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The role of Collective Defined Contribution in decumulation



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OR CONTACT:

Danielle Baker

Head of Membership & External Engagement

danielle@pensionspolicyinstitute.org.uk

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The role of Collective Defined Contribution in decumulation

This report is authored by:



John Upton
Policy Analyst



Tim Pike
Head of Modelling

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What can the UK learn about other countries' approaches to accessing DC savings?

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Executive Summary

This report explores the trade-offs in how a decumulation Collective Defined Contribution (CDC) pension scheme may operate under the environment currently envisaged in the UK.

CDC pension schemes become a reality in the UK when the Pensions Schemes Act 2021 became law, and regulations governing CDC schemes were set out. The legislation, however, is flexible enough to support other applications for CDC schemes.

The UK implementation of decumulation CDC, as currently envisaged, is unlike implementations of similar arrangements across Europe. The UK approach to scheme design is constructed to offer greater fairness between members, at the cost of less predictable future benefit levels.

The designs implemented in other countries, such as The Netherlands, have raised concerns of intergenerational fairness and the subsidising of groups within the schemes. Maintaining the aim of greater transparency and fairness in the UK will lead to challenges for UK decumulation CDC schemes as they will need to operate without smoothing mechanisms, such as buffers, and with a more limited time horizon of future liabilities than whole of life CDC implementations.

UK decumulation CDC schemes should be able to fulfil their objectives while operating under current design constraints

A decumulation CDC scheme offers longevity risk pooling between members, unlike individual drawdown, and a higher degree of investment in growth assets than an annuity. Decumulation CDC schemes can therefore offer a higher, if slightly more volatile, income for life than an annuity without the risk of fund exhaustion associated with drawdown.

Scheme objectives will be a critical part of communication with members as these outline the scheme's approach to risk and therefore the potential for benefit adjustments, including cuts, which will affect members most.

The potential scheme offers an income level which offers a high opening benefit level, which broadly increases in line with the Consumer Prices Index (CPI) [Figure E.1], though the actual year on year increases vary [Figure E.2]. This is achieved with a significant proportion of growth assets which offers a higher benefit level at the cost of reduced benefit predictability.

Figure E.1

A scheme may see increases or decreases in terms of real benefit

Deciles of the index of the real benefit adjusted for CPI of the base scheme

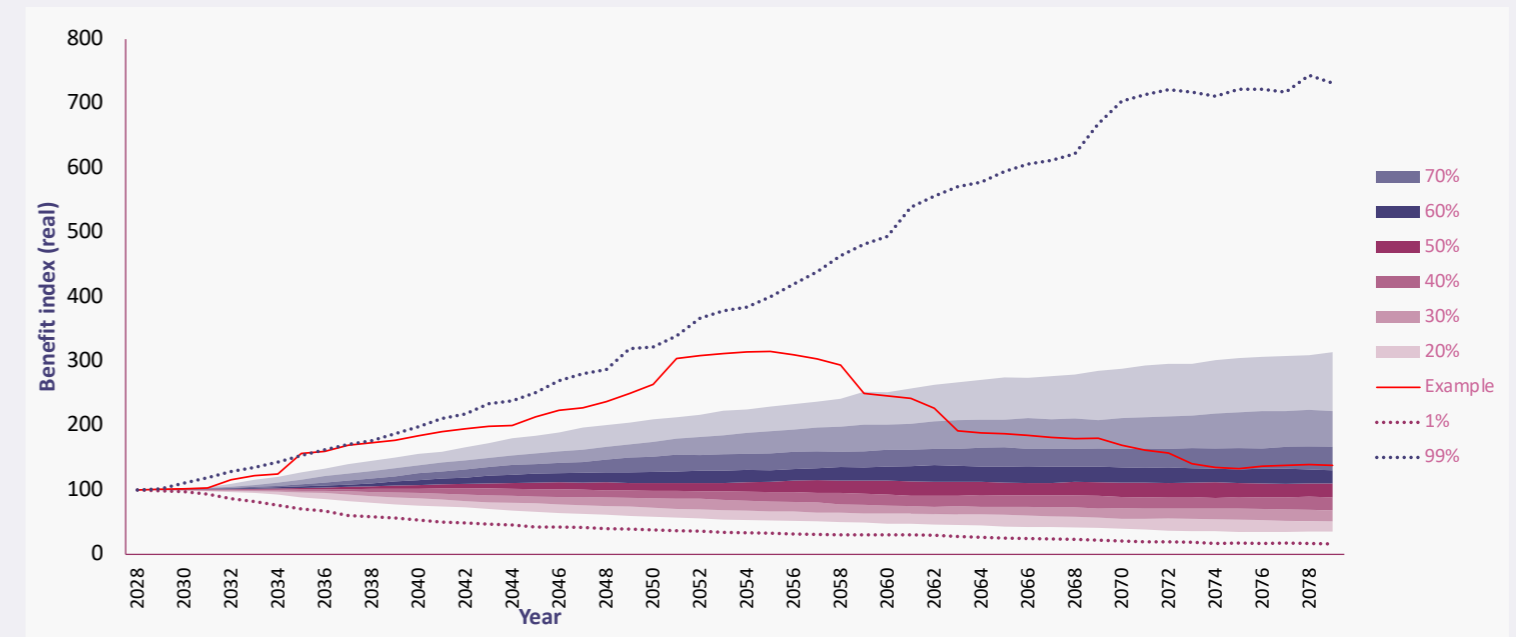
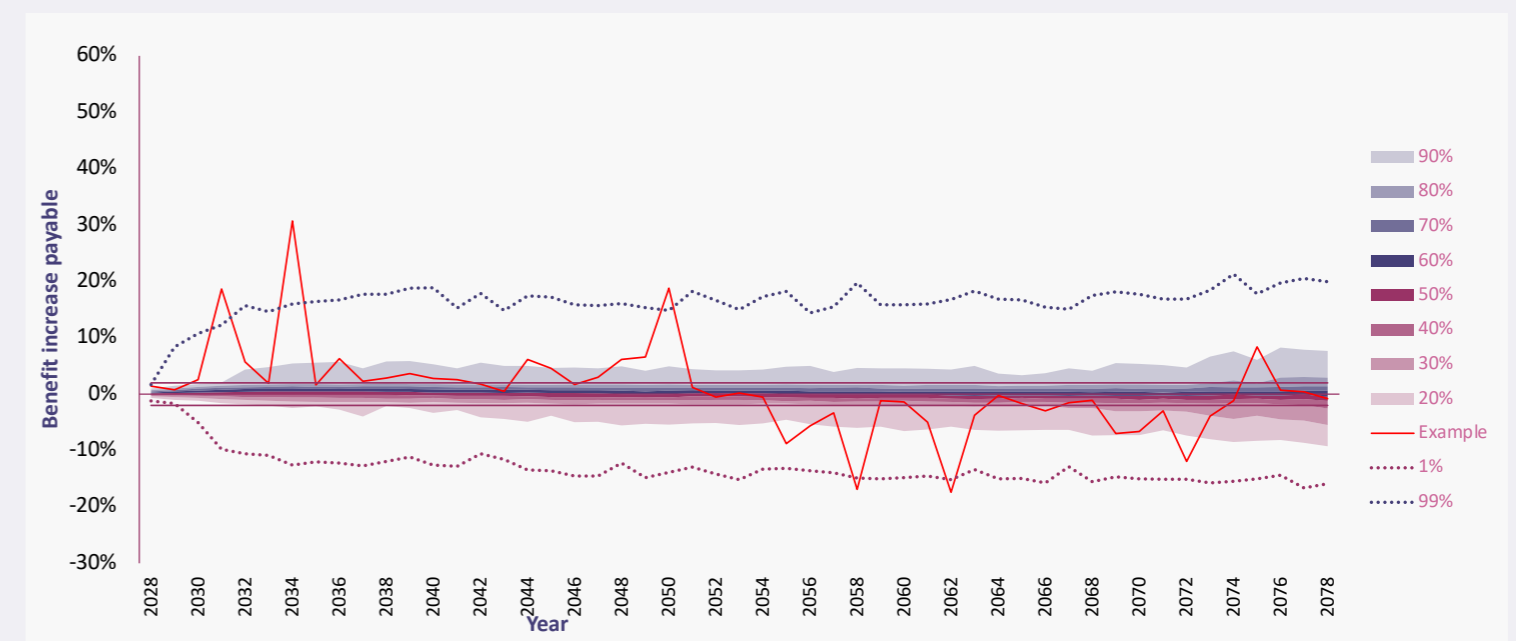


