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The Case for CDC

Understanding the investment implications of Collective Defined Contribution schemes

Capital at risk. The value of investments and the income from them can fall as well as rise and are not guaranteed. Investors may not get back the amount originally invested.

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Introduction

Retirement systems are under pressure. Ageing populations, fiscal constraints and the shift from institutional to individual responsibility have brought retirement adequacy back into focus across developed markets. Across Europe, governments are reforming pension systems to manage the cost of longer retirements while seeking to improve outcomes for individuals. In markets such as the UK and the Netherlands, where private and occupational pension saving is already well established, the next phase of reform is increasingly focused on how retirement savings are invested, structured and converted into income.

Collective Defined Contribution, or CDC, is one of the most significant developments in this shift. While collective pension designs exist elsewhere in Europe, CDC represents a new category in the UK pension landscape. It combines fixed contributions with collective investment and longevity pooling to target a pension income for life, without creating a DB-style employer guarantee.

The potential appeal is clear. Across the UK pensions industry, CDC is widely expected to support materially higher member outcomes than traditional DC approaches, with industry estimates pointing to potential improvements in the range of 40% to 60%.[1] But CDC has also prompted scrutiny. Questions remain around fairness, member understanding, benefit variability and how collective schemes would perform in periods of economic stress.

What is CDC?

Collective Defined Contribution (CDC) schemes are a type of workplace pension scheme, which receive fixed contributions from employers and employees, and pool them together to provide a target, non-guaranteed, retirement income for life. CDC works by pooling investment and longevity risks of all scheme members, removing the need for external insurance or capital guarantees.

- **Investment pooling:** The scheme invests all assets in a single, shared pool, with investment strategy targeting the aggregate life expectancy of the scheme. This limits individual choice, but enables benefits of scale, a higher-for-longer growth asset allocation and dampening of risk for members in retirement.
- **Longevity pooling:** People who live longer than anticipated are supported by the assets that remain in the pool when other members die earlier than expected. This limits the scope of those members who die earlier from passing on their unused capital. In return, it removes guesswork for the individual, and limits costs that usually come from seeking external insurance or capital guarantees.

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1 Range of outcomes per analysis by Hymans Robertson, LCP, 2025.

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In this paper we explore the factors which drive CDC pension outcomes from an investment perspective and compare it to traditional DC. Rather than focusing only on the headline question of what level of improvement CDC may deliver, we focus on how those outcomes arise.

We consider three key factors that shape CDC retirement outcomes:

1. **Investment return factor:** CDC enables a risk-on asset allocation for longer, lifting expected lifetime returns;

2. **Investment pooling factor:** CDC allocates portfolio volatility across members, stabilising retirement income benefits;

3. **Longevity pooling factor:** CDC self-insures longevity risk across scheme members, removing the associated costs of longevity buffers, early de-risking or external insurance.

Improvements and risks to retirement outcomes will ultimately depend on benefit design, where market practice is still developing. Nevertheless, realised investment returns will remain a significant driver of CDC outcomes. Wherever possible, this paper therefore focuses on the investment drivers of CDC, rather than prescribing a single benefit design.

The paper then considers "how to break CDC" — what is required to warrant a cut in benefits, and how the higher-risk investment strategy may impact member outcomes in periods of market stress.

CDC does not eliminate risk. Benefits can go down as well as up, and outcomes will depend on investment performance, longevity experience, scheme design and governance. But, implemented well, CDC offers a compelling framework for improving retirement adequacy — one that aligns investment strategy, actuarial design and scheme governance around the clear objective of providing a pension for life.

Investment return factor

CDC's first return advantage comes from the investment horizon bringing opportunity for growth in investment returns. By investing for the collective membership rather than for each individual retirement date, a CDC scheme can maintain a growth-oriented allocation for longer than a typical DC lifecycle strategy.

How does it work? CDC schemes pool investment risk across all scheme members. This means that rather than targeting each individual's optimal investment strategy, the scheme invests to optimise for the aggregate life expectancy across the scheme. For an open scheme, this approach increases the investment time horizon and allows the scheme to target higher allocation to growth-seeking assets. Among these growth assets, we expect a higher allocation to private markets, allowing the scheme to access illiquidity and complexity premia that are less available in public markets.

In a traditional default "lifecycle" DC portfolio, an individual takes on significant risk early on in working life when the time horizon to retirement is longest, but pension pots are at their smallest. As a member ages, and the time horizon to retirement shortens, the ability to take risk decreases. This risk is usually managed by reducing growth exposure later in life, when wages, contributions and accumulated pension balances are typically larger. This helps reduce point-in-time risk of exposing retirement assets to market volatility as an individual approaches the point of liquidation. However, it also dampens ability to improve return potential. From this perspective, CDC can keep a larger share of capital invested in return-seeking assets for longer, as its investment strategy is less limited by the individual's timing constraints.

The longer horizon and pooled scale of CDC may also broaden the investable opportunity set across assets with longer duration and scale requirements. In particular, CDC schemes may be better placed than individual DC arrangements to access private markets, where appropriate, because they can manage illiquidity, commitment pacing, valuation lag and diversification at whole-scheme level, supporting the long-term inflation-aware return objectives of pensions investment.

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Lifecycling vs. Aggregate portfolio construction

DC default arrangements commonly use a lifecycling approach — dynamically adjusting the risk profile of the portfolio as an individual approaches retirement (see chart A). This approach helps narrow outcomes closer to retirement, limiting risk of drawdowns.

CDC designs optimise for the aggregate life expectancy across the scheme. Thus, an open CDC scheme will have a 25+ year investment time horizon and can consistently invest in a growth-oriented portfolio (see chart B).

On a capital-weighted basis, the average lifetime DC allocation is closer to an 84% equity/16% bond portfolio, which, compared to the more continuously growth-oriented CDC portfolio, is expected to yield 1.53% less p.a. than a CDC portfolio over the long-term.[2]

The annual return differential may appear modest, but small differences in expected return can compound meaningfully over an individual's working life. As shown in Chart C, the higher-for-longer growth allocation materially increases the expected capital value over the investment horizon. This return effect is therefore a major contributor to the higher CDC outcomes identified by other industry analysis.

Chart A: Illustrative DC glidepath allocation based on years to retirement

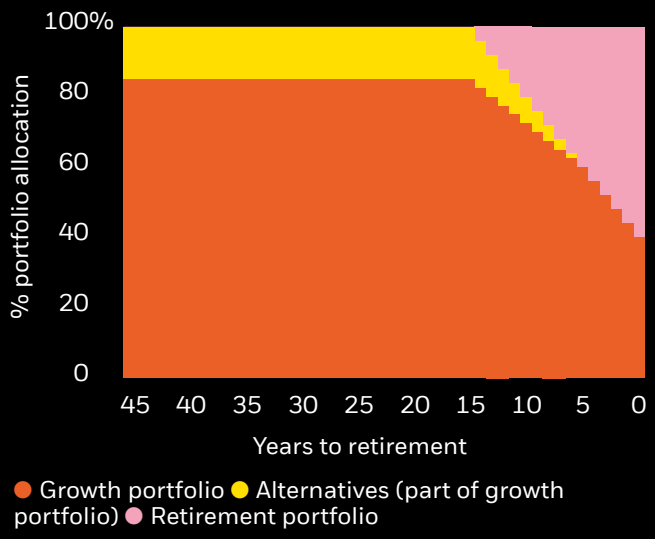
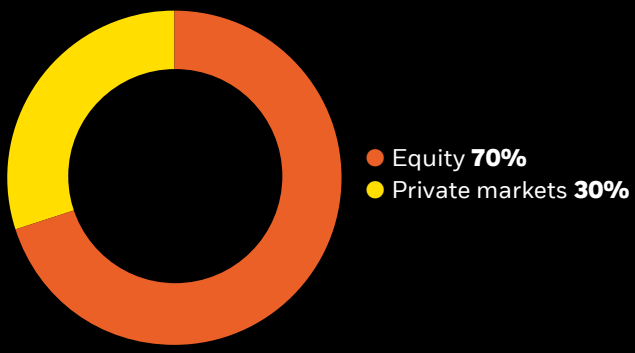


