The DC Future Book 2025: The Essential Guide to the Latest DC Market Data



A Pensions Policy Institute (PPI) Project

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About this year's edition

This year marks the eleventh edition of the Pensions Policy Institute's DC Future Book. In keeping with the evolving pensions landscape, this edition takes a new format. Rather than a full report, we are presenting our analysis as a focused slide deck, designed to make the key trends, data, and insights on the Defined Contribution (DC) market more accessible and easier to use.

The Future Book remains the trusted annual reference point for data and commentary on DC pensions. This year's streamlined output ensures that the core analysis continues to be available while paving the way for new insights and approaches in future editions.

Contents & key messages

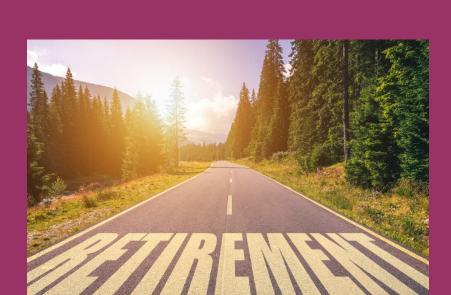


Structure of the slide deck and takeaways

- What does the DC landscape look like?
- How might the DC
- landscape evolve in future?

- 11.3 million employees had been automatically enrolled by June 2025. Yet, 11.8 million workers remain ineligible, for the second year in a row.
- Trust-based DC schemes now hold 88% of active memberships, compared to 60% in 2023/24.
- According to the PPI DC Asset Allocation Survey 2025, most master trust members (73%) and GPP members (64%) remain invested in their schemes' main default arrangements. Before de-risking, **defaults allocate most assets to listed equities**: around **70% in master trusts** and **80% in GPPs**. After de-risking, equity exposure falls to around one-third, with greater weighting to bonds.
- Median DC pot sizes have risen steadily to £15,000 in 2024, while total DC assets have quadrupled since 2015, reaching £1.2 trillion.

What does the DC landscape look like?



The following slides provide a picture of the current DC landscape, including data on automatic enrolment, saving levels, investment strategy, access to savings, and advice and guidance.

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Employees and automatic enrolment

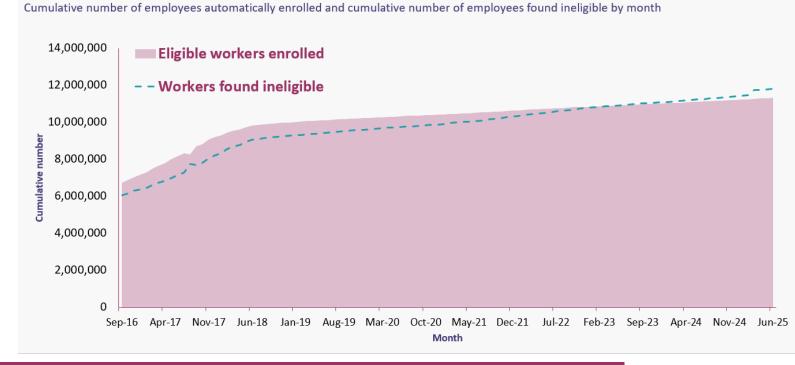


11.3 million employees had been automatically enrolled by June 2025

The number of workers found ineligible for automatic enrolment due to age or earnings had risen to around 11.8 million, now exceeding the number of eligible employees. In addition to the 11.3 million employees who had been automatically enrolled by June 2025, a further 12.3 million employees were already active members of a qualifying scheme on the staging date. 1

The number of employees that have been automatically enrolled is less than the number that have been found ineligible, at 11.8 million





Employers and automatic enrolment

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More than a million employees were automatically re-enrolled by June 2025

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Cumulative number of eligible jobholders automatically re-enrolled by month



As of June 2025, **1.05 million employees** had been automatically re-enrolled, growing from **1.02 million** in June 2024.¹

Every three years, employers must reenrol eligible staff who have stopped saving, giving them a new opportunity to opt out if they wish, and helping to sustain participation in workplace pensions. There is a clear relationship between earnings and pension saving levels. Employees with lower earnings are significantly more likely to save at the automatic enrolment (AE) minimum levels. Nearly half (48%) of those earning £10,000 - £20,000 per year contribute to AE minimums, compared to only 10% of those earning over £70,000. Similarly, around 74% of low earners save 8% or less of their total pay into a pension, whereas this drops to just 25% for those earning above £70,000.³

The proportion of employees saving at AE minimum levels is greater among lower earners

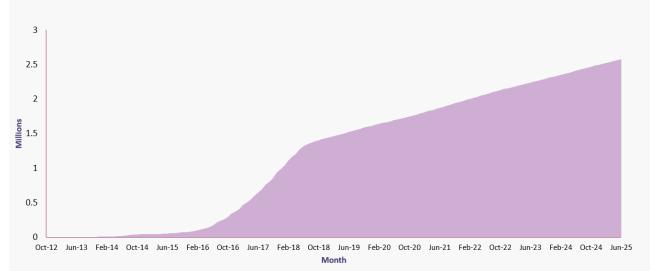
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Employees in DC schemes total contribution levels by earnings, derived from the ONS ASHE, GB, 2023



Over 2.6 million employers had automatically enrolled their employees by June 2025

Employers who have completed automatic enrolment declarations of compliance by June 2024 (cumulative)



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Employers and automatic enrolment