Figure E.2

The modelled scheme provides future benefit increases within CPI ±2% in two out of three annual valuations

Benefit increases payable by year for different percentiles of stochastically generated CDC scenarios



The majority of risk and volatility issues in CDC decumulation stem from investment performance

A CDC decumulation scheme will need to consider within its objectives the balance of a higher opening benefit level and the degree of predictability of future benefit levels that can be provided. Higher initial benefit levels can be achieved through growth-orientated investment strategies, though these are associated with greater degrees of investment volatility and, ultimately, greater unpredictability in future benefit levels. Alternatively, using an investment strategy which foregoes greater investment in growth assets, such as a cashflow driven strategy, it is possible to generate a more predictable future benefit level, though starting benefit levels will be lower.

Cashflow-driven investment strategies are becoming more prevalent in matching Defined Benefit (DB) liabilities and may contribute to the investment strategy to ensure the product functions as intended.

The needs contained within the investment objectives to provide predictability in the future benefit payable to members may result in investment strategies that are consistent with those observed in the more mature DB market. Cashflow-driven investment strategies make greater use of hedging assets to reduce volatility, which, in turn, can deploy dynamic discount rates that deliver greater funding stability. This approach necessitates a move away from growth assets which would have a consequential impact in the level of benefit offered as the price of offering greater predictability.

Without consistent underwriting there may be systemic unfairness in a decumulation CDC scheme.

Within the fairness considerations of a scheme, it is imperative that the sharing of longevity risk be fair. Because the longevity risk is a factor in the volatility of future benefit increases, it would need to be an equivalent risk for all members. That is, their personal longevity risk when compared to the aggregate longevity risk within the scheme must be consistent with other members. To achieve this would require an equivalent degree of underwriting for all new members or else the volatility of future benefit levels (which would be applied uniformly) would not reflect the degree of mortality risk (which would not be uniform).

Insufficient scale is more of a threat to the economic viability of a decumulation CDC scheme than to its effective risk pooling

Risk sharing between members still operates effectively at a scale below which a scheme may not be economically viable. The benefit level offered by very small schemes offer will inevitably be less predictable than that offered by larger schemes, all other things being equal. However, the major driver to the scheme's volatility remains investment performance, regardless of scale, as the mortality volatility is lower than investment volatility and consequently has a smaller impact on predictability.

For a scheme to be of sufficient scale to be economically viable it must be able to implement a charging structure allowing it to cover running costs, as well as recover start-up costs including authorisation fees.

The minimum economically viable size will depend upon both upon the number of members and the total assets under management. The necessary scale may be equivalent to that required for a master trust to have an adequate charging base to cover its costs.

Decumulation CDC will not operate in a vacuum; interaction with other decumulation options, both as competition and compliment, will determine its success within the spectrum of such products

Decumulation CDC will face competition from existing decumulation products, new products within the current framework including blended solutions, alongside additional potential competition from multi-employer CDC schemes.

Income volatility in private pension income will be diluted by income from other sources, such as the State Pension.

For any pensioner they will need to understand the degree of uncertainty they can tolerate from their retirement income. Ultimately the desirability of retirement product mixes will depend upon the risk profile of the individual member. The impact of income volatility from private pension decumulation options is diluted by the State Pension, which provides a predictable income underpin with funding risk (in place of investment risk in a pay-as-you-go scheme), inflation risk and longevity risk borne by the state.

Communication is the single biggest challenge to overcome

Experience from the Netherlands, where communication with CDC scheme members failed to align expectations with the realities of the systems, resulted in reduced trust in their pension system and, ultimately, was a contributory factor to the reforms which will come into force as the new Dutch pension agreement.

While the communication may be the single biggest challenge, this is still only an input to understanding the choices in maintaining an income in retirement. A problem William Sharpe described as the “nastiest, hardest problem in finance”.

Introducing decumulation CDC to the pension market will make a complicated decision more complex.

It will be important to consider where decumulation CDC is positioned within the advised and guided markets and how decumulation CDC should be positioned between the certainty of an annuity and the flexibility of an individual drawdown product.

To ensure the best outcomes for individuals it may be appropriate to use a personalised mix of decumulation products.

Since freedom and choice was implemented combinations of drawdown and annuity products have been proposed which have become more sophisticated and tailored over time, with the aim of meeting consumers' needs, including a desire for flexibility.

The decision to use a decumulation CDC scheme is unlikely to completely answer the needs of a new member.

