individuals' preferences and capabilities, and therefore their behaviour, are much more complicated – hence concerns that individuals might not be saving as much as is in their own best interest – and there is a wide choice of available assets to save in.

The simulations of our model should therefore not be interpreted as suggesting that a given generation should have accumulated a certain level of wealth at a given age, and the simulations from our model should not be compared directly with data on wealth holdings to suggest whether or not the wealth of any particular generation is of concern.

What our analysis does do is illustrate the importance of a number of circumstances for wealth accumulation, and show how, taking these together, they might be expected to lead to different wealth and savings patterns between generations. This provides an important frame of reference for those examining empirical data on the wealth of different generations and seeking to understand whether there is indeed cause for concern and how, if at all, policy should respond.

The structure of this briefing note is as follows. In Section 2, we discuss the set of circumstances we model, illustrate how they vary between generations, and describe how our model simulates that they would (individually) affect wealth accumulation. In Section 3, we vary all the circumstances simultaneously, taking the most applicable for each generation, and show how wealth would be expected to vary between the generations. In Section 4, we draw out some conclusions and implications. A brief description of our model can be found in the appendix.

Greater detail on our model, on the circumstances that we examine, on how we estimate these circumstances have changed between generations, and on the sensitivity of our results is available in a technical working paper available online.⁴

⁴ Crawford and Sturrock, 2019.

2. The impacts of changing circumstances

Different generations face different circumstances, in terms of both demographics and the economic and social environment in which they live, and this will affect how much wealth they accumulate and when.

The set of circumstances that we model the impact of is: earnings levels, rates of return on assets, the tax system, the state pension system, number and timing of children, life expectancies and retirement ages. We first discuss how these circumstances have changed between generations,⁵ and whether our model predicts these changes will increase or reduce wealth levels and saving rates. We then compare the potential size of the effects on saving and wealth of changes in different circumstances.

The set of circumstances that we model is far from an exhaustive list of the things that will differ between generations. We end this section by briefly discussing some other potentially important circumstances which we do not model.

Changing circumstances and their simulated effects

Earnings

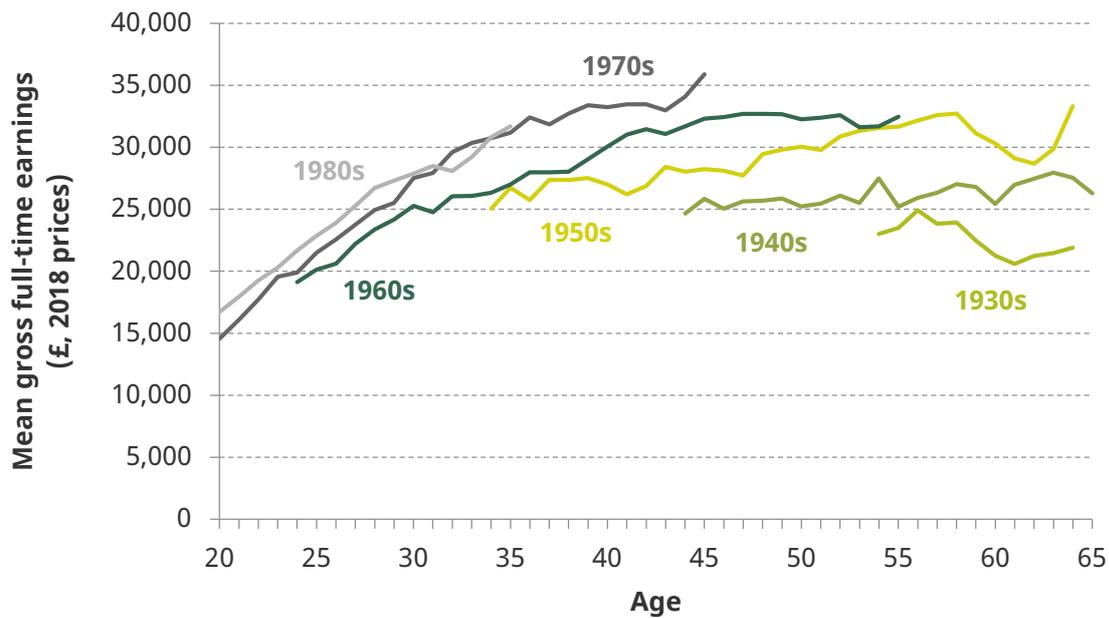
Earnings from work are, for the vast majority of people, the main resource available to fund spending or saving. The earnings circumstances different generations face will therefore be a key driver of their wealth accumulation. Figure 2 shows how mean gross full-time earnings compare between generations. As has been extensively highlighted elsewhere,⁶ those born more recently have generally earned more at any given age – until those born in the 1980s, who have similar levels of earnings to those born in the 1970s.

The results of modelling the effects of these different earnings profiles on saving behaviour are intuitive. Generations who have enjoyed higher earnings would be expected to accumulate greater *levels* of wealth in order to also enjoy more retirement income. However, the simulated *saving rate* of each generation is essentially the same, since those with higher earnings can accumulate a greater level of wealth by saving the same proportion of their earnings.

⁵ Further detail on the data we use, and how we estimate differences in circumstances between generations (where applicable), is available in the technical working paper available online (Crawford and Sturrock, 2019).

⁶ Hood and Joyce, 2013; Cribb, Hood and Joyce, 2016; Resolution Foundation 2019.

Figure 2. Mean gross full-time earnings, by age and generation



Source: British Household Panel Survey and Understanding Society, 1992–2017.

Return on assets

The rate of return received on wealth is a key driver of how much people decide to save. Returns have varied substantially, both across assets and over time. Table 1 describes average annual real rates of return over working life, on equities, gilts and housing, for different generations. This indicates that, in general, generations born more recently have experienced, and are expected to experience in future, lower rates of return than those born earlier (though there is clearly significant uncertainty surrounding future returns).