By June 2025, **over 2.6 million employers** had automatically enrolled their employees, as a result of new employers joining the market.¹

Scheme type

88% of active memberships are now within trust-based DC schemes

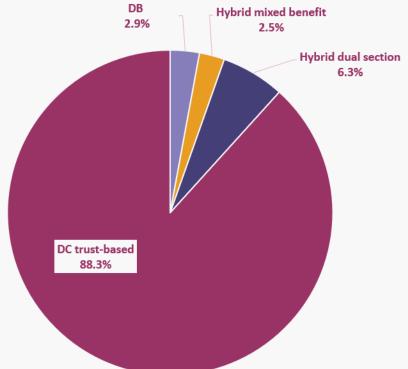
The provision of DB schemes has dwindled in the private sector, and private sector employers are much more likely to automatically enrol their employees into DC schemes.

The use of DC schemes, and especially Master Trusts, has risen dramatically with automatic enrolment, with 88% of active memberships now in trust-based DC schemes.⁴

In 2024/25, 88% of active memberships were in trust-based DC schemes







Contributions

Active memberships:

employees currently contributing to a workplace pension



Contribution rates have shown little movement since the last DC Future Book, remaining close to 4% for both employees and employers.

DC investment



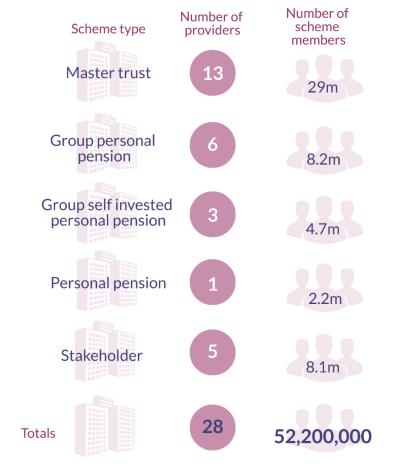
The schemes in the PPI DC Asset Allocation Survey manage around 52 million pots worth £379.8 billion in total

This next section explores how assets are allocated within DC pension schemes' investment strategies.

The following data is based on responses to the PPI DC Asset Allocation Survey 2025. The participating schemes collectively manage 52 million pots with aggregate assets under management (AUM) of around £379.8 billion.⁵

The PPI DC Asset Allocation Survey is an annual online survey that collects data on size, charges and asset allocation across the DC universe. This year's survey was carried out from July to October 2025. Responses to the DC Asset Allocation Survey have become increasingly concentrated in large master trust schemes, reflecting shifts in the DC landscape. All data from the survey is self-reported by participating schemes and is therefore dependent on the accuracy of the data provided, as well as the sample of schemes that respond each year. While many of the same schemes respond to the survey annually, changes in respondents' year-to-year can impact the trends identified in the data.

PPI DC Asset Allocation Survey 2025 responses

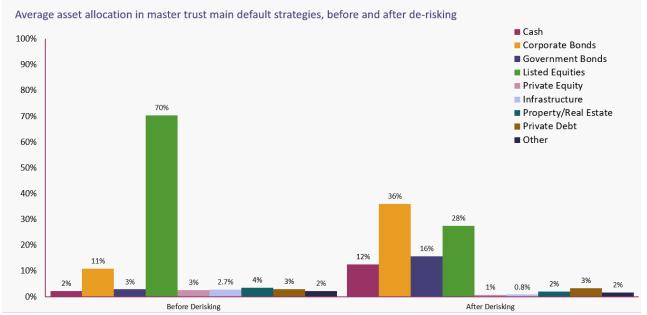


DC investment: Master Trusts

Members of Master Trusts are more likely to be invested in their scheme's main default fund than members of singleemployer schemes.

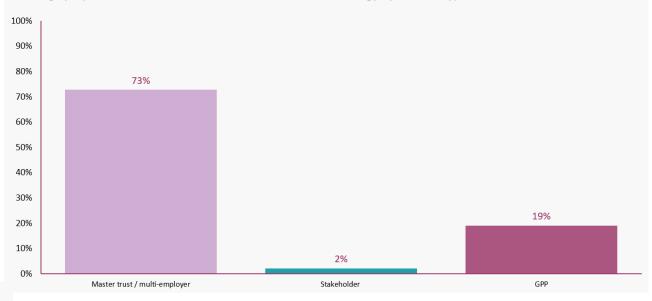
The majority (73%) of Master Trust members are invested in their main default strategy. In single-employer schemes, a smaller share of members are invested in the largest default, likely reflecting the greater range of default funds offered across employers. In both cases, the proportions reported this year are lower than in previous editions, primarily due to sample size.⁵

Master trust defaults shift from equities towards bonds and cash after de-risking



Members of master trusts are much more likely to be in the main default strategy than members of stakeholder and GPP schemes

Average proportion of members in scheme's main default strategy by scheme type, 2025



Master Trust defaults shift from equities towards bonds and cash after de-risking

Before de-risking, Master Trust default strategies allocate the majority of assets (70%) to listed equities, with smaller allocations to bonds (14%) and cash (2%). After de-risking, the allocation to equities falls to 28%, while exposure to corporate and government bonds rises substantially to 52% combined, and cash holdings increase to 12%.