A personalised blend of products would enable an individual's particular needs regarding income levels, need for predictability and risk appetite to be accommodated. It is a complex balance to define the most appropriate combination for an individual and advice may play a role in enabling this.

³ Pension pots 'can be used to buy Lamborghinis', says minister The Guardian, 20 March 2014

Introduction

Collective Defined Contribution (CDC) pension schemes become a reality in the UK when the Pensions Schemes Act 2021 became law, and regulations governing CDC schemes were set out. The first scheme to be authorised is a whole-of-life Defined Benefit-style (DB) scheme offered by Royal Mail [outlined in Box 1].

Box 1 - The Royal Mail CDC Scheme

Royal Mail's Collective Pension Plan comprises a DB Lump Sum section, accruing at 3/80 of pensionable pay plus increases, and a CDC section, accruing at 1/80th pensionable pay plus increases. The contribution rates are 13.6% for the employer and 6% for the employee. Average increases are expected to be the Consumer Prices Index (CPI) + 1% (but not guaranteed).

The legislation, however, is flexible enough to support other applications for CDC schemes. The PPI has previously modelled and published work focussing on CDC during the accumulation phase,^{1,2} and in understanding what lessons could be learnt from other countries who already have CDC.³ It is felt that little has been done to explore the post-retirement space specifically to answer: **How could a CDC-style decumulation-only solution work, what would be the pros and cons and the likely member outcome?**

Box 2 – Accumulation, decumulation and whole of life

Pension schemes and products operate across a life course. The period when a member is paying money into a scheme in the form of contributions is the accumulation phase. This typically ends at retirement when a member stops putting money in and starts taking it out to provide an income in retirement. This period of withdrawing pension savings in the form of an income (or lump sum) is the decumulation phase. Getting between accumulation and decumulation may require transferring pension savings between products and providers. A scheme that operates over both accumulation and decumulation without the need to switch products is referred to as “whole of life”.

Considering a scheme where members transfer a fund into a scheme to purchase an income for life, the PPI has analysed the income that a scheme could provide to its members.

This research has set out to answer the following questions:

What could be the role and main design features of CDC in decumulation?

- What level and rate of indexation could be set for the target benefit level?
- What is the likelihood of this target being met?
- How might benefit cuts from underfunding impact projected benefits?
- How might any bonuses from overfunding get converted into benefits?
- What are the trade-offs between risk (such as investment policy) and outcomes (such as volatility)?

What are the constraints on effective operation?

- Assets under management (AUM);
- Number of members;

How could some of the other possible issues be handled? e.g.:

- Communication risk;
- Cross-generational cross subsidy; and
- What might an endgame look like.

Chapter One – A brief history of CDC in the UK

This chapter examines the place of CDC Pension schemes within the UK pension system and how the current situation may be adapted to accommodate CDC decumulation schemes in future

Chapter Two – A model for a CDC decumulation scheme

This chapter details the implementation of a model for a CDC decumulation scheme. It covers the key features of the scheme and the critical assumptions that drive the model outcomes.

We particularly consider the approach to setting key assumptions:

- Mortality
- Investment portfolio

The approach to liability management through future benefit increases allows the scheme to manage the balance of assets against liabilities.

It summarises how the scheme performs under these conditions

Chapter Three – The sensitivity to assets and members

This chapter examines the impact of how particular sensitivities to investment portfolios and membership impact the observed outcomes for the sample scheme.

We consider the level of benefits offered and the predictability of future benefit levels.

Chapter Four – Further challenges to overcome

This chapter examines other issues associated with the implementation of CDC decumulation schemes in practice. Many issues have been raised within the 2023 DWP consultation ‘Extending Opportunities for Collective Defined Contribution Pension Schemes’.

¹ Popat et al. PPI (2015)

² Wilkinson, PPI (2018)

³ Wilkinson, PPI (2022)



CHAPTER ONE: A BRIEF HISTORY OF CDC IN THE UK

This chapter examines the place of Collective Defined Contribution (CDC) pension schemes within the UK pension system and how the current situation may be adapted to accommodate CDC Contribution decumulation schemes in future.

For CDC pension schemes to operate as a decumulation-only product it is necessary to consider how the whole-of-life CDC schemes have developed in the UK market.

CDC has been implemented in the UK providing an alternative occupational pension scheme to the historical dichotomy between the collectivism of Defined Benefit (DB) schemes and the individualism of Defined Contribution (DC) schemes

The Pensions Scheme Act 2021⁴ gained royal assent on 11 February 2021 passing the necessary legislation to allow the creating of CDC schemes in the UK.

Legislation was first passed for Defined Ambition (DA) schemes in 2015,⁵ however the provisions never came into force.

The act created the provisions for the Government to allow the creation of DA pension schemes. However, there was no demand for the implementation of such a scheme and the necessary secondary legislation was never enacted.

In 2018, the Communication Workers Union (CWU) and Royal Mail Group (RMG) reached an agreement on the design of a new CDC pension scheme. This was to replace the then existing DB and DC schemes open to employees of RMG.⁶ To implement this proposed scheme necessitated legislation to be passed.

Rather than revisit the previous act, it was determined to be more expeditious to introduce new legislation to facilitate the proposed CDC scheme. Within the legislation, clause 47 gives the Government powers to allow the creation of multi-employer schemes, however the legislation was primarily designed to permit the creation of the RMG proposed CDC scheme.⁷

Regulation of CDC schemes falls under the remit of The Pensions Regulator (TPR)

The Pensions Act 2021 sets out the authorisation regime for any new CDC scheme [Box 3]. The scheme is assessed by TPR as to whether they are satisfied the scheme meets the authorisation criteria.⁸ TPR has a supervisory role in the ongoing function of all CDC schemes.

Box 3 – CDC legislation and regulation in the UK

The Pension Schemes Act 2021 provides the legislative framework to establish and operate CDC schemes (referred to as Collective Money Purchase (CMP) schemes in the Act) in the UK. The Act also provides for TPR to produce a Code of Practice for the authorisation and supervision of CDC schemes.

TPR consulted on its proposed Code of Practice between January and March 2022. It came into force 1 August 2022.

The Code of Practice covers the statutory objectives of TPR and considers the authorisation of schemes under the six authorisation criteria set out in legislation:

- Fitness and propriety
- Systems and processes
- Member communications
- Continuity strategy
- Financial sustainability
- Sound scheme design.⁹

Rather than include reference to fairness in the act the Parliamentary Under-Secretary of State for Work and Pensions, Guy Opperman, explained fairness was best considered in regulation.¹⁰

A decumulation CDC product regulated by TPR would be in competition in the market with products regulated by the Financial Conduct Authority (FCA), creating a regulatory distinction between the product and its competitors.