Table 1. Average annual real rates of return during working life

Generation	Equities	Gilts	Housing	Total (assuming portfolio composition varies over life cycle)
1930s	6.7	2.6	5.3	5.9
1940s	5.4	3.4	5.2	5.5
1950s	6.9	5.0	3.2	4.8
1960s	4.9	3.1	3.3	3.7
1970s	3.2	0.7	3.8	3.1
1980s	4.0	-0.1	3.2	2.7

Note: Rates of return are the geometric mean of total returns given by the Barclays Equity Gilt Study (for years up to 2015), and the midpoint of Financial Conduct Authority (FCA) assumed rates of return for 2016 onwards, for an individual born in the middle year of each generation. Housing returns are based on the Nationwide House Price Index and Bank of England Effective Mortgage Rate series for the years up to 2016, and use Oxford Economics’s house price and mortgage rate forecasts thereafter; they include imputed rent as given by the OECD price to rent ratio. Total return assumes a portfolio composition that changes with age. For details, see Crawford and Sturrock (2019).

Our modelling illustrates that higher rates of return lead individuals to accumulate more wealth at each age, and have a higher replacement of working-life income in retirement, but that this is achieved with a lower saving rate.

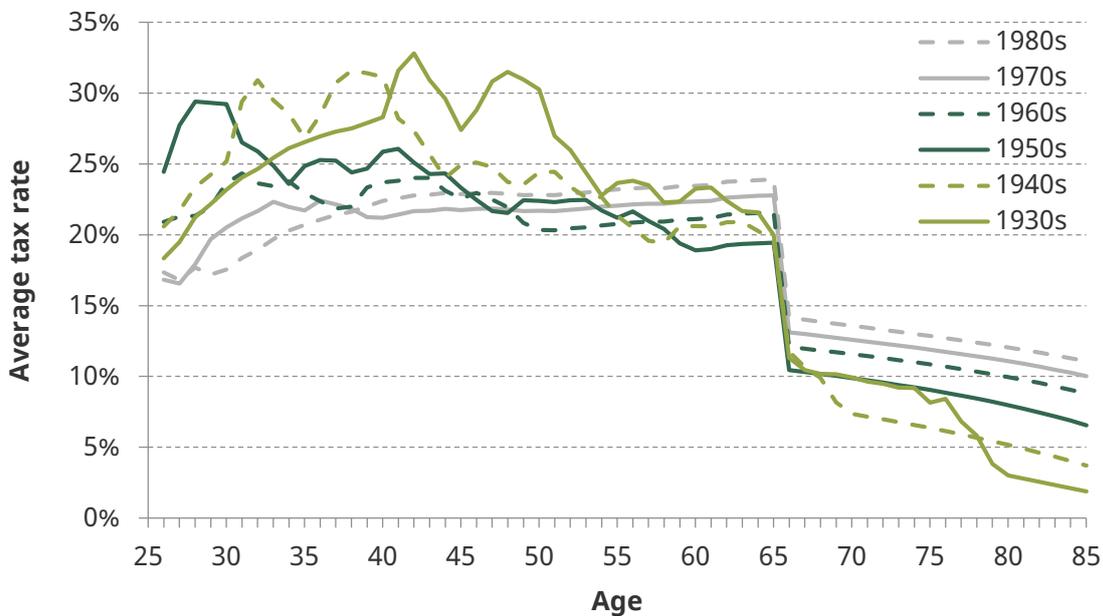
Tax system

The tax (and benefit) system that an individual faces affects their incentives to save, both by changing their available resources and by changing the rate at which they can move spending from one period to another. This is because pension saving is made out of gross earnings and then pension income is taxed in retirement – meaning any difference in the tax rate faced between working life and retirement acts as an incentive (or disincentive) to save.

The tax and benefit system has been under near constant change over the past half-century.⁷ We model income tax, employee National Insurance (NI) and unemployment benefits. As a summary, Figure 3 illustrates how the combined income tax and employee NI rate has varied, on average, between the generations at each age. The rate falls at retirement as individuals no longer pay National Insurance. Comparing generations, those born in the 1930s, 1940s and 1950s had higher average tax rates during their working lives than those born more recently.

The results of our modelling (which, it is important to note, assumes individuals are perfectly aware of current and future tax rates) show that the decline in average tax rates would lead to individuals in generations born more recently being expected to hold greater levels of wealth into retirement, achieved through a higher average saving rate.

Figure 3. Mean combined income tax and employee National Insurance tax rates, by age and generation



Note: Assumes current tax rates remain unchanged, and tax thresholds are updated in line with inflation, from 2017 onwards.

⁷ For a comprehensive account, see Pope and Waters (2016).

State pension system

The amounts individuals choose to save privately for retirement will depend on how much state pension income they expect to receive. The rules governing the state pension have changed frequently and sizeably over time – initially beginning as a flat-rate income, an earnings-related component was added in 1978, before being scaled back and replaced by a flat-rate system (though one that has much higher rates of coverage than the original flat-rate system) again from 2016. The level of the flat-rate pension relative to average earnings has also varied markedly over time.⁸

Table 2 summarises how state pension income relative to final earnings is simulated to vary between generations in our model, given the earnings paths that we simulate and the relevant rules of the state pension system. Broadly speaking, the generosity of the state pension has declined over time, particularly for those higher up the lifetime earnings distribution, though the rate of income replacement expected for the 1970s and 1980s generations is slightly higher than that for the 1960s generation.

We use our model to simulate the effects of varying the state pension system on wealth accumulation. We find that the declining generosity of the state pension would be expected to increase the private saving rate and increase private wealth accumulation. The replacement rate between total retirement income (from state and private sources) and working-life income would be expected to fall slightly; in other words, our model implies that reductions in the state pension are partially, but not fully, offset by increased private saving.