Allocations to alternative asset classes such as private equity, infrastructure, property, and private debt remain modest (9% of portfolios after de-risking).⁵

DC investment within Master Trusts



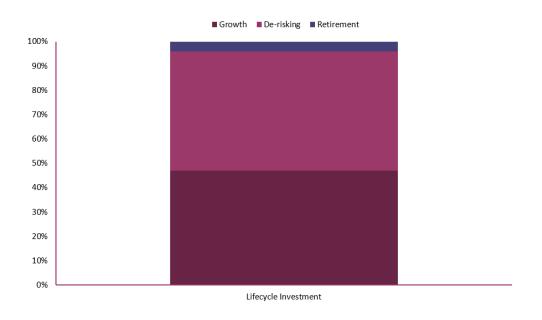
On average, Master Trust assets are evenly split between the growth and de-risking phases, at 47% and 49% respectively, with a further 4% held by members who have reached or passed retirement. This distribution reflects the design of Master Trust glidepaths, which typically begin de-risking around 10 to 15 years before members' target retirement age. Schemes participating in the survey report an average de-risking period of 13 years, indicating a gradual transition from growth-oriented to saving-preserving investments as members approach retirement.⁵

Respondents placed greater emphasis on environmental and governance factors than on social ones.

However, the number of respondents able to provide a clear ranking was small, and results should therefore be interpreted with caution.

Master trust assets are broadly balanced between growth and de-risking phases

Average asset allocation in master trust main default strategies between growth, de-risking and post-retirement, 2025



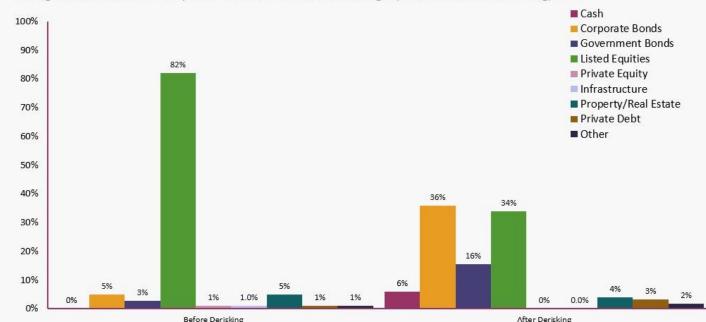
DC Investment: Contract Based

Members of GPP schemes are less likely to be invested in their scheme's main default strategy.

Around two-thirds (64%) of GPP members are invested in their scheme's main default arrangement, compared with over 70% of members in master trusts (as seen in slide 10). Participation among stakeholder and GSIPP members in default schemes is notably lower, at around 20% and 10%, respectively. Contract-based default portfolios remain dominated by listed equities, with limited allocations to bonds, property and alternatives.⁵

Contract-based defaults (GPPS, GSIPPs) shift from equities towards bonds and cash as savers approach retirement.





Respondents placed greater emphasis on environmental and governance factors than on social ones.

However, responses on ESG priorities among contract-based providers were limited and inconsistent.

Contract-based defaults (GPPS, GSIPPs) shift from equities towards bonds and cash as savers approach retirement.

Before de-risking, contract-based default strategies allocate most assets (around 80%) to listed equities, with smaller allocation to bonds (around 8%) and minimal cash holdings. After derisking, equity exposure falls to about one-third, while allocations to corporate and government bonds rise to just over half of assets (52%), and cash holdings increase slightly (6%). Allocation to alternative assets such as property, infrastructure and private debt remain modest, together accounting for less than 10% of portfolios after de-risking.⁵

DC saving levels



Median DC pot sizes were £15,000 in 2024

Between 2010 and 2018, the median DC pot size decreased from £15,000 to £9,300. Median pot sizes began to grow from 2018 onwards, reaching £15,000 in 2024.

Aggregate assets across all DC savers collectively have increased dramatically since AE. Between 2015 and 2024, aggregate assets in DC grew from £324 billion to £1.2 trillion. The strong investment returns from certain asset classes, such as equities, from 2009 to 2021, would also have been a contributory factor to the growth of DC assets.

Median DC pot sizes have started increasing as minimum contributions levels have increased and members have spent a longer time enrolled

Median DC pot size between 2006 and 2024 in UK for people aged 16 and over (includes both deferred and active savers)



Accessing DC savings in retirement



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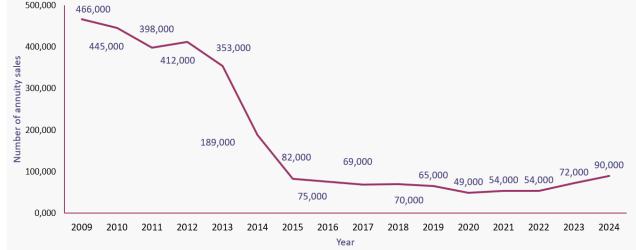
Annuities

Annuity sales have continued to grow in recent years, reaching **89,600** in **2024**, the **highest level in a decade**, up from 72,000 in 2023 and 54,000 in 2021.⁶

Annuity sales have risen considerably, reaching their highest level since 2017

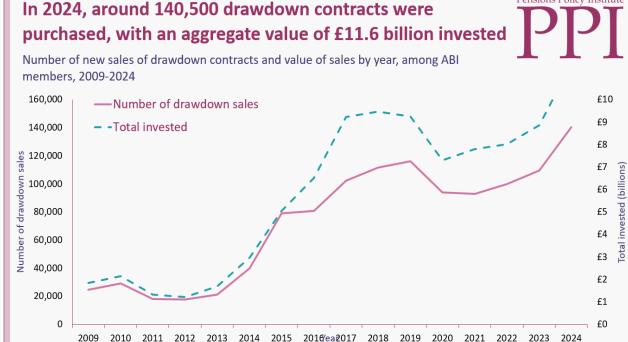


Number of annuities sold by ABI members by year, 2009-2024



Income Drawdown

Annual drawdown sales increased by nearly **30% in 2024**, rising to **140,500** from 109,700 the previous year, continuing the post-pandemic growth trend.⁷