Chart B: Illustrative portfolio allocation for a CDC scheme

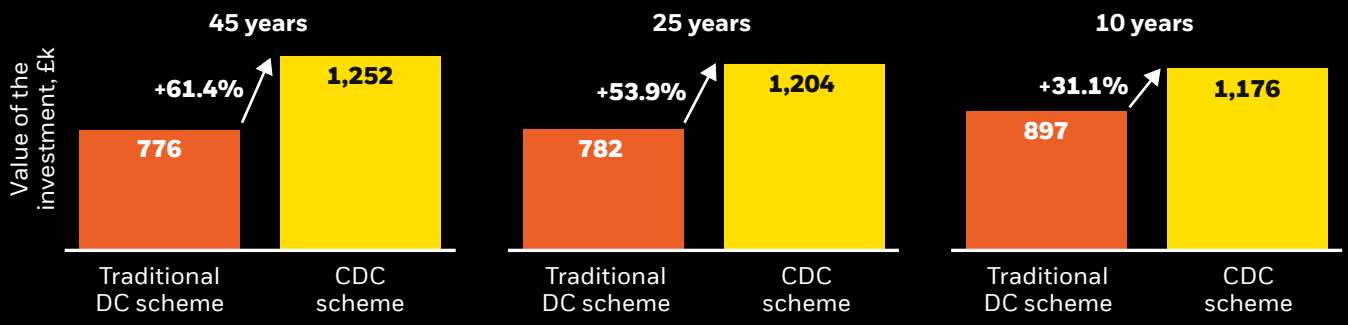


	DC	CDC
Expected return	7.29%	8.82%
Expected risk	14.49%	15.16%

Source: BlackRock, March 2026. For illustrative purposes only.

Chart C: Illustrative median value of a hypothetical investment under the DC glidepath and CDC allocation

45/25/10-year investment horizon for a representative member contribution pattern. As CDC does not involve individual pots, values shown on a pot-like basis for comparison only.



Source: BlackRock, March 2026. For illustrative purposes only. Forecasts are not a reliable indicator of future performance. Refer to Appendix for Capital Market Assumptions Methodology and Key Modelling Assumptions.

2 Source: BlackRock Investment & Portfolio Solutions, 2026. See Appendix for Modelling Assumptions.

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The impact of the investment return factor therefore explains most of the improved CDC retirement outcomes identified by the analysis of other market participants. It also highlights the importance of creating a CDC scheme benefit design that supports a portfolio that is consistently growth orientated.

What happens if the scheme ages? If the aggregate life expectancy of the scheme increases, it will decrease the time to retirement and therefore decrease the ability to continue to take risk. However, CDC schemes do not target stable "retirement pot" values; they target sustainable income for life. Therefore, even if all members of a CDC would reach the point of retirement, lowering the aggregate duration of the scheme, the portfolio would need to support an average life expectancy of 21+ years[3] which would imply a continued growth portfolio focus. Assuming ongoing auto enrolment, a stable CDC is unlikely to reach this de-risking point in the foreseeable future. Thus, it would be expected that the risk profile and the consequent return outcomes of whole-of-life CDC schemes remain structurally higher than DC designs.

What about the volatility of the retirement pot? The higher risk-seeking of the CDC portfolio does imply a broader range of lump sum value amounts at retirement, given the higher portfolio volatility. If an individual wishes to cash out their pot at retirement, this characteristic may pose risk.

However, for individuals saving for a pension that is paid out from the CDC scheme, the volatility of the overall investment portfolio brings limited point-in-time risks as they approach retirement. This is due to the second factor driving better CDC outcomes — investment pooling.

Investment pooling factor

The investment return factor explains how CDC can bring higher expected returns through investment strategy. Investment pooling on the other hand explains how members can bear the volatility that comes with those returns. By sharing portfolio volatility across all scheme members, the CDC benefit valuation process helps members close to or in retirement remain invested in growth assets without bearing the full effects of market movements through retirement.

How does this differ from DC? The key difference is the nature of the member's claim, and the valuation mechanism used. In DC, an individual owns units in an investment fund, with their benefit being the market value of these units. In CDC, an individual's benefit is expressed as a target pension: The present value of the target pension benefit accrued, based on scheme assumptions regarding investment returns, inflation and longevity. In other words, in *DC, members experience markets through a pot. In CDC, members experience markets through a target pension.*

This impacts the experience of portfolio volatility. In traditional DC, a market fall shortly before retirement can directly reduce the capital available to support retirement income. In CDC, investment experience is translated through the annual valuation into target pension adjustments. Rather than seeing the immediate pot-value outcome, an individual would see the market move in the context of future investment return and inflation expectations.

The annual valuation aligns the aggregate value of target benefits with the value of scheme assets, reflecting any gains and losses through member benefits on regular basis. If asset experience is weaker than expected, target benefits or future increase expectations may need to be reduced. If asset experience is stronger than expected, target benefits or future increase expectations may be increased.

What valuation levers does CDC have?

- **Increase/Decrease in future pension:** The growth rate applied to target pension benefit. This is the primary way CDC schemes are expected to change liability value.
- **Expected portfolio return:** Best estimate of expected portfolio return. This will impact future expected asset value used to reconcile liabilities.
- **Mortality assumption:** Best estimate of longevity of individuals invested in the CDC scheme. Unlikely to change materially year on year.

3 UK male life expectancy at 65 is 21.2 years, source: *UK Office of National Statistics. National Life Tables: Life expectancy in the UK (2022-2024).*

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CDC valuation and investment performance

The following simplified example illustrates how annual CDC valuations can share investment experience across members. We first look at dispersion of impact inside a CDC scheme, and contrast equity market experience of a CDC member with a DC saver. In practice, CDC schemes are unlikely to look like the example laid out — however, it provides a useful basis to understand how the same scheme-level asset experience can and will affect members differently depending on the duration of their target benefits.

The simplified CDC scheme consists of 100 working age members (details set out in Appendix), who have all accrued £1,000 of real pension, payable from age 65,[4] with prior communications indicating a target future benefit increase of CPI+1%. In the below scenarios, we have set out the illustrative benefit adjustment necessary in case of a 1 standard deviation move down or up in the equity markets.

In this example we have assumed only one lever to balance the scheme assets and liabilities, the benefit rate, expressed as CPI+x%, which immediately impacts both the recognition of currently accrued nominal pension value and future benefit increase expectations. In practice, the adjustments are dependent on a broader valuation exercise and trustee judgment.

Scenario 1: Asset underperformance

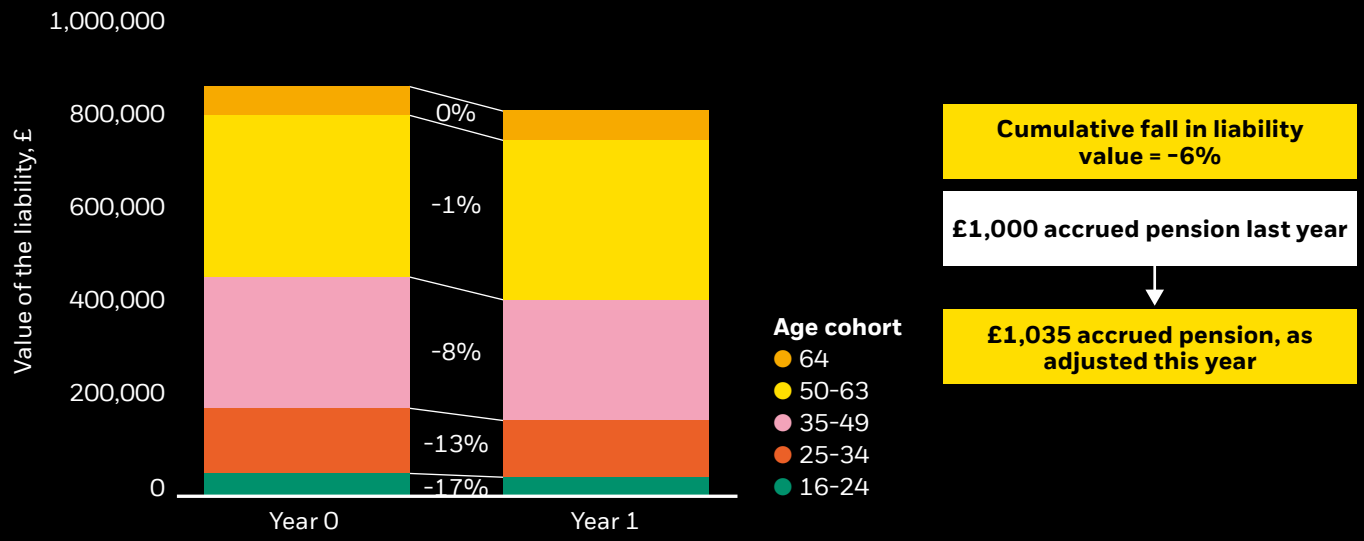
Chart D shows the benefit distribution across age cohorts in a simplified CDC scheme in a year in which the investment portfolio underperforms its target returns by 1 sigma, resulting in total asset fall of 6%. As a result, target benefits provided to individuals must be amended so that the aggregate value of target benefits remains aligned with the assets available to support them.