Table 2. Mean replacement of average final 15 years of earnings provided by the state pension, by tertile of lifetime earnings

Generation	Third with the lowest lifetime earnings	Middle third	Third with the highest lifetime earnings
1930s	58%	50%	42%
1940s	68%	56%	44%
1950s	60%	46%	35%
1960s	52%	37%	27%
1970s	58%	42%	30%
1980s	58%	42%	30%

Note: Individual pension incomes are calculated based on the individual's simulated earnings history, using the full set of rules of the UK state pension system that would be experienced by an individual born in the middle year of the relevant decade. For future years, we assume that government policy is unchanged, with the exception that we assume that the basic state pension is uprated in line with average earnings rather than the 'triple lock'.

Number and timing of children

Families with children would be expected – all else equal – to spend more of their lifetime resources during working life (when their children are financially dependent) than those

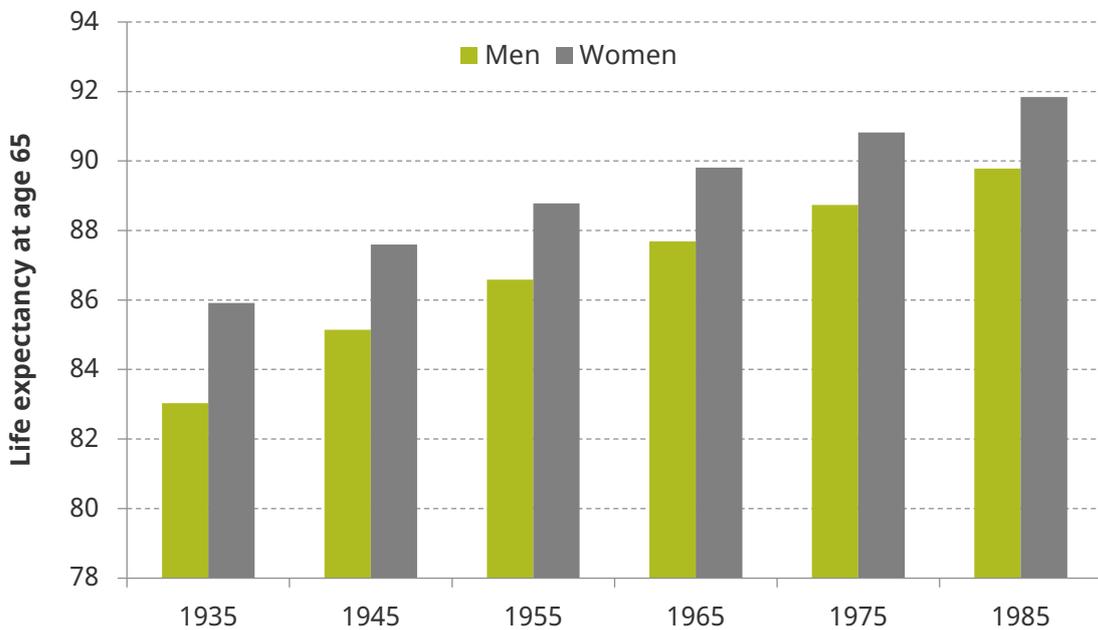
⁸ For more information, see Bozio, Crawford and Tetlow (2010) and Hood and Joyce (2013).

without, and consequently to accumulate less wealth to fund spending in retirement.⁹ Individuals born more recently have fewer children on average than those in previous generations. However, the simulations of our model indicate that changes in the average number (and timing) of children between the generations in practice have only a negligible impact on how much wealth we might expect individuals to accumulate.

Life expectancies

The differences between generations in life expectancy at older ages are substantial. Figure 4 shows how life expectancy at age 65 compares for men and women in different generations. For example, a man born in 1935 who reached age 65 could expect to live to age 83, on average, while for those born in 1985 this figure is projected to be 90.

Figure 4. Average life expectancy at age 65, by generation



Source: Office for National Statistics 2014-based cohort survival curves for England and Wales.

With a fixed age of retirement, living longer would imply a longer retirement. Individuals would therefore need to save more and accumulate more wealth in order to finance those additional years of retirement spending (or else have less to spend in each year of retirement). Our modelling indicates that the expected differences in life expectancies are enough to drive non-negligible increases in the amounts accumulated via a higher saving rate.

Retirement timing

When individuals choose to stop working has a similarly large impact on how much wealth they need to accumulate compared with the effect of differences in life expectancy – retiring later means fewer years of retirement to finance and greater lifetime income from working. The timing of retirement is to some extent an individual choice, and so is a bit different from the other circumstances we consider which are clearly outside of individuals’ control. However, the age at which an individual can access their state pension

⁹ Note that in our model individuals cannot leave bequests.

– which is tied to the age of retirement in our model – is higher for more recent generations.¹⁰ For those born in the 1930s, the state pension age was 60 for women and 65 for men, but this has been increasing and current government policy is that it will reach 68 (for both men and women) for those born in the 1970s – with further increases expected for subsequent generations.

The results of our modelling show that (all else equal) those retiring later accumulate less wealth by any given age, but accumulate wealth for longer and so have a greater level of wealth at the start of their later retirement. They have a lower saving rate, since they can spread their saving over more years of working life. They have a higher replacement rate in retirement, since their longer working life means they have higher lifetime earnings and smooth a higher level of consumption over their lifetimes.

Illustrative magnitudes of the effects of changes in circumstances

The level of wealth that our model simulates individuals should accumulate is sensitive to assumptions made – particularly the rate at which individuals ‘discount’ the future, and how risk averse they are. These will also affect, although to a lesser extent, the proportionate effect on wealth accumulation of a change in a given circumstance. However, to give a sense of the size of the impacts on saving, Table 3 provides a summary of the results for our baseline specification of the model.¹¹ This is useful, even given the model’s sensitivity, for comparing the relative importance of different circumstances.