UK CDC schemes are regulated to operate on a no buffers, best estimate basis to mitigate risks of unfairness between scheme members. This approach is based upon the demographics of a whole-of-life scheme with a broad membership base and a long liability profile across which to mitigate the impact of variable investment returns and mortality experience.

The alternative international implementations, to include buffers and reserving [Box 4], improves the predictability of future benefit payments. The Dutch do not make adjustment to future benefits when the funding ratio fits within a funding gate. Further, their use of recovery plans reduces the likelihood of making benefit cuts.¹¹ In the decumulation-only space, German variable-life annuities are adjusted according to the scheme funding position if the funding ratio moves outside of 100% to 125%, while Dutch variable pensions have the ability to smooth a member's benefit level over a period of up to ten years which is directly applied to the member's capital value ("smoothing with your own pot") to limit intergenerational risk sharing.¹² These approaches could necessitate the adoption of funding regulation in the UK (regulated by TPR) as this could bring them into line with DB schemes.

Box 4 – Features of international CDC implementation

Buffers: Capital buffers are assets set aside in a CDC scheme to mitigate against the need to vary future benefit levels. Where the scheme is underfunded, assets from the buffer are used to maintain benefit levels and, where the scheme is over funded, the buffer may be replenished rather than distributing all of the surplus.

Funding Gate: A scheme cannot distribute any surplus or cut benefits in the case of a deficit when the scheme is only under or over funded by a small margin, e.g. ±5%. This avoids making so many changes to benefit levels, however when an adjustment is necessary it may be larger.

Reserves: Money set aside to cover future adverse experience, see 'buffers'.

Predictability of the benefit paid by UK CDC pension schemes is predicated on the long-term nature of membership. Adjusting future benefit increases over this longer period has a significant impact on the value of future liabilities. In the decumulation-only space, CDC schemes would not be able to spread lower than expected returns across a broad member base and so, all other things being equal, members would be more likely to experience reduced indexation and potentially nominal cuts to pensions in payment, as risk is shared amongst a smaller group.¹³

Research has shown that people experience twice as much pain from a loss as pleasure from a gain of equal size, which may mean that pension funds would seek to avoid delivering outcomes below people's expectations.¹⁴ In terms of scheme design, where expectations of gains and losses are set on a best estimate basis resulting in an approximately equal chance of gain or loss, it may be necessary to seek to control the scale of these gains or losses. This may be the only recourse to mitigate this pain which could result in distrust and disappointment in a CDC arrangement, alongside careful management of expectations through communications.

⁴ Pension Schemes Act 2021 ss 9 and 60

⁵ Pension Schemes Act 2015, pt 2

⁶ CWU (2018)

⁷ Pitt-Watson et al, RSA (2020)

⁸ Pensions Scheme Act 2021

⁹ TPR (2022)

¹⁰ Hansard (2020)

¹¹ Wilkinson, PPI (2022)

¹² Hurman (2023)

¹³ Wilkinson, PPI (2018)

¹⁴ Tversky & Kahneman (1992)

The Royal Mail has authorisation for the first CDC scheme in the UK.

The Pensions Scheme Act 2021 was designed to enable the implementation of the Royal Mail pension scheme and, hereafter, it may be considered that this scheme may operate as a template for future UK pension schemes.¹⁵ Clearly, implementing a decumulation-only product to operate in the competitive retirement market will require going beyond the structure of the Royal Mail scheme, however it is anticipated that it will remain built upon the same principles.

The Royal Mail Group scheme is designed to provide the best affordable pension outcome for Royal Mail employees.¹⁶ It is designed to operate for a particular membership and at a particular cost.

The investment strategy backing the scheme effectively transfers investment risk from older members to younger members via the annual pension increases.¹⁷

This risk transfer is what facilitates the pension smoothing as the future value of younger members' benefits is far more sensitive to changes in the rate of benefit increases. This sensitivity is effectively used to mop up the volatility of investment returns without having such a significant impact upon benefit increases for older members. This allows younger members who may benefit from accepting the risks in the scheme to take it from older members who are less likely to be in a position to benefit from risk taking. In a decumulation-only situation, this risk transfer will not be available as younger members, many years from retirement, are not present in the scheme. The Royal Mail has a workforce of 150,000 people¹⁸ which offers a large supply of active members to their pension scheme.

This offers the scheme an immediate scale of membership, albeit assets will start at zero and grow over time as contributions are made. Most importantly to the scheme design, it generates a broad membership base across which to share the investment risk between younger members and those approaching retirement. In future, the membership will age to include pensioner members who will be able to share risk with new, younger members.

Other potential occupational schemes.

It is estimated that for an employer to be best placed to operate a CDC scheme that is financially viable, they may need a workforce of at least 5,000 employees.¹⁹ This is significantly below the size of the Royal Mail Group.

A prospective membership of 5,000 employees translates to over 100 active members at every individual year of age. Below this scale it may be necessary to consider a multi-employer arrangement to achieve sufficient scale for adequate risk pooling.

The advantage of a single employer scheme is that the scheme does not need to operate in a commercially competitive environment. That is not to say it does not need to deliver value to its members, this is to be monitored by TPR, but that the offering can be tailored to the members and the active membership will remain stable, subject to the ongoing stability of the employer.

CDC is being considered as a potential pension solution to improve outcomes for individuals for the same contributions

Modelling has shown potential whole-of-life CDC retirement outcomes may be at least 30% higher when compared to an individual arrangement.²⁰ This earlier modelling tends to reflect a scheme design more akin to international implementations with a buffer operating through a funding gate approach (by virtue of predating the legislation that prescribed CDC scheme design in the UK). Regardless, the additional value was still generated largely through an investment strategy more heavily based upon growth assets whose volatility can be mitigated through investment risk sharing between younger and older members.²¹ This advantage over an individual arrangement is still available within UK scheme designs, however the outcomes would be expected to be more volatile with the restriction upon buffers. It could be that this increased volatility may lead to an investment strategy in practice that is less growth seeking to offset investment volatility, which would in turn reduce the scale of benefit from being within a CDC arrangement (over an individual arrangement).

CDC schemes are being considered for whole-life multi-employer applications.