Keeping all other assumptions and benefit elements static, the scheme can equalize by cutting the expected rate of current and future pension increases from inflation+1% to inflation+0.53%.

While the total liability value falls in line with the asset underperformance, the distribution of the fall is not uniform, with younger cohorts experiencing a more sizeable fall than older cohorts. This is due to differences in duration of benefits, with older individuals having a shorter-duration benefit, which is less sensitive to rate changes.

Importantly, the dispersion of liability changes across individuals of different ages helps minimise the total benefit change, keeping the pension experience stable. Thus, while pensions in future will grow slower than previously anticipated, as long as the portfolio performance and underlying assumptions do not change materially, the portfolio is still able to generate sufficient growth to provide inflation-outpacing benefits to members.

Chart D: Change in liability value after a 1 standard deviation equity market fall



Source: BlackRock, March 2026. For illustrative purposes only. Forecasts are not a reliable indicator of future performance. Refer to Appendix for Capital Market Assumptions Methodology and Key Modelling Assumptions.

4 Source: BlackRock Institutional Client Specialists, 2026. Based on modelling assumptions as set out in Appendix. Simplified example is for illustrative purposes only.

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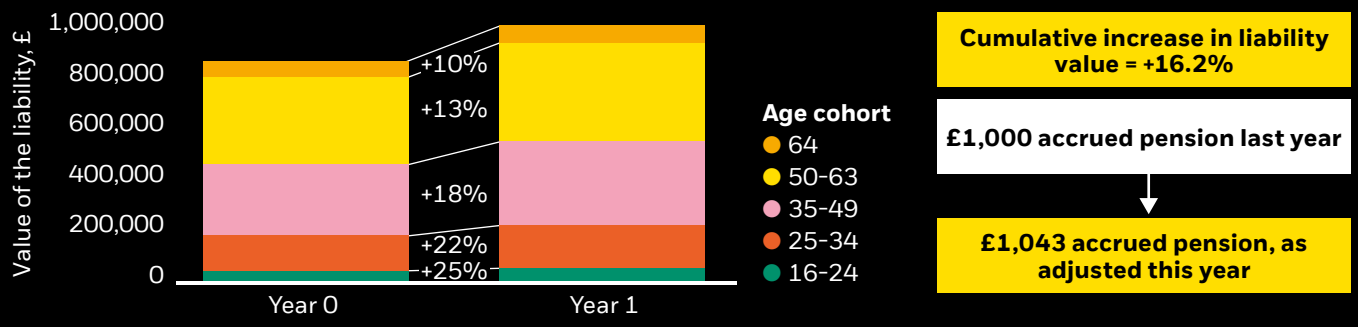
Scenario 2: Asset overperformance

Chart E shows the same mechanism in reverse. In a scenario where the investment portfolio outperforms its target by 1 sigma (absolute increase in asset value of 16.2%), the scheme can increase the value of its target benefits to members.

To do so, the scheme is able to change its target benefit from inflation+1% to inflation +1.29%. Thus, pensions are expected to grow more in the future.

The effect is again larger for younger members in capital-value terms, this time in the upside, because higher future increases compound over a longer period for individuals further away from retirement. That means that, on average, younger individuals invested in a CDC scheme experience higher volatility in their benefit value than DC, however, this value stabilises as an individual approaches retirement — the point when benefits should be crystallised.

Chart E: Change in liability value after a 1 standard deviation equity market rise

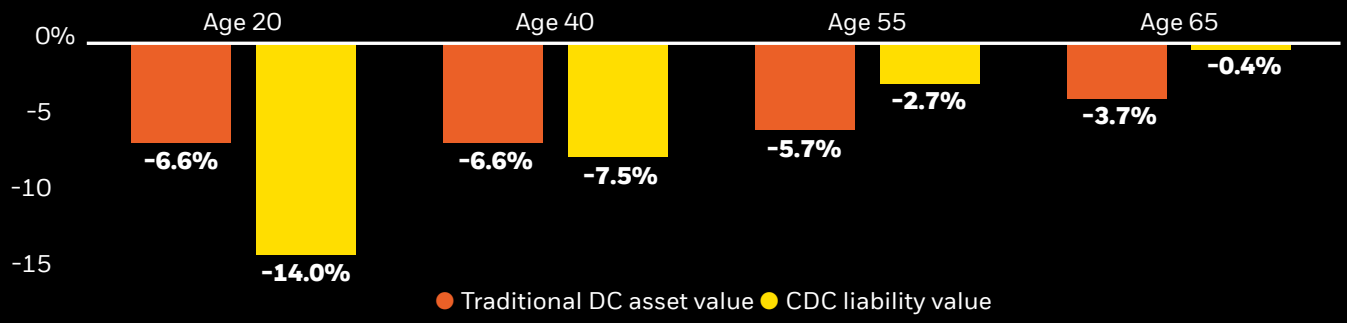


Source: BlackRock, March 2026. For illustrative purposes only. Forecasts are not a reliable indicator of future performance. Refer to Appendix for Capital Market Assumptions Methodology and Key Modelling Assumptions.

The investment pooling factor therefore explains how CDC can combine a growth-oriented portfolio with a more stable target income experience by "reallocating" volatility in the benefit valuation process. Charts F and G illustrate the mechanism by comparing the CDC experience of the equivalent member in individual DC.

Chart F: Impact of a fall in equity markets

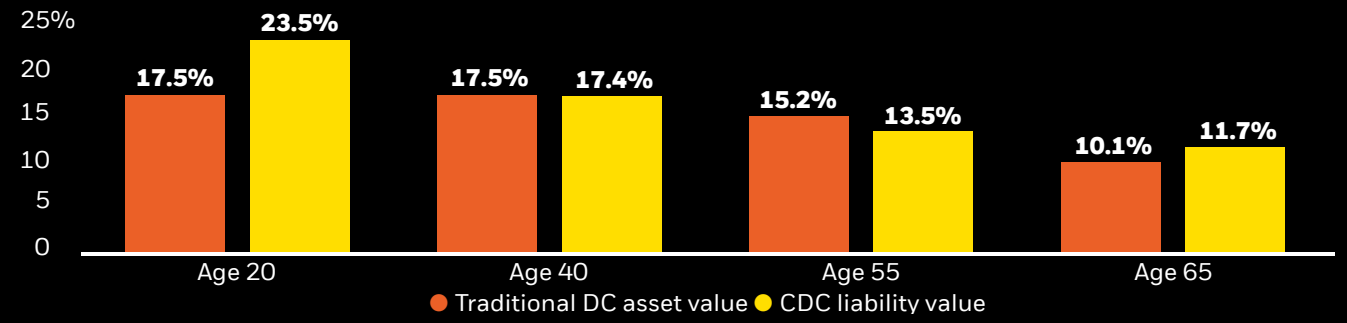
Impact of a -1 sigma market shock for different age cohorts



BlackRock, March 2026. For illustrative purposes only. Forecasts are not a reliable indicator of future performance. Refer to Appendix for Capital Market Assumptions Methodology and Key Modelling Assumptions.

Chart G: Impact of a rise in equity markets

Impact of a +1 sigma market shock for different age cohorts



Source: BlackRock, March 2026. For illustrative purposes only. Forecasts are not a reliable indicator of future performance. Refer to Appendix for Capital Market Assumptions Methodology and Key Modelling Assumptions.