We change one circumstance at a time, leaving all other circumstances at the baseline level: a 3% annual rate of return, a retirement age of 66, and earnings, life expectancy, and the tax and state pension systems as for the 1950s generation. We examine the effect on three different ‘metrics’ of wealth accumulation: (1) wealth at retirement (age 66, except when we vary retirement timing); (2) gross income replacement (which is defined as gross income in the first year of retirement divided by average gross income for the final 15 years of working life); and (3) average saving rate during working life.

The circumstances with the largest effects on the level of wealth holdings by a long way are earnings levels and rates of return. For example, on average, those born in the 1980s might be expected to hold nearly 50% more wealth by age 66 than those born in the 1950s did simply because of their higher lifetime earnings. Of a similar order of magnitude, if individuals had access to a 6% annual rate of return on their savings then they would be expected to accumulate around 50% more wealth by retirement than if they had access to a 3% rate of return. The effects of the tax system, state pension system, different life expectancies and different retirement timing are all simulated to be much smaller – yielding simulated differences in wealth holdings between the 1980s generation and the 1950s generation of around 5–10%.

¹⁰ Cribb, Emmerson and Tetlow (2016) find that increases in the female state pension age have caused women to retire later, and conclude that many people leave work at or near their state pension age as it acts as a ‘signal’ to retire.

¹¹ Some results are omitted for brevity. Full results are available in the accompanying technical working paper (Crawford and Sturrock, 2019).

Table 3. Simulated impact of different circumstances on wealth accumulation

Circumstance	Wealth at 66/retirement (relative to ref.)	Gross income replacement rate	Average saving rate
<i>Earnings:</i> 1930s	68.9	80.1	10.6
1940s	81.0	80.6	10.6
1950s	100.0 (ref.)	80.4	10.6
1960s	116.2	80.3	10.5
1970s	131.0	80.2	10.6
1980s	147.2	80.0	10.7
<i>Return:</i> 2%	88.5	76.6	11.6
3%	100.0 (ref.)	80.0	10.7
4%	113.8	83.9	9.6
6%	150.8	94.1	6.5
<i>Tax system:</i>			
1930s	90.8	79.7	9.7
1940s	94.3	81.4	10.1
1950s	100.0 (ref.)	80.0	10.7
1960s	103.3	80.6	11.0
1970s	104.6	80.9	11.0
1980s	105.0	81.0	11.0
<i>State pension:</i>			
1930s	92.8	82.7	9.8
1940s	85.6	84.8	9.0
1950s	100.0 (ref.)	80.0	10.7
1960s	118.0	75.1	12.8
1970s/1980s	108.6	77.5	11.7
<i>Life expectancies:</i>			
1930s	93.3	81.9	9.9
1950s	100.0 (ref.)	80.0	10.7
1960s	101.7	79.5	10.9
1980s	104.7	78.6	11.3
<i>Retirement:</i> 65	96.6*	78.8	11.1
67	100.0 (ref.)*	81.2	10.4
68	101.2*	82.4	10.0
70	103.8*	85.1	9.2

* Wealth is measured at retirement when retirement age varies.

Simulated saving rates are not affected by different earnings levels, but are affected by changes in other circumstances. However, even when these are affected, they vary only slightly – the simulated saving rate normally lies between 9% and 11%. The exception to this is with changes in the rate of return: moving from a 2% annual rate of return to 6% (holding all else constant in our baseline set-up) reduces the saving rate from 11.6% to 6.5%.

Similarly, the modelled income replacement rate is affected by differences in some circumstances, but the differences are relatively small. For example, moving the retirement age by five years from 65 to 70 only increases the modelled replacement rate from 79% to 85%. Again the largest impact comes from changes in the rate of return: moving from a 2% annual rate of return to 6% increases the replacement rate from 77% to 94%.

Changes in circumstances that are not modelled

While we model the impact on saving behaviour of many of the important differences in circumstances between generations, there are other things that differ, or potentially differ, between generations which we have not been able to model. We discuss a few important examples here.

Defined benefit pensions

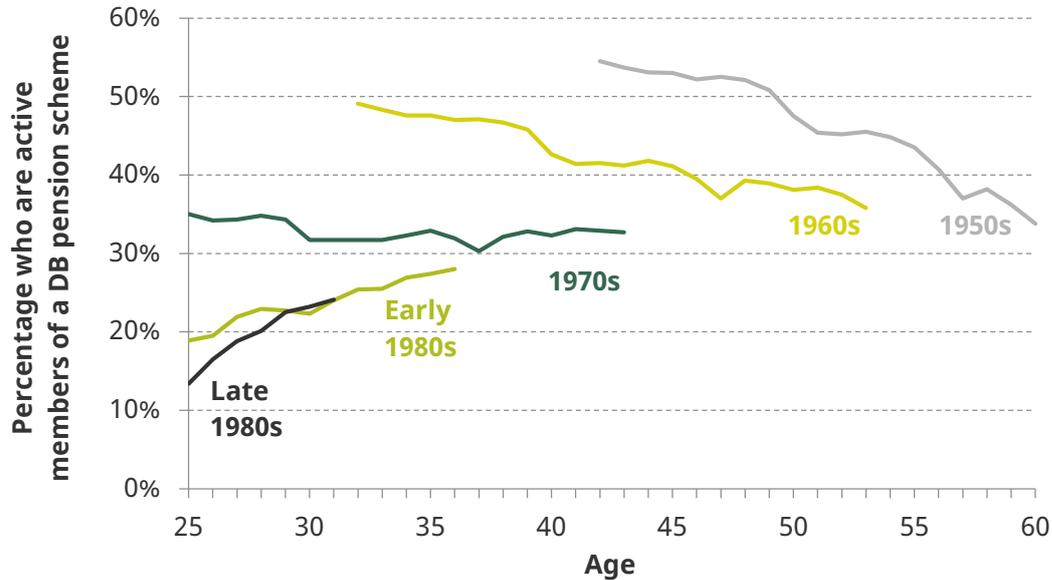
Our model has only one saving asset available, an asset most akin to a defined contribution pension with a risk-free rate of return. However, until recently, the dominant form of private retirement saving in the UK was through a defined benefit (DB) pension. These pensions were often very generous, at least to those who remain a pension member for a long while. For example, a scheme offering a pension income in retirement of $\frac{1}{80}$ of final salary for each year of service and a lump sum of $\frac{3}{80}$ of final salary for each year of service, in exchange for employee pension contributions of 6% of gross earnings each year of working life, would be equivalent to a rate of return of around 8–9% a year for the generations we consider. This is clearly far better than the average rates of return on equities we describe above.

