Office for National Statistics

Article

Estimating defined benefit pension wealth in Great Britain: December 2024

This article provides information on an upcoming development to the methodology used to estimate defined benefit (DB) pension wealth in Great Britain. This article also includes previously published estimates from Round 7 (financial year ending 2018 – 2020) of the Wealth and Assets Survey, updated to illustrate the impact of the methods change.

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1 . Main points

- We have reviewed the methodology used to estimate defined benefit pension wealth published in our Household total wealth in Great Britain release (accredited official statistics), which is derived from the Wealth and Assets Survey (WAS); this is in response to the changing economic landscape, and user feedback.

- All estimates of defined benefit (DB) pension wealth involve making broad assumptions about the future of the economy and people's behaviours; these resulting updates to pension methodology aim to achieve modelling approaches which provide broadly stable and high-quality estimates of pension wealth within a rapidly changing economy.

- We now estimate current values on future pensions promises, both before and after retirement, using the Superannuation Contributions Adjusted for Past Experience (SCAPE) based discount rate, which protects against undue volatility and reflects the stability of DB pension promises for those that hold them.

- Applying the updated model to published data for total private pension wealth in Great Britain financial year ending (FYE) 2018 to 2020 (Round 7) reduces our estimate of median total pension wealth by 16% from £57,000 to £48,000, and mean total pension wealth by 34% from £185,000 to £123,100.

- Changes will be implemented in the upcoming analysis of the WAS data for household total wealth in Great Britain FYE 2020 to FYE 2022 (Round 8), which we plan to publish early next year.

These estimates do not feed into National Accounts and as such do not impact our estimates of GDP.

2 . Overview of defined benefit pensions

We recently commissioned a review into the estimation of defined benefit (DB) pensions by the Government Actuary's Department (GAD) in response to both changes in the economic landscape and stakeholder feedback. This is part of our ongoing commitment to the statistics code of practice, with a core objective to produce quality statistics using the best available methods and recognised standards. Estimates of DB pensions wealth form a core part of accredited official statistics in our Household total wealth in Great Britain: April 2018 to March 2020 bulletin.

The resulting changes bring further stability to pensions wealth estimates and by extension total wealth estimates over time, better reflecting the stability of DB pension promises for those that hold them. Furthermore, method updates incorporate user feedback to ensure that pensions inflation protections associated with typical DB pensions are accurately valued, and a realistic normal minimum pension age is considered when the DB pension valuation is made. Changes are discussed in Section 3: Changing to a methodology based on Superannuation Contributions Adjusted for Past Experience (SCAPE), along with analysis which shows the impact on pension and total wealth. There is no change to the estimates of pensions held in defined contributions (DC) arrangements before retirement. See Section 7: Glossary for definitions of defined benefit (DB), defined contribution (DC), and deferred pensions.

The pensions landscape

The estimate for household wealth is the sum of estimates for physical wealth, net property wealth, net financial wealth and private pension wealth. These estimates are derived using data collected by the Wealth and Assets Survey (WAS) -for more information see our Wealth and Assets Survey quality and methodology information report.

For many components of wealth, such as housing, respondents are asked for the value of their assets. However, pension wealth is less straightforward because of differences across pension types and schemes, and because pensions wealth is the accumulation of a stock of wealth which is typically available around retirement. Most pension wealth falls into two categories: pensions that are DB in nature and pensions that are DC in nature.

In recent decades, many DB schemes provided by private sector employers have closed to accrual of future benefits, meaning members can no longer pay into them, with employers providing DC schemes to new members instead. As a result, most members of DB schemes are either now receiving their pensions, have a deferred DB pension as a source of wealth they can access from retirement or are employed in the public sector.

Most DB schemes are in the public sector; the vast majority of occupational pension benefits provided in the private sector in recent years are DC in nature. DC pension pots are commonly used to purchase an annuity at retirement to provide a guaranteed income for life. Following reforms in 2015, access to pensions wealth became more flexible, such as through an income-drawdown or withdrawal of lump sum amounts.