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The impact of the investment pooling factor therefore enables individuals to maintain exposure to a consistently growth-oriented portfolio through retirement. The CDC mechanism converts ongoing market experience into changes in target pension benefits, allowing volatility to be shared across the scheme rather than crystallised at each member's retirement date, moving away from the point-in-time risk of an individual DC pot. In a sense, the investment pooling mechanism creates higher volatility for younger members, lowering as they approach retirement, similar to lifecycling of traditional DC, all without requiring portfolio de-risking.

Investment pooling mechanisms also highlight the importance of benefit design. Different CDC designs can choose different ways to reflect asset experience: Through changes to current target pension amounts, changes to expected future pension increases, or changes to the assumptions used to value liabilities. These choices will directly impact volatility experience, and as such, the investment strategy that a CDC scheme can take while providing individuals with confidence.

That said, investment pooling only addresses investment risk, helping turn volatile portfolio returns into a more stable target pension pathway. But how can CDC ensure the stable pension experience lasts for life? That is the role of the third factor driving CDC outcomes — longevity pooling.

Longevity pooling factor

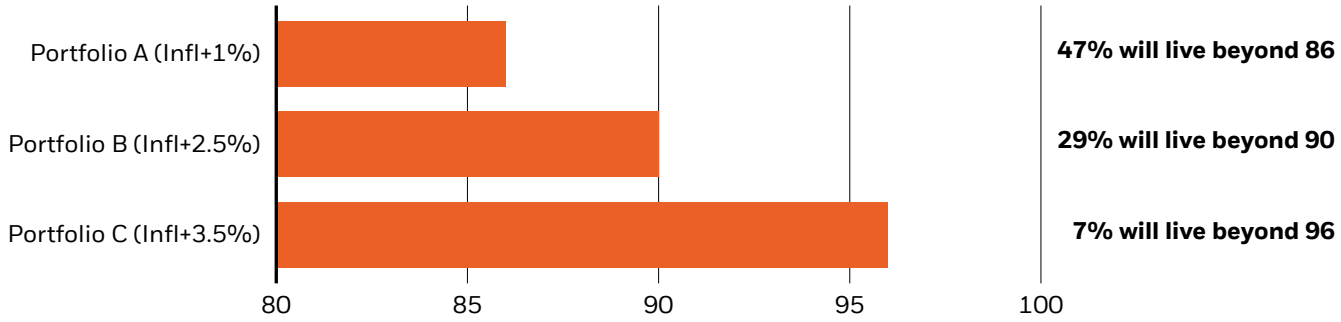
Retirement outcomes are driven not only by investment performance but by the length of time income needs to last, i.e., longevity risk. While an individual can reduce investment risks by de-risking their portfolio, they cannot remove the risk of living longer than expected without either buying insurance or holding back savings to serve as a self-insurance buffer. CDC optimises the longevity risk mitigation through a more efficient mechanism — longevity pooling.

Can't I manage my longevity risk myself? An individual choosing to draw down savings in individual DC must decide how much income can be drawn without knowing how long retirement will last. Drawing too much creates risk of running out of money. Drawing too little helps protect against longevity risk but reduces living standards in retirement if the savings pot is not sizeable enough to meet retirement needs comfortably. This makes longevity risk one of the most difficult problems for an individual to manage.

Chart H illustrates the trade-off, showing how long a retirement savings pot could be expected to last if a 65-year-old invested it and drew income equivalent to a single-life inflation-linked annuity. A typical balanced fund (Portfolio B) is expected to be exhausted by age 90, before taking market volatility or future longevity improvements into account. Based on the current UK ONS data, this implies a 29% probability of insufficient funds in retirement.

A potential approach is to draw less income and hold a self-insurance buffer. In this illustration, limiting the risk of running out of money to 10% would require an individual to draw only 88% of the annuity-equivalent income. In practice, this buffer may be higher once market volatility and longevity changes over time are accounted for.

Chart H: Median age at which a drawdown portfolio runs out of assets
Drawdown of the affordable single-life inflation-linked annuity amount



Source: BlackRock, March 2026. For illustrative purposes only. Forecasts are not a reliable indicator of future performance. Annuity pricing sourced from Hargreaves Lansdown, as of 26 March 2026. Mortality probability sourced from ONS, assuming retirement at age 65.

How does CDC differ from an annuity? Annuities address the longevity risk problem by transferring the risk from the individual to an insurer. The individual can receive an income for life but gives up flexibility and typically has limited ability to pass on unused capital. In this aspect, it provides similar benefits to a CDC scheme — assets of shorter-lived individuals are used to support incomes for longer-living members, while limiting flexibility or legacy transfer to maintain the longevity pooling mechanism.

The guarantee of an annuity, however, comes at a cost: Annuity pricing reflects insurer capital requirements, prudence in longevity assumptions and the investment return available on the assets backing the guarantee. CDC, alternatively, offers a comparable level of longevity pooling without an insurance-backed guarantee, which provides an uplift to expected member income, at a risk of potential benefit cuts if the scheme longevity experience worsens.

Idiosyncratic vs. Systematic longevity risk

Longevity pooling without a guarantee backing the protection may protect against idiosyncratic, but not systematic longevity risks, therefore it is useful to understand the distinction.

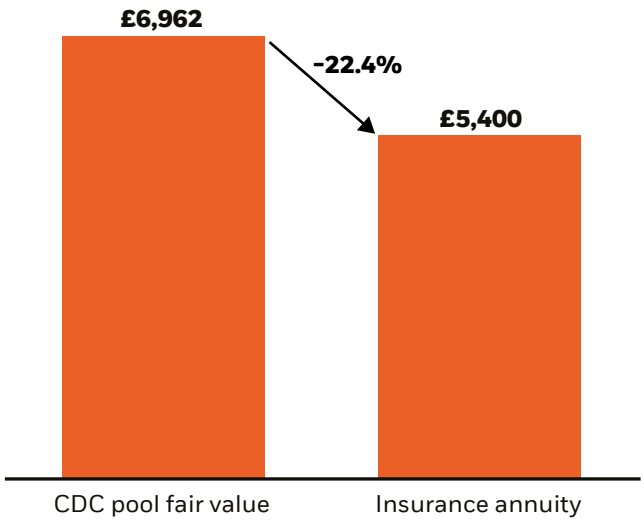
- **Idiosyncratic longevity risk** is the risk of an individual living longer than expected, i.e., not knowing their exact longevity in the context of a known probability curve. CDC can pool this risk across members, using the annual actuarial valuations to assess scheme longevity on aggregate.
- **Systematic longevity risk** is the risk that the whole membership lives longer than expected, i.e., the probability curve shifts right. CDC cannot eliminate this risk; it must be reflected through the annual actuarial valuation and, if required, through lower future pension increases.

In effect, CDC can be viewed as a self-insured but non-guaranteed annuity. Compared to an insured annuity, CDC may support higher expected retirement income as a result of the following factors:

- **Capital requirements:** CDC does not require a capital buffer to support a guarantee (since the benefits are non-guaranteed), therefore income pricing will not include a cost of capital margin.
- **Longevity valuation basis:** CDC scheme longevity must be valued in line with the scheme membership ("best estimate" basis), whereas insurance products are more likely to be valued on a prudent basis (including a buffer for higher-than-anticipated longevity improvements). Therefore, income pricing will not include a longevity margin but may adjust benefits over time.
- **Investment return basis:** CDC assets must be valued on a "best estimate" basis, in line with expected returns of the investment portfolio, which consequently feed into income pricing. Due to the higher growth focus of the investment strategy, the return estimates are likely to be higher than the returns embedded in annuity rates.

Based on our illustrative analysis, this longevity pooling effect is expected to improve lifetime income by around 7% compared with a single-life inflation-linked annuity.

Chart I: Expected annual income from an annuity and CDC
Assuming a pot of £100,000 and entry age of 65



Source: BlackRock, March 2026. For illustrative purposes only. Forecasts are not a reliable indicator of future performance.

The higher efficiency of longevity pooling within a CDC comes at the cost of losing the guarantees embedded in insurance products. If the scheme experiences weaker investment performance over longer periods, or if individuals live materially longer than expected (increasing systematic longevity), target income may need to be reduced.