We simulate that the presence of such a DB pension would (all else equal) make individuals hold more wealth – both because of the high rate of return and because individuals can only choose to be ‘in’ or ‘out’ of the scheme, which might lead them to save more than they would choose if they had a flexible choice of how much to save with an equivalent rate of return. The size of the effect is substantial. Taken to the extreme, Table 4 illustrates the difference in wealth accumulation we simulate in our baseline case if everyone receives a DB pension in retirement of half final salary and a lump sum of 1.5 times final salary, in exchange for contributions of 6% of gross earnings every year, compared with if no one has access to such a pension. Wealth at retirement would be over

Table 4. Wealth and replacement rates, with and without defined benefit pensions

	Wealth at retirement (age 66)	Gross income replacement rate	Average saving rate
With DB	406.4	119.9	7.5
Without DB	179.9	80.0	10.7

Figure 5. Defined benefit pension participation rate of employees by age, for people born in different decades



Source: Cribb, 2019.

twice as large if everyone had access to such a pension, and the replacement rate achieved from retirement income would be 120% rather than 80%.

The availability and generosity of DB pensions have been markedly different for different generations. As the cost of these pension promises to employers became apparent, many schemes closed to new members and/or new accrual, and those that did remain open changed their rules to reduce the implicit generosity. Private sector schemes are now almost entirely closed to new entrants.¹² Public sector pension systems are still typically operating on a defined benefit basis, but recent reforms – notably increases in normal retirement ages and a change in indexation – have reduced their generosity.¹³ As a summary, Figure 5 shows how active participation in DB pensions among employees has declined over the last two decades.

The extent of the decline in DB pension availability for different generations is difficult to model, as one needs to know how pension tenure has changed (affected by schemes closing and labour turnover) and how pension scheme rules have changed. However, undoubtedly, the reduction in DB scheme availability will have reduced the incentive to accumulate wealth for retirement among more recent generations.

Housing

One of the primary components of household wealth in the UK is housing equity. Different generations have experienced very different housing markets, in terms of house price to earnings ratios, the growth of house prices over time, the price and availability of mortgages, and the cost of not being a homeowner (i.e. renting). These differences in

¹² Pensions Regulator, 2018.

¹³ Cribb and Emmerson, 2016.

circumstances almost certainly affect how much wealth (housing and non-housing) individuals in different generations would be expected to accumulate.

Modelling the size and direction of these effects is very difficult. According to economic theory, individuals will buy a house, rather than rent, either to pursue it as a financial investment (e.g. because they believe house prices will grow rapidly over time or because housing returns are lightly taxed and can be leveraged) or because they wish to 'consume' owner-occupied housing (e.g. because they prefer to live in a house that they can renovate) – or, more likely, for both reasons. Some aspects of the former motivation are reflected in our model. In particular, we capture changes in the return to investment in housing between generations by constructing rates of return on housing wealth, which incorporate growth in house prices, mortgage rates and typical leverage ratios.¹⁴ We also capture changes in the general cost of living between generations, which includes housing costs, as part of the difference in 'real' earnings. However, there are other aspects we cannot capture. For example, it is difficult to take account of the fact that housing tends to be a discrete good: individuals generally cannot buy part of a house and ordinarily take out a mortgage on a whole property in order to 'invest' in housing. Changes in price to earnings ratios and rules about borrowing can consequently make it more or less difficult to 'access' the housing market for individuals who do not already have substantial savings. Related to this, it is not easy to flexibly draw on housing wealth in retirement to fund consumption, and in practice the majority of homeowners do not 'downsize'.¹⁵ Perhaps most importantly, to properly model the effects of changes in housing markets on individual behaviour, one needs to model how much individuals value consumption of owner-occupied housing relative to other goods (including rented accommodation). This would all require a more complex model, with housing as a separate asset class, and considerable assumptions about individual preferences and the inflexibility of housing wealth.

Without such a model, it is not possible to say how differences in the housing market experienced by different generations would be expected to affect wealth accumulation. This is because some changes in circumstances would be expected to move behaviour in an opposite direction to other changes in circumstances, and some changes in circumstances could theoretically have effects in either direction. For example, even the effect of an increase in house price to earnings ratios is ambiguous. It could reduce wealth accumulation by causing individuals to substitute away from housing and towards consumption of other goods and services or other forms of saving, or it could cause an increase in the level of wealth accumulation if individuals want to own a certain type of house and are relatively insensitive to the cost.

Labour market attachment

Our model assumes that all individuals are in employment every year between age 26 and retirement. In practice, this is not the case, particularly among women. Roantree and Vira (2018) illustrate successive increases in the employment rate of women in their late 20s and 30s between those born in the 1940s and those born in the 1970s (but little difference between the 1970s and 1980s generations). To the extent that individuals in generations

¹⁴ For full details, see the accompanying technical working paper (Crawford and Sturrock, 2019).

¹⁵ Crawford, 2018.

born more recently will spend a greater proportion of their working lives in employment, this would lead to greater expected wealth accumulation among these generations.