Estimating pension wealth

Estimates of wealth held in DC pension schemes prior to retirement are based on the reported value of the respondent's pension pot at interview. This means pensions wealth can be estimated for these cases without the need for additional modelling.

However, where pensions wealth prior to retirement is held in DB pension schemes, the WAS methodology uses financial and demographic assumptions to estimate DB pensions wealth by calculating a present value of the future retirement income that has been promised.

To estimate this present value, the pension amounts reported by a respondent at interview need to be multiplied by the following two factors:

1. Pre-retirement: a discount rate factor to reflect the time between age at date of interview and expected age of future retirement – this helps determine the present value of the stream of DB pensions wealth expected to come into payment at retirement age.

2. Post retirement: an annuity factor to convert future pension income payable annually from their expected age of future retirement into a present value at the date of retirement.

Where a pension is already in payment (for example, post-retirement), the DB pensions model is also used to estimate the total pensions wealth but with two simplifications. Firstly, the pre-retirement factor is not required, and secondly, the post-retirement annuity factor is based on current age rather than expected future retirement age.

Methodology history

Methodology for estimating DB pensions wealth has developed continuously over the last two decades, reflecting changes to the pensions landscape. As such, previous WAS rounds have used different financial and demographic assumptions in the model, in line with expert guidance at the time.

Market-based annuity factors have been used to calculate the post-retirement value of DB pensions wealth, including all types of pension wealth where a pension is already in payment, up to and including Round 7 (FYE 2018 to 2020) of the survey. This provided a specific valuation for the pension income promised at the time of interview. It is an estimate of what a respondent would get if they were to sell their current DB pension rights.

Discount rate factors have been calculated using the Superannuation Contributions Adjusted for Past Experience (SCAPE) from Wave 3 to Round 7, which covers the period from July 2010 to March 2020. The SCAPE rate is used to determine employer contribution rates in the valuations of the public service pension schemes. Further details on SCAPE discount rate methodology are available in GAD's Public service pensions schemes bulletin. Replacing a rate based on AA-corporate bond yields, the SCAPE-based discount rate was used to place a present value on DB pensions that had been estimated using the market-based annuity factor. This discount rate incorporated SCAPE rate at the time of interview, and Consumer Prices Index (CPI) at the month of interview.

This choice of discount rate was in keeping with expert guidance at the time. The main objective was to minimise the impact of short-term economic changes on the measured value of DB pension wealth (such as minimising fluctuations in pension wealth between rounds). However, with heightened volatility in market-based annuity factors and inflation rates in recent years, it was appropriate to review the methodology for valuing pension wealth in the WAS. We set out more detail on the review and findings Section 3: Changing to a Superannuation Contributions Adjusted for Past Experience based methodology. Details of previous methodological changes can be found in our Wealth in Great Britain 2010 to 12 technical details release.

3 . Changing to a methodology based on Superannuation Contributions Adjusted for Past Experience (SCAPE)

We commissioned the Government Actuary's Department (GAD) to review the financial assumptions used to model defined benefit (DB) pensions wealth from Round 8 (financial year ending (FYE) 2020 to FYE 2022) onwards. Alongside this report, GAD published the result of their review and a series of recommendations. This paper focuses on the implementation of these recommendations and the impact on official accredited statistics.

A key recommendation from GAD is implementation of the Superannuation Contributions Adjusted for Past Experience (SCAPE) discount rate for modelling both pre-retirement and post-retirement elements of DB wealth, where previously a market-based approach was used for the post-retirement element of the model.

This recommended change in methodology aligns with our objectives to minimise undue volatility in the value placed on future pension benefits given the stable nature of DB pensions. The rationale for this is that the pension holder will not experience volatility in the pension benefits they receive (for instance, in the same way that the formal financial assets they own, such as stocks and shares, may rise and fall with the current economic circumstances) and therefore the estimation of their wealth should not be affected by short term volatility in this regard. Furthermore, a more stable rate such as the SCAPE discount rate will provide greater consistency in pension wealth and total household wealth estimates over time, allowing users to identify trends in the composition of wealth over time more easily.