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However, unlike market shocks, which can put immediate pressure on annual benefit adjustments, systematic longevity risk is generally slower moving and can be reflected through successive valuations. It can reduce target income, but our illustrative analysis suggests that even material longevity improvements do not undermine the relative value of pooling versus managing longevity risk individually.

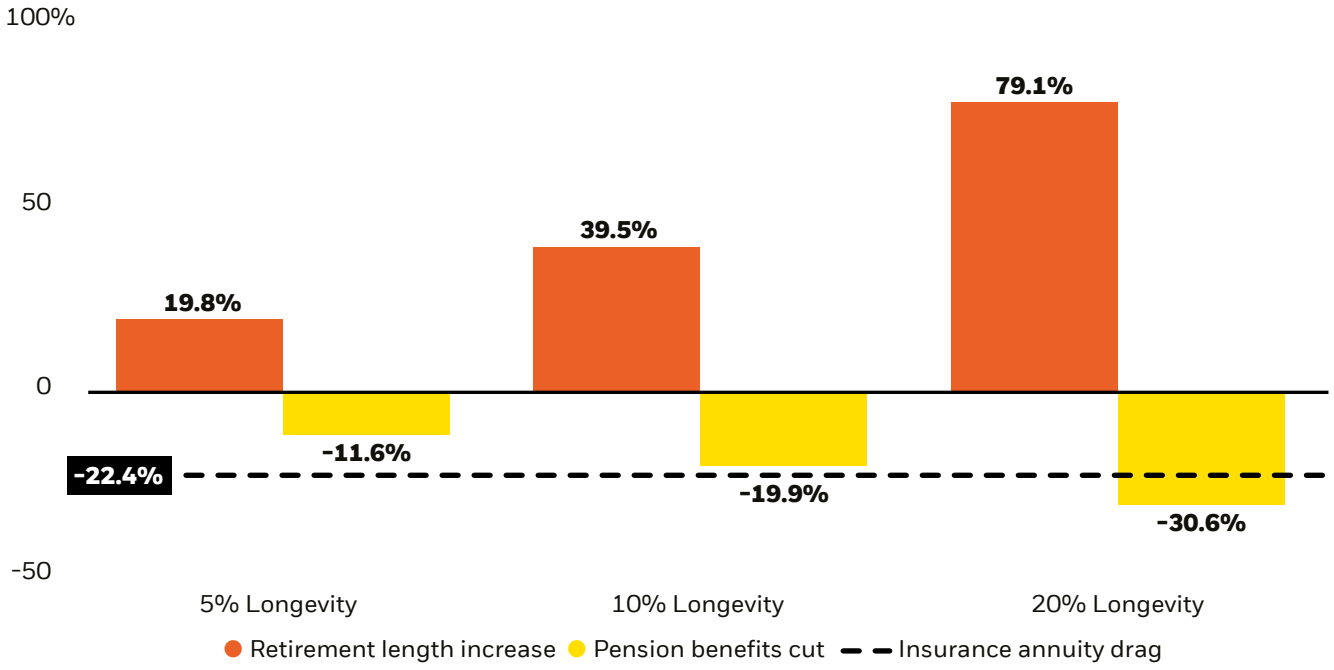
While the exact impact of systematic longevity risk will be a function of scheme membership and benefit design, our illustrative analysis indicates that, for income to be meaningfully reduced, longevity has to shift significantly. As shown in Chart J, a 20% increase in scheme longevity is expected to reduce CDC income levels by 10%, as compared to an annuity. For reference, the expected longevity of an individual retiring at 65 has increased by ~20% in the last 35 years,[5] thus we expect this to be a long-term shock without a stark impact on YoY CDC benefit changes.

The impact of the longevity pooling factor explains how CDC can convert retirement savings into income for life at a lower implicit cost than experienced through self-insurance or a fully guaranteed product. It also highlights the importance of scheme design: Mortality assumptions, benefit adjustment rules, dependant benefits and legacy options all affect the level, stability and flexibility of target income.

The CDC mechanism therefore aligns actuarial and investment strategies to support better member outcomes by improving lifetime investment growth potential, managing volatility experienced by individuals, and, crucially, determining how savings can be paid as an income for life.

Chart J: Sensitivity to increased longevity

Expected % reduction in retirement income due to a 5%/10%/20% increase in average longevity



Source: BlackRock, March 2026. For illustrative purposes only. Forecasts are not a reliable indicator of future performance.

5 Source: ONS. The 20% shock has been calculated by equal-weighting life expectancy for males and females at age 65 in years 2023 and 1987.

How to break CDC

The higher-growth portfolio, re-allocation of volatility away from retirees and optimisation of longevity risk hedging are in our view key factors to view CDC as a positive development in the UK pensions landscape and present a strong case for considering CDC as a contribution towards improved pensions adequacy. That said, it is important to be aware of risks involved and understand potential outcomes in case of adverse scenarios. While collective designs help individuals deal with the investment and longevity risks inherent in retirement, it does not remove risk and will not be the right choice for everyone.

The downside risks of CDC are shaped by the very factors that support higher CDC outcomes:

1. Investment and longevity pooling improves efficiency but also means benefits can be variable, and pensions may have to be cut.
2. A higher growth-oriented investment allocation for longer improves expected returns but can bring underperformance in stress scenarios.
3. An alignment between actuarial assumptions and portfolio construction improves efficiency and limits cross-subsidies, but it also increases scheme dependency on accurate benefit pricing and clear governance.

Benefits can go down, as well as up.

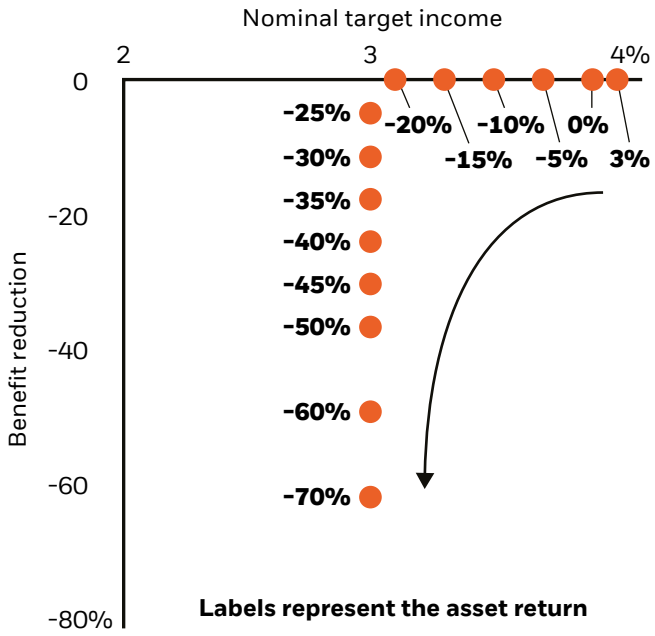
In CDC, adverse experience is not absorbed by an employer's balance sheet or an insurer's guarantee but is reflected through the valuation of target benefits. This benefit variability is a key mechanism to enable CDC schemes to reflect the true value of pension benefits, however, it may lead to adverse individual experience in cases of benefit cuts.

CDC schemes should be designed at outset to outperform inflation. This target provides a level of headroom in case of adverse scheme outcomes — an individual would not experience a nominal decrease in their pension levels in times of underperformance, as the first lever a CDC scheme has is a decrease in the level of increase it provides its members.

Our simplified valuation analysis (see Appendix for underlying assumptions) suggests that a material asset shock should occur to warrant a nominal benefit reduction. As outlined in Chart K, equity markets should fall by 45% in a year for nominal benefits to be reduced in the simplified illustrative benefit structure used.

Therefore, while pension levels are not guaranteed, and a decrease in the real level of pension is likely to occur at some point over the life of the scheme, the market shock to warrant a pension cut is likely to be a tail event across all types of pension designs.