This may necessitate some modifications to the single employer scheme design as currently legislated, however some features will remain the same. Notable considerations that may also be meaningful in the decumulation space include:

- Sectionalisation of schemes;
- The need for competition and assessment of benefit levels and levels of risk;
- TPR oversight of communication and marketing;
- The use of Technical Actuarial Standards to provide illustrations and in marketing;
- Maintaining an approach of 'no buffers' when undertaking scheme valuations to assess the funding position; and
- Bounds on adjustments to future indexation.

It is indicated that multi-employer schemes, if implemented, could be based upon the same legislative and regulatory framework as Master Trusts.²²

Multi-employer schemes would allow access to a CDC scheme for employers who do not have a suitable employee profile to support their own scheme

¹⁵ Wilkinson, PPI (2022)

¹⁶ CWU (2018)

¹⁷ Donnelly, IFOA (2022)

¹⁸ Royal Mail Group (2023)

¹⁹ Eagle et al, WTW (2020)

²⁰ Popat et al (2017), Aon (2020), GAD (2009), Pitt-Watson et al, RSA (2012), Eagle et al, WTW (2020)

²¹ Taylor, Ward (2023)

²² DWP (2023)

Conclusions

In supporting transparency and fairness, UK CDC scheme design may produce more volatile outcomes than international implementations, where volatility is managed through buffers using a funding gate mechanism.

UK whole-of-life CDC scheme designs share risk across a broad membership base, using longer time horizons to produce more predictable benefit levels.

In decumulation only CDC schemes the time horizon is significantly shorter, reducing the efficacy of benefit increase mechanisms to smooth benefit levels.

Decumulation CDC schemes would need to operate in a commercially competitive environment.

Schemes would be competing for new members and, for this effective competition, it will be necessary to communicate how benefit levels and levels of risk may compare not just to other decumulation CDC schemes, but also to alternative decumulation products.

CDC schemes tend to produce better-modelled outcomes than individual arrangements through greater use of return-seeking investment strategies and pooling of mortality risk.

Where there is less opportunity to share investment risk across membership in decumulation-only CDC schemes it may be necessary to use a more conservative investment strategy than their whole-of-life counterparts. This may result in a reduction in the advantage that a decumulation-only scheme may be able to achieve while maintaining a risk exposure suited to its membership.

CHAPTER TWO: A MODEL FOR A COLLECTIVE DEFINED CONTRIBUTION (CDC) DECUMULATION SCHEME

This chapter details the implementation of a model for a Collective Defined Contribution (CDC) decumulation scheme. It covers the key features of the scheme and the critical assumptions that drive the model outcomes.

We particularly consider the approach to setting key assumptions:

- Mortality
- Investment portfolio

The approach to liability management through future benefit increases allows the scheme to manage the balance of assets against liabilities.

It summarises how the scheme performs under these conditions.

More detail on the design of the model and the assumptions used are contained in the Modelling Appendix. Results for sensitivities and other scenarios are included in Chapter Three.

The approach to member mortality

To model the scheme, we assume the scheme receives a constant supply of new members. They are aged 68 at the beginning of their membership and the pots they bring to the scheme are based upon the distribution of pots currently used to purchase annuities. The number of new members is set intentionally high so that the impact of mortality risk pooling functions as intended in this base case.

Members age and die according to a random stochastic process.

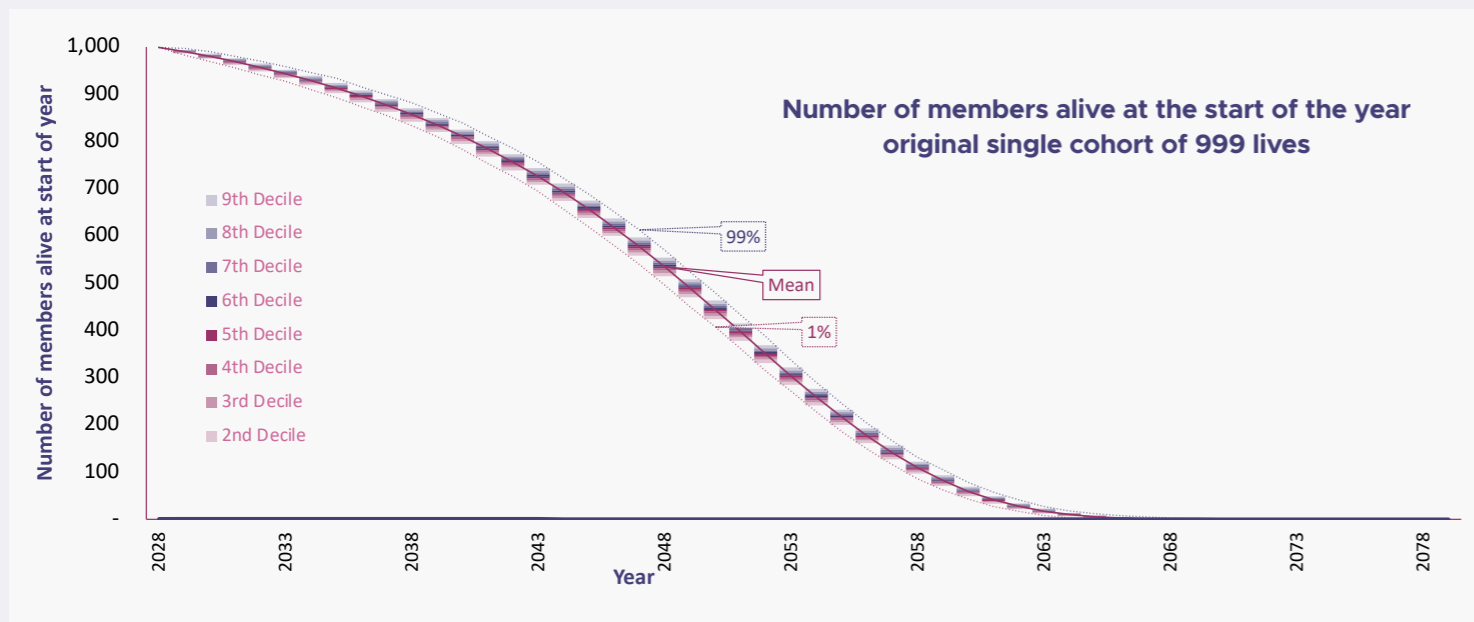
Each year, the model picks randomly and independently for each member whether they die in that year. The probability for each member is based on two things: how old they are, and when they were born. This is used to build a personal mortality table for every individual, which is taken from population statistics and allows for mortality improvement over time.²³ For example, 90 years olds have a higher chance of dying than 70-year-olds, and someone who is 80 in 2030 has a higher chance of dying than someone who is 80 in 2050, because it is projected that life expectancy will increase over time.