Using SCAPE allows us to avoid undue volatility by using a long-term forecast of GDP growth. Therefore, the annuity factor used to convert future annual pension incomes into a wealth value will now use a SCAPE discount rate, rather than market-based annuities which present a higher likelihood of introducing short-term volatility to our pensions wealth estimation.

A range of plausible discount rate approaches were covered by the review (further details available), with the SCAPE-based recommendation reflecting our analytical objectives as outlined earlier in this release. Choice of discount rate is likely to impact pension wealth estimations, and overall estimates of total wealth accordingly (more information can be found in Tables 1 to 7).

Other GAD recommendations from the review

In addition to recommending the SCAPE discount rate, GAD have also made the following recommendations, which we will adopt from Round 8 onwards:

- a consistent discount rate should be used in all parts of the model

- the SCAPE discount rate on the last day of a survey cycle should be used to calculate all DB pensions wealth in each survey

- the discount rate used should be expressed in real terms, both before and after retirement, to reflect that DB pensions promises typically include some form of inflation protection both before and after retirement

- the DB pensions wealth model is suitable to value all types of pensions in payment wealth for Round 8

The full rationale for these changes is outlined in GAD's published results and recommendations paper. The use of the DB pensions wealth model to value all pensions in payment wealth will be reviewed at future rounds, as the proportion of pensions in payment wealth relating to DC pensions is expected to grow following changes to the pensions landscape over the last two decades.

We will keep pensions wealth modelling under regular review, in line with GAD recommendations.

Implementing the recommendations

Drawing on GAD recommendations, we will now use SCAPE discounting for both pre-retirement and post-retirement pensions, remove CPI from pre-retirement discounting and will use annuity factors which use SCAPE discounting.

Some assumptions have been made to calculate the SCAPE-based annuities. Firstly, the benefits of the pension promise have a "joint life" element - this means that there is potential for them to be passed on to a surviving partner. The annuity rates are calculated separately for men and for women accounting for differences in life expectancies between males and females. Calculations also assume CPI increases when in payment. Finally, for pensions not yet in payment, the rates consider the age of the survey respondent at the time of interview alongside the age at which they will receive their DB pension - so a valuation will be different for a 25-year-old retiring at 66 years of age and a 60-year-old retiring at 66 years of age.

Additional change to the model

In addition to changes to the financial assumptions in line with GAD recommendations, we have also made one further minor refinement to our model.

Adjusted age of retirement

An additional adjustment has been made for members who are not yet in receipt of their occupational DB pension. Within the Wealth and Assets Survey (WAS) interview the respondent is asked for their earliest age of retirement and this informs the annuity factor adopted for the WAS calculation. However, the question does not specify the age of retirement where the pension will be received in full, which means it is likely some respondents will give a minimum pension age, rather than the normal pensions age, of their occupational DB scheme. From Round 8, the model will set the assumed minimum age of retirement to 60 years for any current occupational pension scheme.

4 . Estimating the impact on defined benefit pension wealth

This updated approach to estimating defined benefit (DB) pensions wealth will be introduced for upcoming Round 8 household total wealth in Great Britain statistics. This change reflects a methods update and there are no current plans to revise the back series. Instead, the discontinuity in time series data will be annotated on charts and data tables from Round 8 onwards.

To help user interpretation, the impact of this upcoming method update on previously published pensions and total wealth figures (Wealth and Assets Survey (WAS) Round 7) is presented in Tables 1 to 7.

Table 1 shows the change the updated methodology would have to average DB pensions wealth, for those who have some pension wealth. Median pre-retirement DB pensions reduced by 9%, while mean wealth reduced by 35%. The lesser impact on median wealth compared with mean wealth is because of the highly skewed nature of the pension wealth distribution. There is a larger decrease for pensions in payment wealth estimates (Table 2) where the median value drops by 43%, while the mean drops by 45%. When combined (Table 3), the median is 27% lower, while the mean is 40% lower.