Accessing DC savings in retirement



Drawdown investment pathways were introduced in February 2021 and require non-advised drawdown customers to make a decision about how they intend to access their pension pot in the near future.⁷

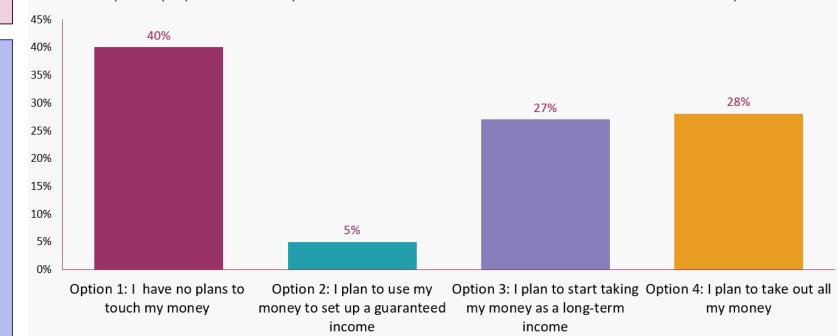
By Q4 2024, 47% of drawdown customers used investment pathways, 3% chose to self-select investments, and 49% remained in their existing options. As the chart shows, among those using pathways, most planned either to leave their money invested or withdraw it in whole within five years, while only a quarter expected to start taking a flexible income in that period.⁷

Drawdown Investment pathways

Only a quarter of investment pathway users said that they plan to start taking their money as a long-term income in the next five years



Investment pathways options selected by non-advised drawdown consumers on intentions within the next five years



Accessing DC savings in retirement

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Lump Sums

Both full and partial withdrawals have increased

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Number of full and partial cash lump sum withdrawals made from ABI members by financial year



In 2023/24, full withdrawals rose to 296,000, up from 273,000 in 2022/23, while partial withdrawals increased to 302,000, from 285,000 the previous year.

In the first half of the 2024/25 financial year (April to September), nearly 150,000 pots were fully withdrawn through a lump sum. Full-year data for 2024/25 is not yet available, but if withdrawal rates remain stable compared to the first half of the year, this would mean an increase to around 300,000 pots fully withdrawn.⁷

DB transfers



Main Risks: DB to DC transfer

Given the risks involved, anyone transferring a DB entitlement worth £30,000 or more is required to take regulated advice



Individual Risk

Where people transfer out of a DB scheme when it is not in their best financial interest.



Scheme Risk

Where substantial transfers out of DB schemes could cause schemes to change or review their investment strategies. In some cases, transfers out could help scheme funding through the reduction of ongoing liabilities.

Although pension freedoms apply to DC pensions only, some DB members can transfer their benefits to DC schemes though a Cash Equivalent Transfer Value (CETV). Transfers rose after pension flexibilities were introduced but have since declined, from 7,000 in 2023/24 to 6,000 in 2024/25. Because of the risks involved, anyone transferring a DB entitlement worth £30,000 or more must now take regulated financial advice.8

Advice and Guidance

Take-up of Pension Wise guidance. 9

- Established alongside the 2015 pension flexibilities, Pension Wise provides free, impartial guidance for those aged 50+ with DC savings and now sits within the Money and Pensions Service (MaPS).
- New regulations introduced in June 2022 require pension providers to give members accessing their pension pots a 'stronger nudge' towards Pension Wise's guidance services, including offering to book a Pension Wise appointment on the member's behalf. 10
- The FCA and HM Treasury's ongoing Advice-Guidance Boundary **Review (AGBR)** aims to enable more tailored support than Pension Wise can offer without triggering the full requirements of regulated advice, widening access for those currently underserved.
- Both the stronger nudge requirement and ongoing policy developments will influence how individuals engage with guidance services and broader support in the future.



Take-up of Pension Wise guidance



Telephone

Face-to-Face



There were around **162,000** telephone appointments, compared to **170,000** in the previous year.

There were **7.000** face to face appointments, compared to 11.000 in the previous year.

There is a significant gap between the number of appointments arranged and appointments attended, both for face-to-face and telephone.

telephone appointments arranged

face-to-face appointments

In addition to appointments, self-serve journeys (when someone uses the Pension Wise website to get guidance about their pension options without speaking directly to an adviser) were also completed

70.400 self-serve journeys were completed, compared to

78.400 in the previous year.

Customer satisfaction rate

satisfaction rate among those who had telephone

of telephone customers the service.

of self-serve customers recommend

the service.