Preferences

Our model assumes that all individuals, regardless of when they were born, are willing to trade off consumption in future with consumption today at the same rate. For example, with the discount rate set to 3% (as it is for the results in Table 3 and Section 3), individuals are indifferent between £1 today and £1.03 next year or £1.34 in 10 years' time. There is limited evidence that preferences, on average, differ between generations, but if they did then this could have a similarly sizeable impact on saving behaviour compared with the effect we estimate for rates of return.

Behavioural biases

Our model assumes that individuals are rational and well informed, and make their saving decisions in such a way as to smooth their consumption over their life cycle. In reality, there is concern that this is not how individuals behave. For example, there is concern that individuals consistently 'put off' saving until future years and never get around to it, and then reach retirement and regret not having accumulated more wealth. The role of these biases could differ between generations – particularly given that the pension saving landscape, and especially the role of employers, has changed so much over time.

Inheritances

Our model does not include inheritances – either being received (i.e. providing a source of wealth) or being given (i.e. providing an incentive to save). There is evidence to suggest that inheritances are becoming more common, and on average larger, for later-born generations.¹⁶ However, there is little evidence on how preferences for bequeathing wealth differ between generations (it is possible, for example, that younger generations plan to leave larger bequests in turn). To the extent that a generation is expecting to inherit more than it bequeaths, our model will overestimate the amount of wealth that that generation would need to accumulate through its own private saving. However, the contribution of inheritances to the overall level of lifetime saving of any generation is still relatively small.

¹⁶ Hood and Joyce, 2017.

3. Simulated impact on the saving and wealth of different generations

We use our model to simulate the overall impact on saving behaviour of allowing the circumstances described in Section 2 to vary simultaneously. We produce six scenarios, one for each of our generations, and illustrate the potential impact of changes in all the circumstances together on the savings and wealth of each generation. The headline results are summarised in Figure 6 and Table 5.

Results

Our modelling illustrates that we would expect the wealth accumulation of different generations to differ as a result of differences in the circumstances they have faced.

Figure 6. Simulated wealth and saving profiles, by generation



Note: Negative saving rates may occur during working life if individuals draw on their accumulated wealth in response to an unexpected gain due to high returns on saving.

Table 5. Wealth and replacement rates, by generation

Gen.	Wealth at:				Gross income replacement rate	Average saving rate
	Age 30	Age 40	Age 50	Retirement		
1930s	77.4	58.3	53.7	87.3	104.0	5.3
1940s	72.9	83.8	63.5	78.9	95.3	4.9
1950s	100.0 (ref.)	100.0 (ref.)	100.0 (ref.)	100.0 (ref.)	81.7	8.3
1960s	125.4	164.3	94.0	132.8	74.4	11.4
1970s	147.7	123.4	95.8	139.6	76.7	12.2
1980s	147.3	147.2	109.0	158.9	77.3	11.9

Note: Wealth at the various ages and at retirement are each expressed relative to wealth of the 1950s generation. Gross income replacement rate is defined as total gross retirement income (from state pension and private wealth drawdown) divided by mean gross earnings between ages 50 and 65 inclusive. The average saving rate is defined by calculating a cohort's aggregate saving rate at each age and taking the mean of these rates over working life.

Focusing on wealth at retirement, each generation is simulated to accumulate more wealth than its predecessor (with the exception of the 1940s generation, where wealth drops just before retirement). This is driven mainly by higher earnings levels, but also by a relatively less generous state pension system and lower average tax rates. The effect of longer life expectancies is largely offset by assumed later retirement.

However, looking at earlier ages, the picture is much more complicated, due to particular periods of high and low rates of return hitting different generations at different ages. At younger ages, our simulations do suggest a 'stalling' – or in some cases even reversal – of generation-on-generation wealth increases. For example, at age 40, the 1970s and 1980s generations are simulated to hold less wealth than the 1960s generation, while at age 30 the 1970s and 1980s generations are simulated to hold the same level of wealth.

Simulated saving rates are unaffected by differences in earnings between generations. However, our modelling indicates that we could still expect average working-life saving rates to broadly increase from around 5% for the 1930s and 1940s generations to 8% for the 1950s generation and around 11–12% for the 1960s to 1980s generations. This is driven by falling rates of return and, to a lesser extent, the declining generosity of the state pension and lower average personal tax rates.

Despite saving at nearly twice the rate of earlier generations, it is interesting to note that the 1960s to 1980s generations have gross retirement replacement rates of 74–77%, compared with 95–104% among the oldest two generations we consider. This is again driven by falling rates of return and the declining generosity of the state pension.

Discussion

The levels of wealth and saving simulated by our model are sensitive to the assumptions made, and our model does not capture all of the circumstances that differ between

generations. These results should therefore not be compared directly with empirical data on wealth holdings to imply that any generation has or has not saved 'enough'.

However, that said, our modelling does capture many of the important differences in circumstances between different generations, and gives a good indication of how saving behaviour would be expected to be affected by these circumstances. The result that levels of wealth accumulated by retirement would be expected to increase generation-on-generation, but that at younger ages this may not be apparent due to the timing of rates of return on assets, is consistent with the empirical pattern shown in Figure 1. In other words, one does not necessarily need to appeal to differences in preferences or behavioural biases between generations to generate a picture of stalling of wealth accumulation. The different demographic and economic circumstances faced by different generations are able to generate this pattern.

Furthermore, our results indicate that we would expect later born generations to choose lower gross replacement rates in retirement than their predecessors given the circumstances they face, but also that to achieve these they would still need higher average saving rates over their working lives. The implication of this is that caution must be used when seeking to make inferences about younger generations' preparedness for retirement by comparing their wealth levels or projected retirement replacement rates with those of previous generations. Using previous generations as a benchmark may be holding younger generations to an inappropriately high ideal.