The probability of death for each member is independent of any other member. Evaluating these probabilities randomly, running the model multiple times leads to a set of distinct stochastic results. Modelling one cohort of 1,000 members who all join in 2028, we see that the number of surviving members in each year after that follows an S shaped curve [Figure 2.1], where the distribution is fairly tight: the difference in population between the 1st percentile and 99th percentile of stochastic runs of the mortality of a 1,000-person cohort is never more than 75 lives in the entire lifetime of the cohort.

Figure 2.1

Even with random variation, the mortality of 1000 68 year olds in 2028 is relatively predictable

Spread of members left alive in each year in 1000 stochastic runs of a model CDC scheme with one cohort of 68 year olds joining in 2028



The scheme is structured to include new members at the beginning of each year and the membership takes approximately 30 years for the membership to stabilise.

Within the base scheme membership every cohort that joins will be at retirement age. At first, everyone in the scheme will be relatively young and it will only be once the first cohort has mostly died out that the age distribution will stabilise, with every age group being represented. This takes approximately 30 years when all new members join at age 68. The proportion of people at each age stays roughly the same, assuming roughly equal numbers of new members each year.

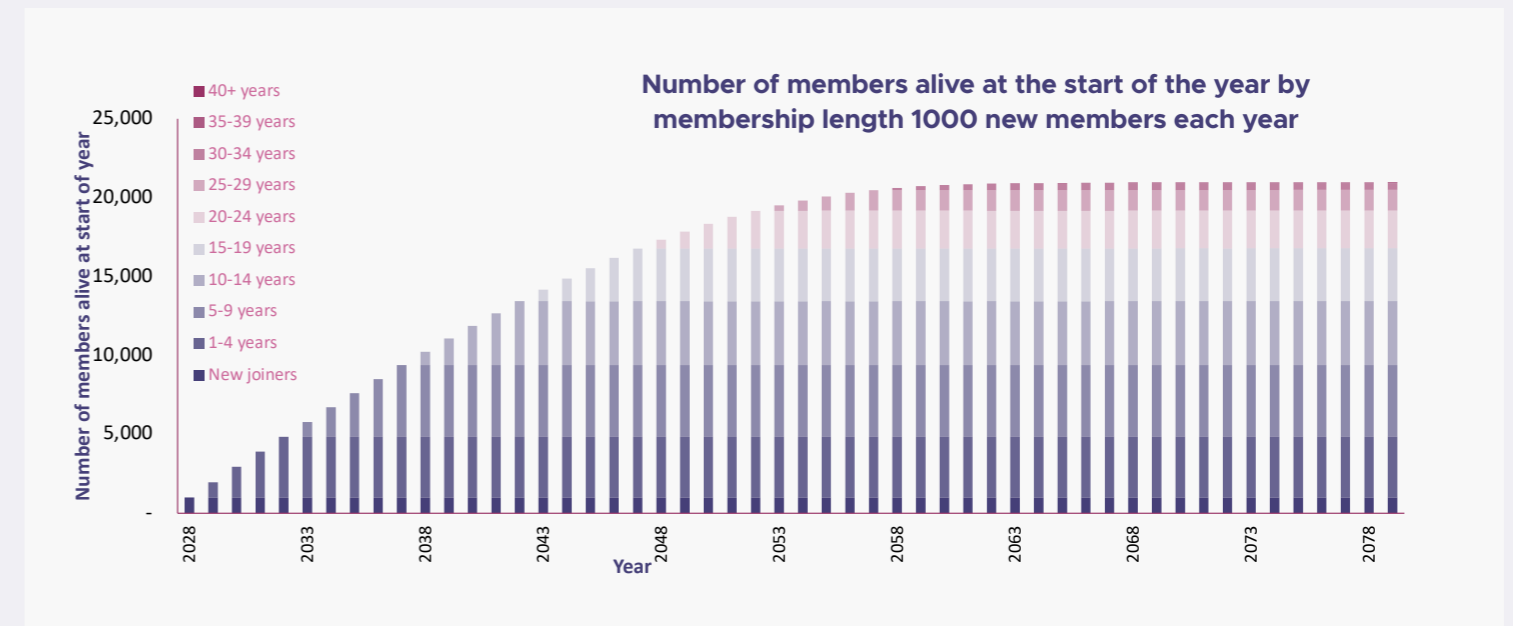
It takes around 30 years for the membership to become stable, and the scheme to be matured

We see that, if we model a scheme where a cohort of 1,000 people join each year, in the first 15-20 years, the total size of the membership grows fairly linearly. This linear growth can be attributed to low mortality levels across everybody in the scheme, given that nobody in the scheme is yet old enough to have a particularly high probability of dying. After this initial linear growth, the earliest cohorts start to reach the ages where their probability of dying in a given year becomes high, and the growth of the total membership starts to plateau [Figure 2.2]. Eventually, after about 30 years, the membership stabilises completely: for each year where 1,000 new 68-year-olds join, there will be approximately 1,000 deaths in the preceding cohorts.

Figure 2.2

It would take approximately 30 years for a scheme's membership to reach a stable age profile

Age of members in the scheme by number of members by 5 year tenure brackets



The average future life expectancy of the membership decreases from 19.9 years when the first new members arrive, to a minimum of 13.2 years when the membership stabilises 32 years later [Figure 2.3]