Advice and Guidance

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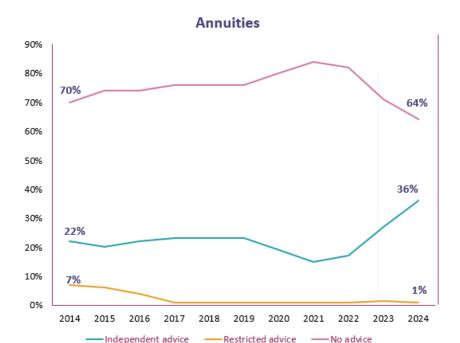
The number of people seeking independent advice when buying annuities has increased substantially

2024 saw a substantial increase in the proportion of people taking independent advice for annuities, rising from **27% to 36%**. In contrast, the use of independent advice in drawdown is decreasing, falling from **44% to 40%**, while the proportion seeking no advice increased from **40% to 47%**.

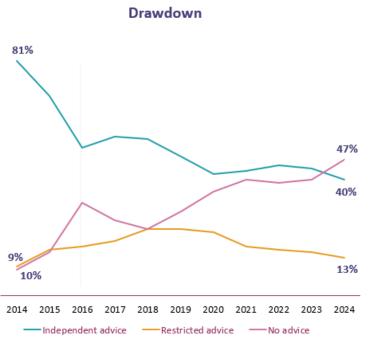
Purchasing retirement income products without the use of advice or guidance increases the risk that individuals will make sub-optimal decisions for meeting their income needs in retirement.

The proportion of individuals using independent advice to purchase annuities has increased by 9 percentage points, however use of advice in drawdown remains stable

New annuity and drawdown contracts sold, by level of advice used, 2014-2024, ABI members







Summary of key findings



Automatic enrolment and coverage

11.3 million employees had been automatically enrolled by June 2025. Yet, 11.8 million workers remain ineligible, now exceeding those enrolled.

Scheme types and contribution levels

Trust-based DC schemes now hold 88% of active memberships, but average contribution rates have stalled at around 4% each both for employers and employees.

DC investment patterns

Assets managed by DC schemes have grown to nearly £380 billion across 52 million pots. Most members remain in default funds, which typically shift from around 70–80% equities before de-risking to roughly 30% after.

Allocations to alternative assets remain limited, and ESG priorities are broadly consistent with previous years (although responses to this segment of the DC Asset Allocation Survey are limited).

Summary of key findings



DC saving levels

Median DC pot sizes have risen steadily to £15,000 in 2024, while total DC assets have quadrupled since 2015, reaching £1.2 trillion. Despite this growth, balances remain modest for many savers relative to future income needs.

Accessing savings in retirement

Annuity sales reached 89,600 in 2024, the highest in a decade, while drawdown sales rose 30% to 140,500. Full and partial withdrawals also continue to increase, highlighting ongoing demand for flexible access to savings.

DB transfer activity has declined in comparison with last year.

Advice and guidance

Advice use is shifting. In 2024, the share of annuity purchases with independent advice rose from 27% to 36%, while advice for drawdown fell from 44% to 40%, and those taking no advice increased to 47%. These trends underline persistent gaps in retirement guidance.

How might the DC landscape evolve in future?



Explores how the DC landscape might evolve in the future both for individuals and on an aggregate level, using PPI modelling.

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The evolution of the DC market depends on many factors



The analysis on the following slides explores how a continuation of current trends in DC saving could affect the membership numbers and the aggregate value of DC scheme assets in the next 20 years.

Explanation of the modelling

This section of the slide deck uses the PPI suite of models and data from the Office for National Statistics' (ONS) Wealth and Assets Survey (Round 7), to explore how DC assets may change and grow in the future under the assumption that current trends continue. The next three slides also set out the potential distribution of DC assets, under a range of possible future economic scenarios and based on historical data. The future value of DC assets depends on many variables:

- Employee behaviour participation and contribution levels
- Employer behaviour contribution levels, scheme choice, remuneration decisions
- Industry behaviour charges, investment strategies, default offerings, new scheme development (e.g., Collective Defined Contribution (CDC) schemes)
- Economic, demographic and financial market effects market performance, interest rates, inflation, and the age and size of the working population
- Policy changes taxation, changes to minimum pension age, introduction of new scheme types, or a policy of auto-escalation and/or
 opting down of contributions under automatic enrolment

The model outputs should be viewed as an illustration of a range of potential scenarios arising from current trends, and not a prediction of the future.

How might scheme membership develop in the future?

Under automatic enrolment, employers can use an existing qualifying pension, set up their own DB, DC, or hybrid scheme, or use a third-party DC provider.

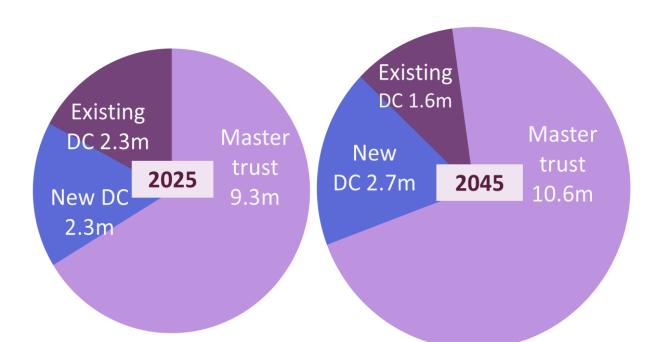
Assumptions

The following analysis is based on the assumptions that:

- All eligible workers are automatically enrolled and 15% opt out or cease contributing after the opt-out period has expired, before accruing meaningful amounts of assets.
- Of newly enrolled workers:
 - 80% are enrolled into a master trust scheme
 - 20% are enrolled into a non-master trust, automatic enrolment DC scheme.¹¹
- The displacement of members, leaving one type of scheme and entering another (as a result of movements in and out of the labour market, or between jobs) results in roughly the same proportions of the workforce in different types of schemes.
- New members of DC schemes, who may be leaving DB schemes or be newly automatically enrolled, are split in the proportions outlined above between automatic enrolment and workplace DC schemes which pre-dated automatic enrolment.