4. Implications and conclusions

There are a number of important implications to be drawn from the modelling exercise that has been summarised in this briefing note.

1) Economic circumstances can be expected to have important effects on wealth accumulation and saving behaviour

The overarching theme illustrated by the modelling conducted for this briefing note is that different economic and demographic circumstances can have important implications for wealth levels and saving behaviour. Successive generations have different levels of earnings, have access to different rates of return, are entitled to different amounts from the state pension, and are expected to live for different lengths of time. This may affect how they behave – how long they choose to work, and how they choose to smooth their income between working life and retirement by saving and accumulating wealth.

Empirical analysis that documents differences in observed wealth levels between generations therefore needs to be interpreted carefully. It is not automatically a concern if wealth levels differ or do not differ – the causes and implications are what are important.

2) Comparisons of saving rates and replacement rates are 'safer', but should still be made with care

Generations are often compared in the context of examining their financial preparedness for retirement. In this context, saving rates and replacement rates are 'safer' metrics than levels of wealth, as they are not affected by differences in the earnings levels of different generations.

However, our modelling indicates that even replacement rates would be expected to differ between generations because of the different circumstances they face – in particular due to different returns to saving and state pension systems. The income replacement rates achieved in retirement by older generations should therefore not necessarily be taken as a target to be achieved by generations born more recently.

3) Understanding the drivers of wealth differences is important

Determining the drivers of any wealth differences is important in order to understand the extent to which they are a concern, and what policy action (if any) might therefore be warranted to address them. For example, lower wealth levels that solely arise from lower average earnings would be a concern from a standard-of-living point of view, but are primarily a further manifestation of the problem of low earnings rather than an additional concern in their own right.¹⁷ Lower wealth levels at any given age caused by people retiring later and therefore accumulating wealth more gradually might

¹⁷ One exception to this is at the very low wealth end, where not having a 'buffer stock' of wealth could cause additional problems for those who do not have access to credit at a reasonable price.

not be at all concerning. In contrast, differences in wealth caused by differences in people's understanding of the need to save (not something we model) could be of significant concern.

It is important to note that to the extent that lower wealth accumulation is an appropriate response to changing circumstances (even circumstances that are thought to be undesirable or unfair), getting individuals to save more will incur more costs than it brings benefits, unless policy materially affects the trade-offs individuals face when they save.

4) Variation in the rate of return enjoyed by different generations should not be overlooked

Our modelling indicates that differences in the rate of return would be expected to have a quantitatively important impact on the amount of saving and wealth accumulation that people do. The expected fall in the average rate of return over working life for those born in the 1970s and 1980s, compared with those in previous generations, is simulated in our modelling to result in lower wealth levels and lower retirement replacement rates (despite increasing the saving rate). Though not explicitly captured in our modelling, we would also expect the sharp decline in the availability and generosity of defined benefit pensions to exacerbate these impacts on wealth and replacement rates.

While lower levels of wealth accumulation may be an appropriate response to lower rates of return, this could still be a source of concern from an intergenerational equity point of view. However, it is interesting to note that **recent shifts in the pension saving landscape – the shift in the onus of saving away from the state and onto individuals, coupled with the decline of defined benefit pensions – have resulted in a decline in the pooling of rate-of-return risk between generations.** The fact that more recent generations enjoy less pooling of risk with their predecessors than earlier generations did is a subject worthy of further discussion.

Appendix.

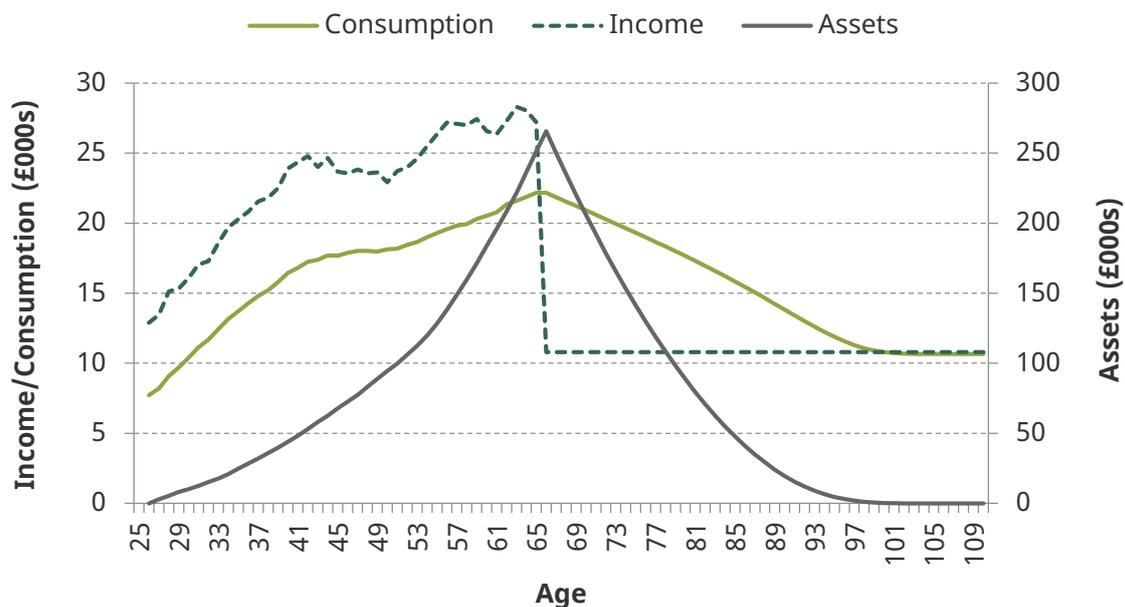
A simple life-cycle saving model

To illustrate the potential effects of different circumstances on saving behaviour and wealth accumulation, we use a stylised economic model. This model follows an individual over their lifetime – from age 26 until death – and each year the individual chooses how much of their income to spend and how much to save. The individual makes this choice given the circumstances they find themselves in – their earnings, the state pension system, the tax system, the number and timing of their children, the retirement age, and the rate of return on saving – and in the context of uncertainty around their future earnings and how long they will live. Individuals are assumed to make saving choices with the objective of smoothing consumption over their life cycle. In particular, this means they accumulate wealth during working life when earnings are high, and draw on this wealth in retirement when only state pension income is received.