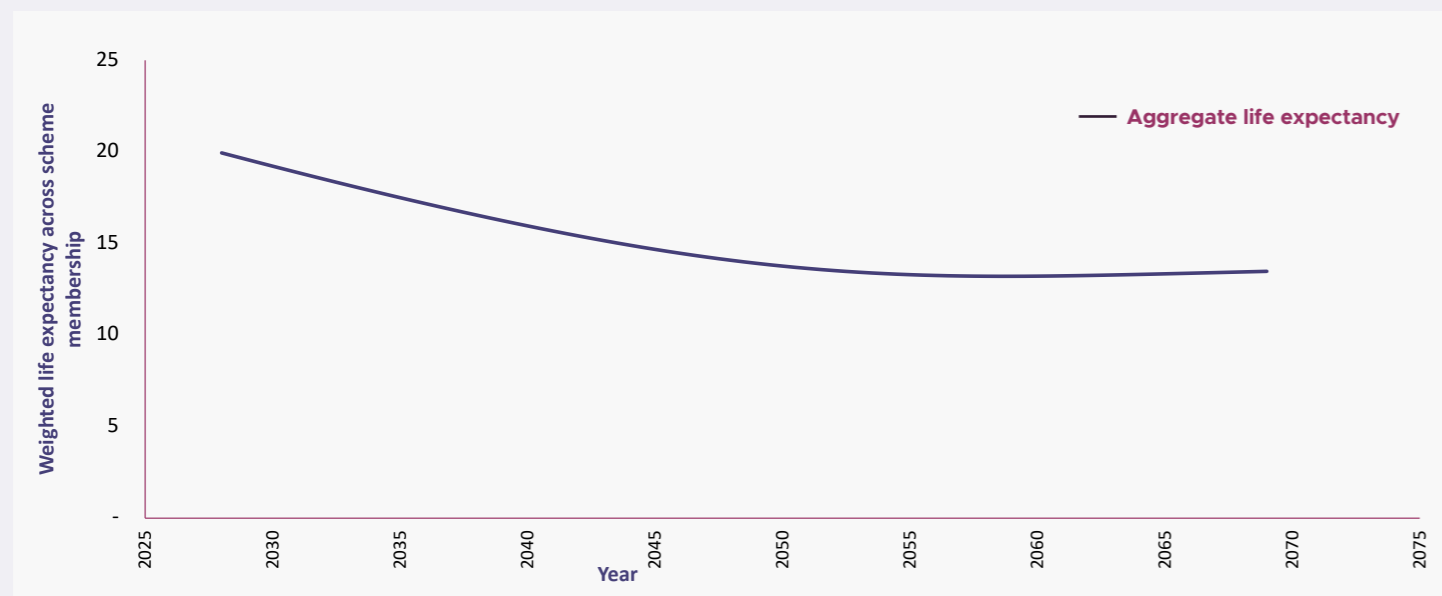
²³ ONS (2022)

The term over which benefits can be smoothed through risk pooling can be represented by the average life expectancy across all members in the scheme. It represents the number of years the average member will live for. It decreases from scheme inception until the scheme becomes mature [Figure 2.3]. Initially, the scheme is purely populated by 68-year-olds who have the largest future life expectancy of any members (being the youngest). As the membership ages their future life expectancy reduces. The minimum future life expectancy is after 32 years and represents a reduction in life expectancy of the membership by one third. It is only after this, with a stable membership, that the average future life expectancy starts to increase in line with future mortality improves.

Figure 2.3²⁴

The outstanding average life expectancy decreases as the scheme matures

Weighted life expectancy of members Constant rate of new members aged 68, ONS 2020-based mortality for females



The life expectancy observed in a decumulation-only scheme is far below the future aggregate life expectancy that could be expected in any open whole-of-life scheme where the membership would be dominated by working-age individuals in a mature scheme.

We effectively assume that the membership, on average, is underwritten perfectly fairly and consistently.

The model uses the same life tables²⁵ for three distinct purposes in the base realisation (though all may be set independently):

- Setting the benefit level for new members on a best estimate basis.** The mortality is used to calculate an opening benefit level for a new member (i.e., the pricing basis);
- Calculating the best estimate value of future liabilities for any existing member on a best estimate basis.** The mortality is used to calculate the value of the liability for any member (i.e., the valuation basis);
- Calculating the probability of death of a member in the scheme is projected in any year.** The mortality is used to designate particular members as dying or surviving in any year of projection (i.e., the experience basis).

By using the same mortality rates for each purpose, the model implicitly assumes that lives have been perfectly underwritten. Where the pricing basis is systemically out, this would imply ineffective underwriting and may result in particular new members either subsidising or being subsidised by other members of the scheme. Where the valuation basis is systemically out, the value of future liabilities will be misvalued, leading to a bias in future benefit adjustments. Where the experience basis is systemically out, the scheme will find itself consistently under or over funded.

In practice, a scheme would not have a perfect estimate of future mortality rates, and the mortality estimate for a new member would be updated on a best estimate basis as that member continued in the scheme. Where there is a bias to the estimation of mortality, the scheme will tend to penalise those with either a short lifespan or long lifespan depending upon the direction of the bias.

The approach to setting an investment portfolio has to be tailored to meet the objectives of the scheme

The portfolio of the backing assets is split 40:40:15:5 between equities, gilts, bonds and cash, with volatility reduction to reflect meeting an investment goal whereby assets are selected to more closely correlate with the liability profile.

This portfolio allows the scheme to deliver adequately consistent benefit increases while including growth assets to be able to achieve objectives of a CDC scheme.

The benefit adjustment that a member receives at the end of each year is directly linked to investment performance in that year. Although other factors affect their benefit to a lesser extent, such as the number of members who die and the number of new members who join with whom risk can be shared, investment performance has the capacity to cause large fluctuations in the benefit adjustments applied each year. Within a CDC scheme the benefit is not predetermined at outset: it is not bound in the same way that a Defined Benefit (DB) scheme would be to provide a particular benefit. However, broadly speaking, a CDC scheme should still aim to provide a consistent, reliable benefit increase in order to give members financial stability and peace of mind. This creates a trade-off between providing some level of stability, while also utilising the capacity to accept risk to seek higher return and therefore higher overall benefit.

The scheme's ability to spread the investment risk across members is reduced when compared to whole-of-life CDC schemes. This is due to the shorter average future membership period (13.2 years) when compared to a whole-of-life scheme.

²⁴ PPI analysis of data from ONS (2022)

²⁵ ONS (2022)

More volatile, return-seeking asset mixes would lead to greater uncertainty in future benefit levels (albeit with a higher overall return). The objective of the model scheme was picked such that the benefit increase deviating by more than 2% from the Consumer Prices Index (CPI) was restricted to a one in three chance.

Ultimately, it was determined that a portfolio mix of 40:40:15:5 between equities, gilts, bonds and cash would result in this scheme's objective being met under the modelled central conditions and membership demographic. The objective is, in a sense, arbitrary and reflects a scheme's willingness to accept risk in the pursuit of higher benefits. It will determine the scheme's investment strategy and is a balance that the trustees of any new scheme would have to grapple with.

This portfolio is more return seeking than portfolios typically designed to back annuities or DB schemes and so offers a higher lifetime income than other guaranteed-for-life products or schemes.

The assets used to back an annuity portfolio can vary, but one rule of thumb suggests that they should be made up of 90% bonds.²⁶

The asset mix used in the decumulation CDC scheme offers a higher return and therefore a higher opening benefit level. With the proposed assets profile of 40% equities, a member who bought in with a £100,000 pot could expect an opening benefit of £6,077, anticipated to rise with inflation. Modelling the same CDC scheme, but with the 10% equity investment more comparable to an annuity, this same member would see an opening benefit of £4,890, which is 19.6% lower and does not include a margin for risk premium or the cost of capital associated with an annuity.