In 20 years there could be around 10.6 million active members in master trust schemes

Active workplace DC by scheme members in 2025 and 2045





Current 45–54-year-olds could have smaller pots at SPa than people approaching retirement, and the generation behind them



If current contribution patterns continue, today's 45- to 54-year-olds are projected to have smaller DC pension pots at State Pension age than both older and younger cohorts. Median pot sizes in 2025 earnings terms are estimated at £62,000 for those aged 45 to 54, £68,000 for 55 to 64s, and £72,000 for 35 to 44 year-olds.



The low average levels of DC pension savings that people aged 45-54 will accrue over the next few years means that many will be mainly dependent in retirement on income from the State Pension, State benefits and any DB pension, or non-pension savings, they have.

Assumptions

The following analysis is based on the assumptions that:

- Those currently saving into a workplace DC pension (trust- or contract-based) continue saving at their current level and continue contributing, with their employer, in the same proportions.
- Those who are not currently saving, but are eligible, are automatically enrolled and do not opt out.
- Before charges, investments yield a nominal average annual investment return of 6%.¹²
- Earnings increase by 3.5% on average per year over the course of the projection.¹³
- Annual Management Charges (AMCs) range between 0.5% and 0.75% depending on scheme type. These are the member-borne charges, including administration and investment costs.

Economic assumptions are based on Office for Budget Responsibility (OBR) projections appropriate to the projection period.¹⁴

Current 45-54 year-olds could have smaller pots than people approaching retirement and the generation behind them



Distribution of pension pot sizes at State Pension age for different cohorts (2025 earnings terms)



How might the aggregate value of private sector DC assets grow in the future?



Assuming that current trends continue, the aggregate value of private sector workplace DC assets could grow from around £1.2 trillion in 2025 to around £2.2 trillion in 2045. The aggregate value of assets is sensitive to economic performance. If the market performs very poorly, DC assets could stagnate, reaching around £2 trillion by 2045, but in a very positive market performance scenario, DC assets could

grow to around £4.1 trillion by 2044.

Assumptions

The following analysis is based on the assumptions that:

- All eligible employees are automatically enrolled and existing savers remain saving.
- 15% of automatically enrolled savers opt out or cease contributing, before accruing any meaningful assets.
- Employee/employer contributions vary by scheme type:
 - Those in master trusts and other automatic enrolment DC schemes make contributions with their employers based on band earnings.
 - Existing savers continue contributing at the same rates, on total earnings (if applicable).
- Investment scenarios are a product of the PPI's Economic Scenario Generator (ESG), which uses data from Bloomberg. Long-term median rates are taken from the OBR's FSR.
- Median nominal investment return is dependent on pension scheme and varies between 5.5% and 6%.¹²
- · AMCs vary by scheme.

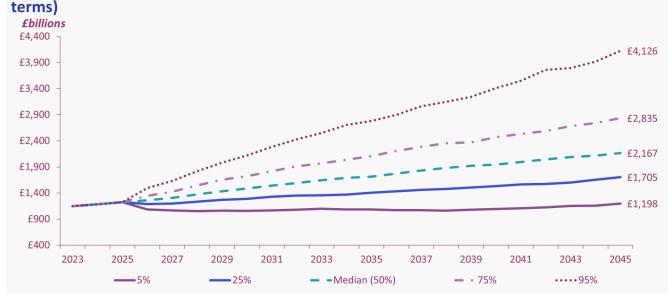
Economic assumptions are based on long-term OBR projections appropriate to the projection period.

By 2045, total aggregate assets in DC schemes and personal pensions could grow to around £2.2 trillion (median outcome), compared to £1.2 trillion in 2025

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Aggregate value of DC assets in workplace and individual contracts in the UK, by year, under 1,000 randomly generated economic scenarios (2025 earnings



Employee and employer behaviour, and Government policy will all affect the aggregate value of DC pension schemes in the future



The aggregate value of private sector workplace DC schemes will vary, not just as a result of economic fluctuations, but also as a result of employee and employer behaviour, and Government policy. There are a wide range of possible changes in market conditions, pensions policy and saving behaviour that could materialise in future, and each would have a different effect on the aggregate value of DC assets and the value of a member's pot at retirement.

A wide range of policy changes are scheduled to unfold over the next five years, reflecting the Government's ambition to improve outcomes for DC savers. If implemented as planned, the Pensions Schemes Bill and associated regulations could introduce significant changes to scheme structure, governance, and retirement support. These include the introduction of new requirements around guided retirement, value for money (VfM), and scheme consolidation. Alongside this, reforms to the advice and guidance boundary aim to improve access to personalised support without triggering regulated advice. Broader system initiatives, such as the relaunch of the Pensions Commission and the live launch of Pensions Dashboards, signal a wider focus on adequacy, engagement and sustainability. However, the delivery of this ambitious reform agenda will depend on legislative progress, regulatory capacity, and industry readiness over the coming years.

changes in the next five years 2025

Timeline of relevant policy

Pension Schemes Bill introduced

- Launch of second stage of Pensions Commission + State Pensions age review
- FCA to publish Advice-Guidance Boundary Review