Table 1: Impact of updated pensions methodology pre-retirement defined benefit (DB) pension wealth
Great Britain, April 2018 to March 2020

Methodology	Median pre-retirement DB pension wealth (£)	Mean pre-retirement DB pension wealth (£)
Published methodology	71,700	194,600
Updated methodology	65,100	126,600
Percentage (%) difference between two methodologies	-9	-35

Source: Wealth and Assets Survey from the Office for National Statistics

Notes

1. Pre-retirement DB pensions include active and retained DB pensions and preserved pension expected from a former spouse or partner. The retained DB pensions only include those that have not been accessed yet. Where pensions have been partly accessed, the respondent gives an estimate of the remaining value of their pension.

2. Calculated for those with some of this type of private pension wealth.

Table 2: Impact of updated pensions methodology on pensions in payment wealth
Great Britain, April 2018 to March 2020

Methodology	Median pensions in payment wealth (£)	Mean pensions in payment wealth (£)
Published methodology	161,400	294,000
Updated methodology	91,900	162,300
Percentage (%) difference between two methodologies	-43	-45

Source: Wealth and Assets Survey from the Office for National Statistics

Notes

1. Calculated for those with some of this type of private pension wealth.

2. Pensions in payment wealth consists of pensions from which individuals are receiving an income.

Table 3: Impact of updated pensions methodology on those with pre-retirement defined benefit (DB) and/ or pensions in payment wealth
Great Britain, April 2018 to March 2020

Methodology	Median households with pre-retirement DB and/or pensions in payment wealth (£)	Mean households with pre-retirement DB and/or pensions in payment wealth (£)
Published methodology	105,700	244,000
Updated methodology	76,800	146,400
Percentage (%) difference between two methodologies	-27	-40

Source: Wealth and Assets Survey from the Office for National Statistics

Notes

1. Calculated for those with some of this type of private pension wealth.

2. Pre-retirement DB pensions include active and retained DB pensions and preserved pension expected from a former spouse or partner. The retained DB pensions only include those that have not been accessed yet. Where pensions have been partly accessed, the respondent gives an estimate of the remaining value of their pension.

Looking at pension wealth overall, applying the updated methodology lowers previously published estimates of private pension wealth for Round 7 (Table 4), with both mean and median showing a reduction (16 and 34 %, respectively).

Table 4: Impact of updated pensions methodology on total private pensions wealth
Great Britain, April 2018 to March 2020

Methodology	Median households with private pension wealth (£)	Mean households with private pension wealth (£)
Published methodology	57,000	185,500
Updated methodology	48,000	123,100
Percentage (%) difference between two methodologies	-16	-34

Source: Wealth and Assets Survey from the Office for National Statistics

Notes

1. Calculated for those with some private pension wealth.

While the updated methodology has a similar impact on the pension wealth calculated for men and women (Table 5), there are different effects when looking at the impact upon different age groups. Mean pension wealth increased for those who are under 34 years of age, yet it decreased for those who are older, reducing by 47% for those aged 85 years old or over (Table 6). However, younger people will have built up less pension wealth over their life and are less likely to be a member of a DB pension scheme than prior generations, thus this age group is less impacted by the change to methodology.

Table 5: Impact of updated pensions methodology on private pension wealth, by sex
Great Britain, April 2018 to March 2020

Methodology	Male	Female
Published methodology for median private pension wealth (£)	75,000	43,500
Updated methodology for median private pension wealth (£)	63,900	37,400
Published methodology for mean private pension wealth (£)	232,700	135,200
Updated methodology for mean private pension wealth (£)	154,100	90,100
Median private pension wealth percentage (%) difference between two methodologies	-15	-14
Mean private pension wealth percentage (%) difference between two methodologies	-34	-33

Source: Wealth and Assets Survey from the Office for National Statistics

Notes

1. Calculated for those with some private pension wealth.

Table 6: Impact of updated pensions methodology on private pension wealth, by age
Great Britain, April 2018 to March 2020