Chart K: Expected reduction in CDC benefits for a given equity shock



		Allowing real income reduction	
Assets perform.	**Assumed return over CPI**	**Scheme real income (over CPI)**	**Benefit reduction**
3%	4.0%	1.0%	–
0%	4.0%	0.9%	–
-5%	4.0%	0.7%	–
-10%	4.0%	0.5%	–
-15%	4.0%	0.3%	–
-20%	4.0%	0.1%	–
-25%	4.0%	–	-5.0%
-30%	4.0%	–	-11.5%
-35%	4.0%	–	-17.8%
-40%	4.0%	–	-24.1%
-45%	4.0%	–	-30.4%
-50%	4.0%	–	-36.8%
-60%	4.0%	–	-49.4%
-70%	4.0%	–	-62.1%

Source: BlackRock, March 2026. For illustrative purposes only. Forecasts are not a reliable indicator of future performance.

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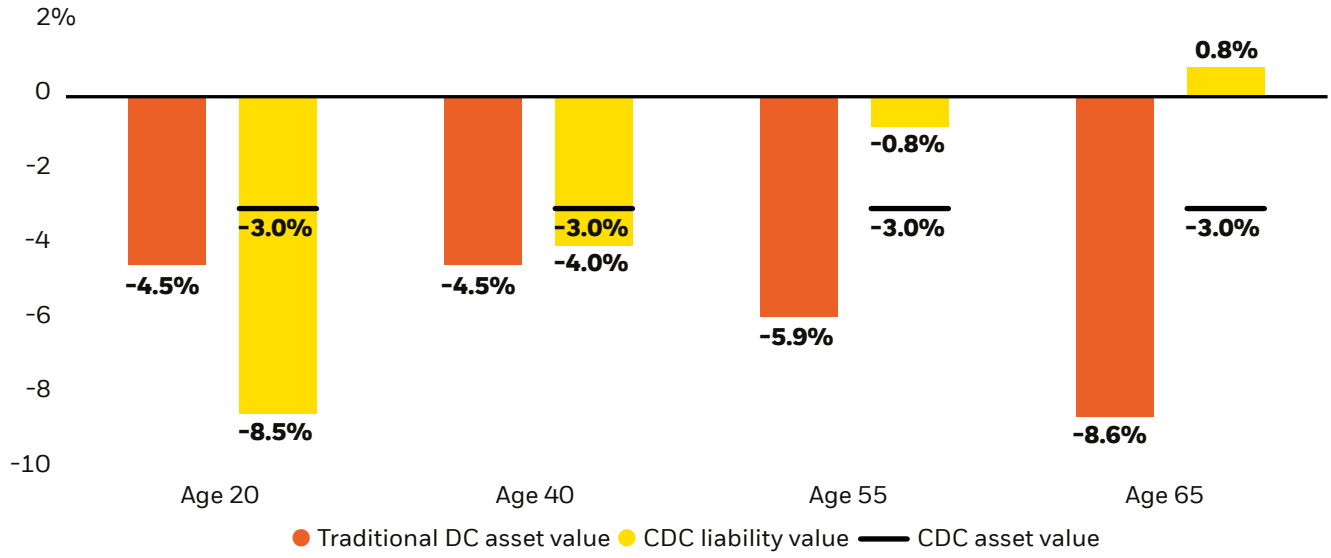
A risky portfolio allocation may underperform in stress scenarios.

Investment pooling supports higher allocation to growth assets for longer through sharing risk across individuals in the CDC scheme. However, risk is not eliminated, and the higher growth tilt can entail more severe levels of underperformance in some market environments.

As outlined in stress scenarios in Chart L, a CDC portfolio experiences similar losses to a growth-only DC portfolio, with an estimated drawdown of 27.7% during the 2008 financial crisis, a 14.2% drawdown during the 2007 credit crisis and a 3% drawdown during the 2022 inflation shock. In line with our illustrative CDC model in Chart K, these shocks would mean benefits would be cut in real terms. However, in the case of the 2007 and 2022 scenarios, the scheme should still be able to retain (or possibly increase) nominal benefit.

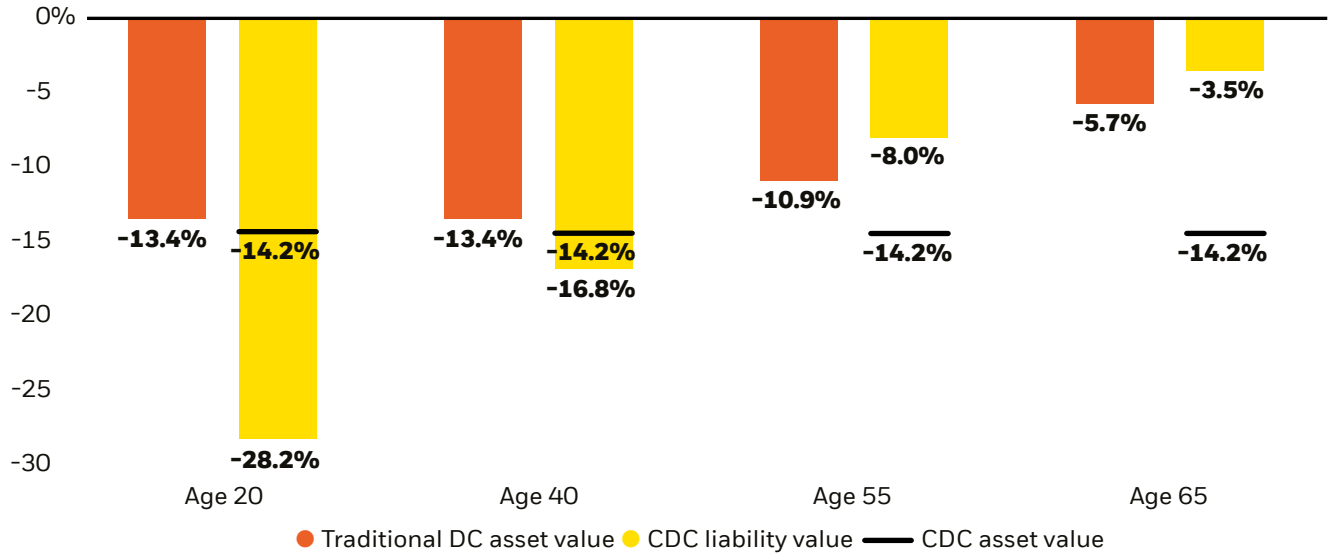
Chart L: Asset reaction in historical scenarios

2022 Inflation Shock



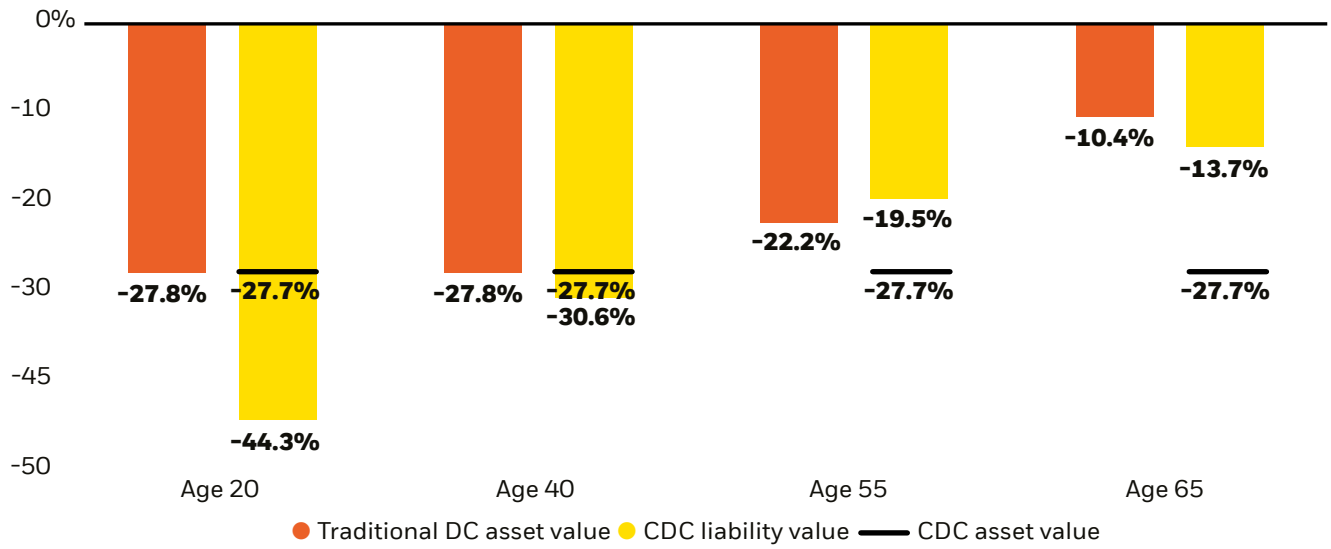
Source: BlackRock, July 2026. For illustrative purposes only. Forecasts are not a reliable indicator of future performance.