2026

- Pension Schemes Bill expected to receive Royal Assent
- FCA Targeted Support rules to be implemented to improve access to simplified guidance
- Pensions Dashboards to go live with provider connections
- DWP & FCA to publish rules and regulations for **Guided Retirement**

2027

- Master Trusts required to offer guided retirement options for members
- Value for Money (VfM) regulations expected to take effect

2028

- **VfM assessments** to begin across pension schemes
- Contractual Override and Internal Default Consolidation processes to come into force to support scheme efficiency and member outcomes
- Other DC schemes (non-MTs) required to offer guided retirement options

2029

• Annual VfM data publication and assessments to continue

2030

- Deadline for main default funds of MTs and GPPs to reach £25 billion in assets under management
- Default pension funds required to invest a minimum of 5% in UK **productive finance** to support growth and long-term returns, as set out in Mansion House Accord

References



The data presented in this slide deck reflects the most recent information available from each source. Due to differing collection periods and publication cycles, some datasets refer to 2024 while others reflect 2025. All figures are, however, the latest available at the time of publication.

A glossary for all the technical terms used within this slide deck can be found here: 20230125-pensions-glossary-final.pdf

- (1) The Pensions Regulator (TPR) (2025) Automatic enrolment declaration of compliance report. Available at: <u>Automatic enrolment declaration of compliance report | The Pensions Regulator</u>
- (2) GOV.UK (2025) Workplace pension participation and savings trends of eligible employees: 2009 to 2024. Available at: Workplace pension participation and savings trends of eligible employees: 2009 to 2024 GOV.UK
- (3) DWP (2025) Analysis of Automatic Enrolment saving levels. Available at: Analysis of Automatic Enrolment saving levels GOV.UK
- (4) The percentage of DC contract-based schemes is not included in this year's edition, as the data has not been updated since 2022/23 and is no longer included in TPR statistics as of 2025. For earlier figures on contract-based schemes, please refer to previous editions. Occupational defined contribution landscape in the UK 2024 | The Pensions Regulator
- (5) This infographic shows the number of schemes that responded to the PPI DC Asset Allocation Survey 2025 and the number of members these schemes reported. It is not representative of the full DC market.
- (6) Association of British Insurers (ABI) (2015) [Press release, 3 November 2015] "£4.7 billion paid out in first six months of pension freedoms"
- (7) The data on access to savings in this report uses information provided by Association of British Insurers (ABI) members and therefore does not cover the full market. However, the data provides a picture of the overall trends in accessing DC savings.
- (8) Financial Conduct Authority (2025) Retirement income market data 2024/25. Available at: Retirement income market data 2024/25 | FCA

References



The data presented in this slide deck reflects the most recent information available from each source. Due to differing collection periods and publication cycles, some datasets refer to 2024 while others reflect 2025. All figures are, however, the latest available at the time of publication.

A glossary for all the technical terms used within this slide deck can be found here: 20230125-pensions-glossary-final.pdf

- (9) Money & Pensions Service (2025) MoneyHelper pension take up dashboard. Available at: https://maps.org.uk/moneyhelper-pension-take-up-dashboard/. These figures differ from those reported in previous editions of The DC Future Book as previously data was only publicly available on the number of appointments arranged, which is higher than the number actually attended. This year's edition uses attendance data which is available alongside arranged data on the MaPS website.
- (10) DWP (2022) Government response: Stronger Nudge to pensions guidance [Consultation outcome]. Available at: <u>Government response:</u> <u>Stronger Nudge to pensions guidance GOV.UK</u>
- (11) Based on information about scheme allocation from The Pensions Regulator (TPR) does not account for opt-ins or ineligible workers who are automatically enrolled.
- (12) A blend of OBR returns based on an asset mix to represent typical pension portfolios. The long-term economic assumptions are based on the OBR Fiscal Sustainability Report (FSR) (July 2020)
- (13) Based on OBR projections from the EFO (2023)
- (14) See the appendix for further detail on assumptions

Acknowledgements



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Annex

Modelling Appendix



The modelling for this slide deck considers the projection of an individual using the PPI's Suite of Pension Models, and a stochastic approach of economic assumptions. The economic scenarios are generated using the PPI's Economic Scenario Generator. The Models used are detailed below. Results are presented in 2025 earnings terms.

The pensions system

The pension system modelled is as currently legislated. The triple lock is assumed to be maintained. Individuals are assumed to be members of a Defined Contribution (DC) occupational pension scheme.

General assumptions

Investment returns are modelled stochastically with curves generated by the PPI's Economic Scenario Generator (ESG). 1,000 scenarios were produced providing values for equity returns, bond returns, cash returns, Consumer Prices Index (CPI) and earnings increases each year for each scenario.

Other economic assumptions

Other economic assumptions are taken from the OBR's Economic and Fiscal Outlook (for short-term assumptions) and Fiscal Sustainability Report (for long-term assumptions).

Asset allocation

Unless otherwise specified, asset distributions are assumed to be 56.7% invested in equities, 33.3% invested in bonds and 10% in cash. These assumptions are consistent with those used across the PPI Modelling Suite and are the result of consultation with the PPI's Modelling Review Board, which consists of a number of experts in the field of financial modelling.

Fund charges are assumed to be 0.75% for existing workplace DC schemes, and 0.5% for other DC/master trust schemes set up for automatic enrolment.