Methodology	16 to 24 years	25 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 to 74 years	75 to 84 years	85 years and over
Published methodology for median private pension wealth (£)	2,700	9,500	30,600	81,200	189,700	190,000	100,500	63,700
Updated methodology for median private pension wealth (£)	3,000	10,500	31,400	72,900	133,800	120,800	62,700	31,900
Published methodology for mean private pension wealth (£)	8,800	25,500	81,700	207,300	365,100	344,000	174,100	102,300
Updated methodology for mean private pension wealth (£)	12,200	28,200	69,900	141,100	224,900	213,700	110,500	53,900
Median private pension wealth percentage (%) difference between two methodologies	11	11	3	-10	-29	-36	-38	-50
Mean private pension wealth percentage (%) difference between two methodologies	39	11	-14	-32	-38	-38	-37	-47

Source: Wealth and Assets Survey from the Office for National Statistics

Notes

1. Calculated for those with some private pension wealth.

Table 7 shows the estimates for total household wealth in Great Britain for Round 7 with the original and updated methodology applied. Total wealth is the sum of pension wealth, physical wealth, net financial wealth and net property wealth estimated using the WAS. Applying the updated methodology reduces published estimates of median total wealth in Great Britain for financial year ending (FYE) 2018 to FYE 2020 by 7% and mean wealth by 14%.

Table 7: Impact of updated pensions methodology on the change in household total wealth
Great Britain, April 2018 to March 2020

Methodology	Median household total wealth (£)	Mean household total wealth (£)
Published methodology	302,500	576,000
Updated methodology	282,200	493,900
Percentage (%) difference between two methodologies	-7	-14

Source: Wealth and Assets Survey from the Office for National Statistics

Notes

1. Household total wealth comprises pensions wealth net financial wealth, net property wealth, and physical wealth

5 . Additional analysis on the impact of changes

Additional analysis showing the effect of simply removing Consumer Prices Index (CPI) from Superannuation Contributions Adjusted for Past Experience (SCAPE) discounting and adjusting a normal pension age to a minimum of 60 years are shown in the accompanying data tables.

6 . Future developments

Round 9 of the Wealth and Assets Survey (WAS) covering the financial year ending (FYE) 2022 to 2024 saw further developments to the pensions questions to improve the questionnaire experience for respondents. These will be outlined after the release of Round 8 estimates.

With the evolving pensions landscape, we will keep the data collection and method for modelling pensions wealth under review. Future plans include:

- assessing other aspects of the model such as the inclusion of lump sums within the model

- assessing whether the model can account for now common elements of current workplace pensions, such as pensions promised income, based on career average earnings

7 . Glossary

Deferred pensions

An occupational pension where the member is no longer active (for example, through change of employment or closure of scheme), but has not yet accessed their benefits. These may also be referred to as retained or preserved pensions, with benefits payable on retirement.

Defined benefit scheme

An occupational pension scheme in which the rules specify the rate of benefits to be paid. The most common defined benefit scheme is a salary-related scheme in which the benefits are based on the number of years of pensionable service, the accrual rate and either the final salary, the average of selected years' salaries or the best year's salary within a specified period before retirement.

Defined contribution scheme

A pension scheme in which the benefits are determined by:

- the contributions paid into the scheme

- the investment return on those contributions

- the type of annuity (if any) purchased upon retirement

It is also known as a money purchase scheme. Defined contribution pensions may be occupational, personal or stakeholder pensions.

Pension scheme

A legal arrangement offering benefits to members upon retirement. Schemes are provided by employers and are differentiated by a wide range of rules governing membership eligibility, contributions, benefits and taxation. Pension schemes in the private sector have trustees. Personal pensions and stakeholder pensions offered by insurance companies may also be referred to as schemes, but technically they are individual accounts rather than schemes.

Further definitions of pensions terms are available in our Employee workplace pensions glossary.

8 . Related links

Household total Wealth in Great Britain: April 2018 to March 2020
Bulletin| Released 7 January 2022
Main results of household wealth from the seventh round of the Wealth and Assets Survey covering the period April 2018 to March 2020.

Saving for retirement in Great Britain: April 2018 to March 2020
Bulletin | Released 17 June 2022
Private pension wealth in Great Britain, April 2018 to March 2020, taken from the seventh round of the Wealth and Assets Survey.

9 . Cite this article

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