2007 Credit Crisis



Source: BlackRock, July 2026. For illustrative purposes only. Forecasts are not a reliable indicator of future performance. Refer to Appendix for Capital Market Assumptions methodology and Key Modelling Assumptions.

2008 Recession



Source: BlackRock, July 2026. For illustrative purposes only. Forecasts are not a reliable indicator of future performance. Refer to Appendix for Capital Market Assumptions methodology and Key Modelling Assumptions.

Under a mean reversion approach, major market downfalls are typically followed by higher return expectations in the short term, alongside a fall in inflation expectations. This mechanism partially offsets the immediate impact of the market shock by lifting the forward-looking assumptions.

Therefore, stress testing should focus both on asset performance and pension outcomes: How the portfolio falls, and how that fall is translated through the valuation into target pension changes. Realised asset losses, expected future returns, inflation assumptions and benefit duration all affect how much of a market shock is passed through to target pensions.

From this perspective, CDC brings a more stable experience to pensions under market stress scenarios than individual DC to those individuals closest to or in retirement.

As any investment, CDC portfolio can fall in value. The true question is whether the portfolio remains consistent with the target pension objective through different market environments. In our view, this requires a whole portfolio approach, taking careful view of diversified, inflation-aware sources of growth across the portfolio, with clear liquidity management and stress testing in place to provide a robust investment performance.

The target pension can be mispriced.

While well-positioned for one-off market shocks, the CDC stabilising mechanism will struggle most over periods of long-term underperformance, where the benefit target, valuation assumptions and the investment portfolio consistently drift. This is where scheme alignment and governance will determine success.

CDC requires a portfolio designed for the target pension — return assumptions, inflation sensitivity, liquidity, private market pacing and stress outcomes need to be monitored together. The actuarial valuation and the investment portfolio therefore cannot be run as separate processes. CDC becomes fragile if return assumptions, asset allocation, liquidity management and benefit design are not aligned.

This is why CDC governance has to integrate investment, actuarial and communication decisions in a single, streamlined governance framework:

- The investment strategy should be built around the target pension design
- The valuation basis should be consistent with the assets actually held
- Liquidity should be managed against expected benefit payments, transfer activity and private markets commitments
- Member communications should make clear that benefits are targeted, not guaranteed

Conclusion

CDC has sparked a lot of debate and interest across the UK pensions landscape. We believe there are merits to be optimistic and consider CDC as a potential solution to deliver adequate workplace benefits. While dependent on the specifics of scheme design, CDCs are generally expected to enable higher-for-longer growth tilts in portfolio allocations, limit volatility experience in retirement and provide a fairer value for longevity risk protection. Most crucially, by aligning all aspects of scheme design to the fundamental need in retirement — a pension for life — CDC enables simplicity and confidence for individuals. These are all significant improvements to the current status quo for DC savers when reaching retirement — with many struggling to meet adequate retirement income or finding it difficult to understand the options and choices they can make with their retirement savings.

However, innovation can bring novel risks — investment strategy should be appropriate for the chosen scheme design, there should be alignment between actuarial and investment forecasting assumptions, and portfolio and scheme risks should be well-understood and communicated to individuals. But these are design and implementation challenges, not reasons to dismiss the model. With the right investment framework and actuarial alignment, CDC can offer a more effective bridge between the adequacy challenge facing DC savers and the affordability constraints that have limited DB provision.

The success of CDC will depend less on whether the industry accepts the concept of collectivisation, and more on whether schemes can translate that concept into a robust investment, valuation and communication framework.

Appendix

Index proxy and Key Modelling Assumptions

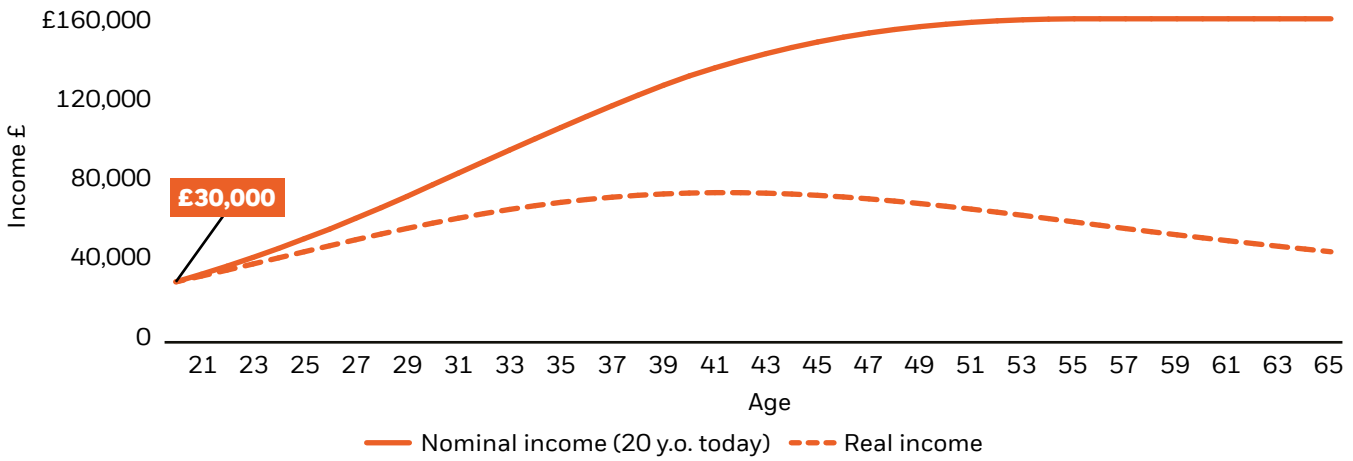
Asset class	Index proxy	DC Lifetime-weighted	DC Growth	DC Retirement	CDC
Global Equities	MSCI All Country World Index	71.1%	85%	0%	70%
Global Bonds	Bloomberg Global Aggregate Index	16.3%	0%	100%	0%
Private Equity	BlackRock Proxy	3.8%	4.5%	0%	9%
Infrastructure Equity	BlackRock Proxy	3.8%	4.5%	0%	9%
Global Direct Lending	BlackRock Proxy	2.5%	3%	0%	6%
Global Core Real Estate	BlackRock Proxy	2.5%	3%	0%	6%

1. We have calculated the asset value simulations for a 50-year period, utilizing 5,000 Monte-Carlo simulations for both individual assets and entire portfolios.
2. All analyses are based on Capital Market Assumptions simulations from the BlackRock Investment Institute as of 31 March 2026.
3. The alpha for private market strategies is derived from BlackRock Investment Institute's assumptions.
4. The analysis represents just a subset of all possible outcomes.
5. For illustrative purposes only. Forecasts are not a reliable indicator of future performance.

1.1 Individual DC Modelling Assumptions

Assuming continuous contributions of 10% starting from age 20, with wages following nominal wage curve as set out in the income curve below, and investment portfolios aligned with allocation as specified in chart B.

Assumed nominal and real income curves



Assumed parameters for different ages

Member age	Starting salary at the relevant career start (in £ thousands)	Already-contributed years	Starting pot today (£)
20	£30	0	£0
40	£17	20	£188
55	£13	35	£607

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1.2 Modelling Assumptions

Collective DC assumptions:

- 100 members between ages 22-65, with number of members in each age bracket approximated with reference to the UK workforce composition, as of March-May 2026 (ONS, Employment, unemployment and economic inactivity by age group (seasonally adjusted), 2026).
- All members have accumulated £1,000 real income in retirement, regardless of age. For the period under analysis, no new members join the scheme, and no additional contributions are made. No assumptions are made as to how the £1,000 income benefit has been accrued.
- Internal target for retirement income growth is inflation +1%
- Portfolio investment target is inflation +4%
- Illustrative scenarios assume inflation of 3%

Annuity assumptions:

Insurance: Current-price income for RPI, 5Y guarantee, 5Y guarantee, for a member aged 54 as of 05/03/2026. Annuity fair value for CDC based on: Long-term inflation rate of 2.2%; Interest rate of 5.41%.