We simulate our model 30,000 times for each generation (10,000 for each of three education levels). Each simulation is an individual and, because of different earnings realisations and different timing of death, we end up with 30,000 different life histories. For each individual, the model calculates their best saving choice each period (given their objective of smoothing consumption), and therefore how their assets evolve over the life cycle.

The type of output that is produced by the model is illustrated graphically in Figure 7. This shows, for an example set of circumstances, average income at each age across our 30,000 individuals, and average consumption and assets (given their saving choices) assuming survival to age 95. The profile for consumption is much flatter than that of income (which is comprised of income during working life and state pension in retirement). This is achieved by the individual building up assets during working life and then drawing them down in retirement.

Figure 7. Example model output



We discuss how three summary metrics of saving behaviour are affected by circumstances: (1) wealth levels (at age 50 and retirement); (2) the average saving rate over working life; and (3) the replacement rate defined as average gross income at age 66 divided by average gross income at ages 26–65. These are three metrics commonly used to examine how different generations are ‘faring’.

This model is necessarily an extremely simplified approximation to reality. Notable limitations in our context include individuals not choosing when they retire, there being only one choice of asset and that asset having a fixed known return (in particular, there is no housing or defined benefit pension), individuals having no bequest motive, and there being no behavioural biases. However, keeping these limitations in mind, this model still provides a useful benchmark for how we might expect changes in circumstances to affect individuals’ saving behaviour and retirement resources.

References

Barclays (2016), *Equity Gilt Study: 2016*.

Bozio, A., Crawford, R. and Tetlow, G. (2010), 'The history of state pensions in the UK: 1948 to 2010', IFS Briefing Note BN105, <https://www.ifs.org.uk/bns/bn105.pdf>.

Crawford, R. (2018), 'The use of housing wealth at older ages', IFS Briefing Note BN239, <https://www.ifs.org.uk/uploads/publications/bns/BN239.pdf>.

Crawford, R., Innes, D. and O'Dea, C. (2015), *The Evolution of Wealth in Great Britain: 2006–08 to 2010–12*, IFS Report R109, <https://www.ifs.org.uk/uploads/publications/comms/R109.pdf>.

Crawford, R. and Sturrock, D. (2019), 'Should generations differ in their wealth accumulation?', IFS Working Paper WP19/28, <https://www.ifs.org.uk/publications/14519>.

Cribb, J. (2019), 'Intergenerational differences in income and wealth: evidence from Britain', *Fiscal Studies*, 40, 275–99.

Cribb, J. and Emmerson, C. (2016), 'Workplace pensions and remuneration in the public and private sectors in the UK', *National Institute Economic Review*, issue 237.

Cribb, J., Emmerson, C. and Tetlow, G. (2016), 'Signals matter? Large retirement responses to limited financial incentives', *Labour Economics*, 42, 203–12.

Cribb, J., Hood, A. and Joyce, R. (2016), 'The economic circumstances of different generations: the latest picture', IFS Briefing Note BN187, <https://www.ifs.org.uk/uploads/publications/bns/bn187.pdf>.

Department for Work and Pensions (2017), *Automatic Enrolment Review 2017: Analytical Report*, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_t_data/file/668657/automatic-enrolment-review-2017-analytical-report.pdf.

Financial Conduct Authority (2019), 'Intergenerational differences', Discussion Paper DP19/2, <https://www.fca.org.uk/publication/discussion/dp19-02.pdf>.

Hood, A. and Joyce, R. (2013), *The Economic Circumstances of Cohorts Born between the 1940s and the 1970s*, IFS Report R89, <https://www.ifs.org.uk/comms/r89.pdf>.

Hood, A. and Joyce, R. (2017), 'Inheritances and inequality across and within generations', IFS Briefing Note BN192, <https://www.ifs.org.uk/uploads/publications/bns/bn192.pdf>.

Pensions Regulator (2018), 'The DB landscape: defined benefit pensions 2018', <https://www.thepensionsregulator.gov.uk/-/media/thepensionsregulator/files/import/pdf/db-pensions-landscape-2018.ashx>.

Pope, T. and Waters, T. (2016), 'A survey of the UK tax system', IFS Briefing Note BN09, <https://www.ifs.org.uk/uploads/publications/bns/bn09.pdf>.

Resolution Foundation (2019), *An Intergenerational Audit for the UK: 2019*, <https://www.resolutionfoundation.org/app/uploads/2019/06/Intergenerational-audit-for-the-UK.pdf>.

Roantree, B. and Vira, K. (2018), 'The rise and rise of women's employment in the UK', IFS Briefing Note BN234, <https://www.ifs.org.uk/uploads/BN234.pdf>.

Data references

Office for National Statistics. Social Survey Division. (2018). *Wealth and Assets Survey, Waves 1-5, 2006-2016*. [data collection]. *6th Edition*. UK Data Service. SN: 7215, <http://doi.org/10.5255/UKDA-SN-7215-6>.

University of Essex. Institute for Social and Economic Research. (2010). *British Household Panel Survey: Waves 1-18, 1991-2009*. [data collection]. *7th Edition*. UK Data Service. SN: 5151, <http://doi.org/10.5255/UKDA-SN-5151-1>.

University of Essex. Institute for Social and Economic Research. (2018). *Understanding Society: Waves 1-8, 2009-2017*. [data collection]. *11th Edition*. UK Data Service. SN: 6614, <http://doi.org/10.5255/UKDA-SN-6614-12>.