Earnings growth and other economic assumptions are taken in line with OBR assumptions, derived from their 2019 long-term economic determinants. The earnings band for automatic enrolment contributions and minimum salary assumption are assumed to grow with average earnings.

The Economic Scenario Generator (ESG)

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

Key results

The Model generates projected future inflation rates, and earnings growth

Inflation rates

Future CPI increases and earnings inflation rates

Investment returns

Returns are produced for the major asset classes of equity, cash and gilts

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

Application of output

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

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Key data sources

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

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

Summary of modelling approach

The six identified risk factors modelled are:

G Nominal GDP

CPI CPI

N Average weekly earnings

Long-term yields

Money market yields

S Stock returns

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

$$x_{t} = \begin{bmatrix} \ln G_{t} - \ln G_{t-12} \\ \ln(P_{t} - \ln P_{t-12} + 0.02) \\ \ln W_{t} - \ln W_{t-12} \\ \ln\left(e^{Y_{t}^{l}} - 1\right) \\ \ln\left(e^{Y_{t}^{s}} - 1\right) \\ \ln S_{t} \end{bmatrix}$$

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

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

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

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

The first and third components of x_t give the annual growth rates of GDP and wages, respectively. The fourth and fifth components are transformed yields. The transformation applied ensures that the yields are always positive in simulations. Similarly, the second component gives a transformed growth rate of CPI. In this case, the transformation applied ensures that inflation never drops below -2% in the simulations. This figure was selected to be twice the maximum rate of deflation ever found in the historical data. Mean rates of economic variables in the ESG are set to be consistent with Office for Budget Responsibility long term projections.

Where t denotes time in months.

Modelling Appendix



PPI Aggregate Model

Overview of Aggregate Modelling of Private Pensions

The PPI Aggregate Model links changes in the UK population, the labour market and economic assumptions to project forward private (and State) pension savings. Population projections are taken from 2016-based figures published by the ONS.

Current distributions of individuals across pension scheme types are taken from the Lifetime Labour Market Database (LLMDB), a panel dataset of 1% of UK National Insurance records. The workforce data includes numbers of individuals and average earnings split by age, gender and earnings band. The data are further split between public and private sector contracted-out schemes and those who are contracted-in to the State Second Pension (S2P).

Initial Conditions

In the base year of projection (2010), individuals with private sector pension arrangements are split between public and private Defined Benefit (DB) schemes and workplace Defined Contribution (DC) schemes. 17.5% of working individuals are assumed to be members of DC workplace pensions and 32.1% of individuals are assumed to be members of DB workplace schemes. 73.2% of those in DB schemes are assumed to work within the public sector, leaving 8.6% of the workforce in private sector workplace DB schemes.

The workforce not initially enrolled in public sector DB, private sector DB or private sector workplace DC, are considered as the eligible population for automatic enrolment. This includes individuals not in workplace pension schemes who contribute to personal pensions.

Stocks of existing assets for DB schemes and workplace DC schemes are split across cohorts by contribution levels.

Movement of individuals between schemes due to decline in DB schemes

The proportion of individuals in each scheme is not stable over time: the proportion of the total workforce who are enrolled in a private sector DB scheme is assumed to decline by 80% between 2010 and 2030 and these individuals are moved into the existing DC workplace schemes.

Movement of individuals between schemes post automatic enrolment

From 2012, employees in the private sector without workplace DC provision are placed in a scheme to represent automatic enrolment, which is split further into master trust schemes and other DC schemes, assuming 80% are automatically enrolled into master trusts and the remaining into other DC schemes. Individuals are enrolled in proportion to the likely number of employees becoming eligible each year due to staging of their employers. Similarly, during the staging period, employees in existing DC schemes who become eligible for automatic enrolment either remain in the existing scheme or are moved to a new automatic enrolment workplace DC scheme (again split into master trusts and other DC schemes in the same proportions as mentioned above). It is assumed that 80% of existing members remain in their current scheme, and 20% are expected to move to the new automatic enrolment scheme. New members to DC schemes who have an employer with an existing scheme either join the new automatic enrolment scheme (80%) or join an existing DC scheme (20%).

Overall, after 2012 the private sector workforce is assumed to contribute to either private sector DB pension schemes, DC schemes which were existing prior to automatic enrolment, DC schemes which were set up for automatic enrolment, or DC schemes set up for those that are eligible for automatic enrolment that did not contribute before the implementation of automatic enrolment. It is assumed that 14% of the workforce change jobs from year to year, which causes individuals to shift from existing DC schemes into new DC automatic enrolment schemes over time.

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Contributions

Contributions are taken as a percentage of total earnings for employer-provided schemes (both existing schemes and those set up after automatic enrolment) and are taken across band earnings for individuals automatically enrolled who previously were not saving. The earnings band is taken to be £6,240 to £50,270 with an earnings trigger of £10,000 (all in 2025/26 terms).

When automatically enrolled, individuals and their employers are assumed to contribute at the minimum levels required under automatic enrolment legislation (phased in from a combined contribution of 2% of band earnings in 2012, rising to 8% of band earnings in 2019 in accordance with existing regulations) unless otherwise stated.

Limitations of analysis

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

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

Box plots allow graphic representation of a distribution of outcomes. The rectangle represents the 25th to 75th percentiles of the distribution, while the ends of the vertical line represent the 10th and 90th percentiles. The horizontal line through the middle of the box represents the median.