Stress test assumptions:

Market shocks calculated on an annual basis assuming 16.5% volatility and expected return of 7.5%, resulting in a positive shock of +24% and negative shock of -9%.

Capital Market Assumptions Methodology

BlackRock's Capital Market Assumptions disclosures: This information is not intended as a recommendation to invest in any particular asset class or strategy or product or as a promise of future performance. Note that these asset class assumptions are passive, and do not consider the impact of active management. All estimates in this document are in UK pound sterling terms unless noted otherwise. Given the complex risk-reward trade-offs involved, we advise clients to rely on their own judgment as well as quantitative optimisation approaches in setting strategic allocations to all the asset classes and strategies. References to future returns are not promises or even estimates of actual returns a client portfolio may achieve. Assumptions, opinions and estimates are provided for illustrative purposes only. They should not be relied upon as recommendations to buy or sell securities. Forecasts of financial market trends that are based on current market conditions constitute our judgment and are subject to change without notice. We believe the information provided here is reliable, but do not warrant its accuracy or completeness. If the reader chooses to rely on the information, it is at its own risk. This material has been prepared for information purposes only and is not intended to provide, and should not be relied on for accounting, legal, or tax advice. The outputs of the assumptions are provided for illustration purposes only and are subject to significant limitations. 'Expected' return estimates are subject to uncertainty and error. Expected returns for each asset class can be conditional on economic scenarios; in the event a particular scenario comes to pass, actual returns could be significantly higher or lower than forecasted. Because of the inherent limitations of all models, potential investors should not rely exclusively on the model when making an investment decision. The model cannot account for the impact that economic, market, and other factors may have on the implementation and ongoing management of an actual investment portfolio. Unlike actual portfolio outcomes, the model outcomes do not reflect actual trading, liquidity constraints, fees, expenses, taxes and other factors that could impact future returns. Asset allocation/diversification does not guarantee investment returns and does not eliminate the risk of loss.

Index disclosures: Index returns are for illustrative purposes only and do not represent any actual fund performance. Index performance returns do not reflect any management fees, transaction costs or expenses. Indices are unmanaged and one cannot invest directly in an index.

CMA Methodology interest rates: Our model provides a way to chart the yield curve at multiple time horizons in the future. We base this on our estimates of: (1) the short rate and (2) model implied term premia. We base our estimates of short rates on market data in the near term and on macro-informed data in the long term. We assume investors' views about long run inflation and real growth, coupled with changing preferences as to savings and risk aversion, will ultimately determine their expectations for short rates (the 'long run short rate'). We use an affine term structure model — a type of model that assumes bond yields as a linear function of a small set of parameters (Piazzesi, 2010) — to compute model-implied term premia. In our implementation, we represent the yield curve using the first five principal components of yield, as laid out by Adrian et al. (2013). We then blend the model implied term premia from the affine term structure model with market implied term premia, with the relative weights dependent on the relevant time horizon.

Equities: Expectations of cash flows and discount rates can help explain the variability in equity returns as shown by Campbell (1990). We have used this insight to develop a discounted cash flow (DCF) model, with a few key innovative features. Most academic research focuses on the question of whether stock returns are predictable at all. We are concerned with making the best estimates that we can. We make two additional contributions. First, the baseline DCF model estimates earnings by leveraging analyst earnings estimates in the near term as discussed by Li et al (2013) to derive the implied cost of capital. The common assumption in implied cost of capital (ICC) studies is that earnings growth implied by analyst earnings estimates in the near term should trend towards GDP growth in the long term. This can introduce an unintended assumption of continued expansion of profit margins. We have introduced a modification to account for late economic cycle dynamics. We allow for corporate profit margins to revert to trend (the median over a rolling 10-year history) as margins typically peak late-cycle. The standard ICC approach typically tests for equity returns using linear regression tests. For our DCF model, we take the desired time horizon as an input (number of years) and we estimate the appropriate discount rate for the specific time horizon using our aggregate implied cost of capital. This way, we account for both key sources of variability in equity returns, namely changes in cash flows and changes in the discount rate.

Credit: Our model for credit asset (excess) returns is anchored on two key elements: 1) our estimate of credit spread at a given horizon and 2) our estimated loss due to defaults and downgrades over the horizon. The first component is projected in a consistent manner with our view of real GDP growth and the link between credit spreads and equity volatility. Our approach helps explain the behaviour of credit spreads using a limited number of predictive variables. Yet, as validated by tests against more complex methods, it retains the ability to help explain a high proportion of the variance in credit spreads. The second component is estimated based on our outlook for spreads, the duration of the asset and an assumed transition matrix which captures migrations and defaults across multiple credit cycles. We currently base our transition matrix on Moody's long-run transition data. We aim to further develop our model by

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directly modelling transitions based on macroeconomic conditions in order to better capture cycle dynamics and the respective variation in losses due to credit events. In addition to making our estimates of credit spreads consistent with our macroeconomic views, our new credit (excess) return model allows greater flexibility of calibrating our expected returns to different credit rating compositions which may prevail over the entire time horizon.

Uncertainty and optimisation: Expected returns and asset price volatility are difficult to predict. We believe any technique that builds portfolios should incorporate this inherent uncertainty (Ceria et al. 2006). We consider both long-and short-term drivers of return. In the long run, we expect a relatively small number of macroeconomic drivers — economic growth, rates, inflation, credit and currencies — to determine an asset's returns. In the short-run, other factors can overpower the structural drivers causing wider fluctuations from an asset's fair value. Valuations can be helpful in estimating short-term returns. We combine contributions from the long-and short-term return drivers to produce a final set of return expectations with a range of uncertainty around each. The next step is to use this set of return expectations in an optimisation engine that seeks out the best return without breaching an investors' risk limit. Mean variance optimisation would produce a portfolio that maximises expected return under one base scenario with a given level of risk. In contrast, we look to build a 'least-worst' portfolio — one that maximises returns for an investors' target risk levels across the worst outcomes, say for the bottom 50% of the distribution, from a set of stochastically generated scenarios (cf. Tütüncü et al. 2004 and Garlappi et al. 2006). This helps ensure the portfolio is not overly reliant on just the median return. This process seeks to produce a portfolio that is robust to small changes in the central return estimates (Scherer, 2006).

Stochastic engine: We use Monte Carlo simulation to create random distributions informed by historical return distributions and centred on our expected returns. The engine simulates thousands of return pathways for each asset, representing the range of possible outcomes over a five-to 20-year time horizon. We leverage BlackRock's risk models to help ensure that assets generate similar returns, to the extent that they have common drivers. The range of scenarios incorporate our work on incorporating uncertainty in return expectations. We use an extension of the Black-Litterman model (1990) — a well-known model for portfolio allocation that combines equilibrium returns and medium-term views in a single-period setting. Our model uses a Kalman filter (1960) — an algorithm that extracts insights about return paths by bringing together a number of uncertain inputs -to extend Black-Litterman into a multi-period setting. This allows us to capture the variation of expected returns over time under various scenarios — from economy-related to market sentiment driven. A large part of these variations is not predictable. Constructing portfolios that are robust to, or can exploit, these variations is a major challenge for investors. The ability to calibrate the engine with asset class views with uncertainty at arbitrary time horizons, and to evolve this uncertainty stochastically, drives the dispersion of return outcomes. Highlighting the uncertainty that investors face when building portfolios helps ensure ostensibly precise return expectations do not lead investors to concentrated portfolios. Simulated return paths support a broader range of applications, such as asset-liability modelling. We believe stochastically generated return scenarios enable investors to move with ease beyond mean-variance and optimise portfolios against their individual needs. Investors can place more emphasis on the tails of the distribution or focus on the path of returns rather than just the total return. They can incorporate flows in or out of the portfolio over the course of the investor's time horizon or place more emphasis on scenarios that are challenging for the investor's business beyond their portfolio. Investors with complex asset-liability matching requirements, such as insurers, typically rely on stochastic simulations of returns to assess and construct portfolios.

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