For a £100,000 pot the scheme would offer an initial benefit level of £6,077 per year anticipated to rise in line with increases in CPI.

The benefit level is set such that the value of the future benefit and charges is valued to be the same as the pension pot transferred into the scheme.

When a member joins the scheme, their initial benefit level is set so that, if they live as long as they are expected to, if inflation grows as it is projected to, and if investments perform as they are expected to, then in theory they will receive in benefits exactly the same value as they paid into the scheme when they joined (less charges payable towards scheme expenses). Of course, in practice these estimates and projections will not be completely accurate, but this is the approach used to set the initial benefit for a member.

This initial benefit is lower than currently available level annuity rates, however the CDC benefit still offers a higher initial income level than currently available from an index-linked annuity.²⁷

If the member dies before they were projected to, the value of the benefit they were paid will be less than the value of the pension pot they transferred into the scheme. The difference is used to support other members who may live longer. Longevity risk is shared between members, those who die early financially support those who live the longest.

Longevity risk is the risk that somebody only budgets for living for a certain amount of time, and then lives longer than anticipated, thereby running out of money. In the case of somebody who retires with a Defined Contribution (DC) pension pot, they might estimate that they will die in 15 years, and then each year draw down 1/15th of their pot. If they die 10 years after retirement, they will have some of their pot left over, and could have had a higher income each year. However, if they die 20 years after retirement, they will have spent their money too quickly, and will have to stretch what little they have left once they realise they will live longer than initially budgeted for. This is particularly problematic as, on average, retirees' total household spending per person remains relatively constant in real terms through retirement, increasing slightly at ages up to around age 80 and remaining flat or falling thereafter.²⁸ Any fall in income may result in pensioners no longer being able to sustain this rate of expenditure and experiencing a fall in living standards.

²⁶ Blanchett & Finke, (2018)

²⁷ Comparison is made with current best annuity rates taken from Hargreaves Lansdowne (2023)

²⁸ Crawford et al. (2022)

A CDC scheme reduces this risk for a member by sharing this risk between all members. The scheme will estimate when each member is likely to die, and calculate their benefit accordingly so that it is affordable for the scheme. However, this estimate is just an estimate, and any given member could still die sooner or later than anticipated. The difference is that, by joining together in a CDC scheme, they protect those that live longest: the ones who die sooner than anticipated may not "make their money back": what they paid into the scheme may be more than they get back out of it, because they did not live long enough to collect enough payments. This money that is contributed by members who die before they can claim it all back (as there is no further benefit paid on or after the member's death) is used to cover those members that live longer than anticipated: their benefit will have been calculated on the assumption that they would die sooner than they actually did, and therefore the benefit they claim in their lifetime will be worth more than the initial pot they bought in with.

This does not eliminate the risk entirely: if too many members live longer than anticipated, then there will still not be as much money to go around as expected. However, given that mortality is fairly predictable on a large enough scale, joining together in a CDC scheme vastly reduces the longevity risk for any individual member, giving them the peace of mind that no matter how long they live, they will have an income that is fairly steady.

10% of 2028's new members within the modelled scheme are projected to live less than nine years, while at the other end of the spectrum 10% of 2028's new members are projected to live for at least 29 years.

At the extreme ends of this distribution, even when considering that every individual in a cohort has the same mortality risk, we still see that the last 10% of the cohort to die will claim their benefit for roughly three times as long as the first 10% to die. This demonstrates well the deal that an individual member is making with all other members: in this example, a member who lives nine years and a member who lives 29 years both had the same chances of dying in each year, and could not have anticipated that they would live especially short or long lives. In joining the scheme, they agreed to trade the possibility of not gaining all their money back for the almost guaranteed income for life. A member who lives only nine years essentially contributes a large amount of their pot to providing this stable benefit for the members who live 29 years.

The approach to balancing assets and liabilities

When the scheme's assets end up being higher or lower than expected at the end of the year (based on a best estimate projection), the scheme makes an adjustment to the benefit. This adjustment determines the benefit that a member receives in the following year, but also sets the expectation for the rate that the benefit will be uprated every year in the future, until another year of unexpected performance causes the scheme to update this adjustment again. This adjustment factor is the measure of how volatile the member's benefit will be. If the adjustment factor were always zero, then a member would see their benefit uprated exactly alongside inflation, which would be as stable a benefit as possible and consistent with the benefit level provided by an annuity. The model bounds the future adjustment to the rate of benefit increases at ±2% from CPI increases, and, when this bound is applied, makes a one-off benefit adjustment to balance assets and liabilities.

A scheme must realise any shortfall in its asset position every year.

Using a median investment return to calculate the value of assets means that there is a 50:50 chance that future benefit increases may rise or fall as a result of investment performance

In a similar way to how estimates of future mortality rates are used to calculate a member's benefit level, so too are projected investment returns. Rates of investment return are more volatile than mortality experience, and so in practice a scheme will have to be prepared for investment performances that are significantly better or worse than anticipated. This can be mitigated with defensive investment approaches such as a cashflow-driven investment strategy, however this will tend to forego growth assets and, as a result, higher overall benefit levels would have to be foregone. It will be necessary within a scheme to strike a balance when using defensive investment strategies which prioritises predictability over total benefit level.

The model uses the median expected portfolio rate of return as a best estimate rate used to value future liabilities. What this means is that, within the model, there is a 50% chance that investment performance will be better than the anticipated performance used in the valuation of a member's benefit, and a 50% chance that it will be worse.

In this model, and indeed in a UK decumulation-only CDC scheme as it would be legislated currently, any investment return that is above or below what was expected for that year, will be directly reflected in the benefit level of the next year through adjustments to the benefit increase. The scheme cannot increase the benefit by a conservatively small amount so that some of the extra investment return from years with a higher-than-expected return can be held back to smooth the benefit in case of poor returns in subsequent years; the scheme must factor in all assets when increasing the benefit and continue with the assumption that all future years will have the same investment return as predicted. The use of such buffers has been explicitly prohibited in current permissible UK CDC scheme designs.

In the long run, this should lead to an appropriate benefit level for the scheme, since there is a 50% chance of the investments under or over performing. However, this can lead to large fluctuations in the benefit in particularly volatile periods of investment return, where benefit adjustments are down one year and rebounding the next.

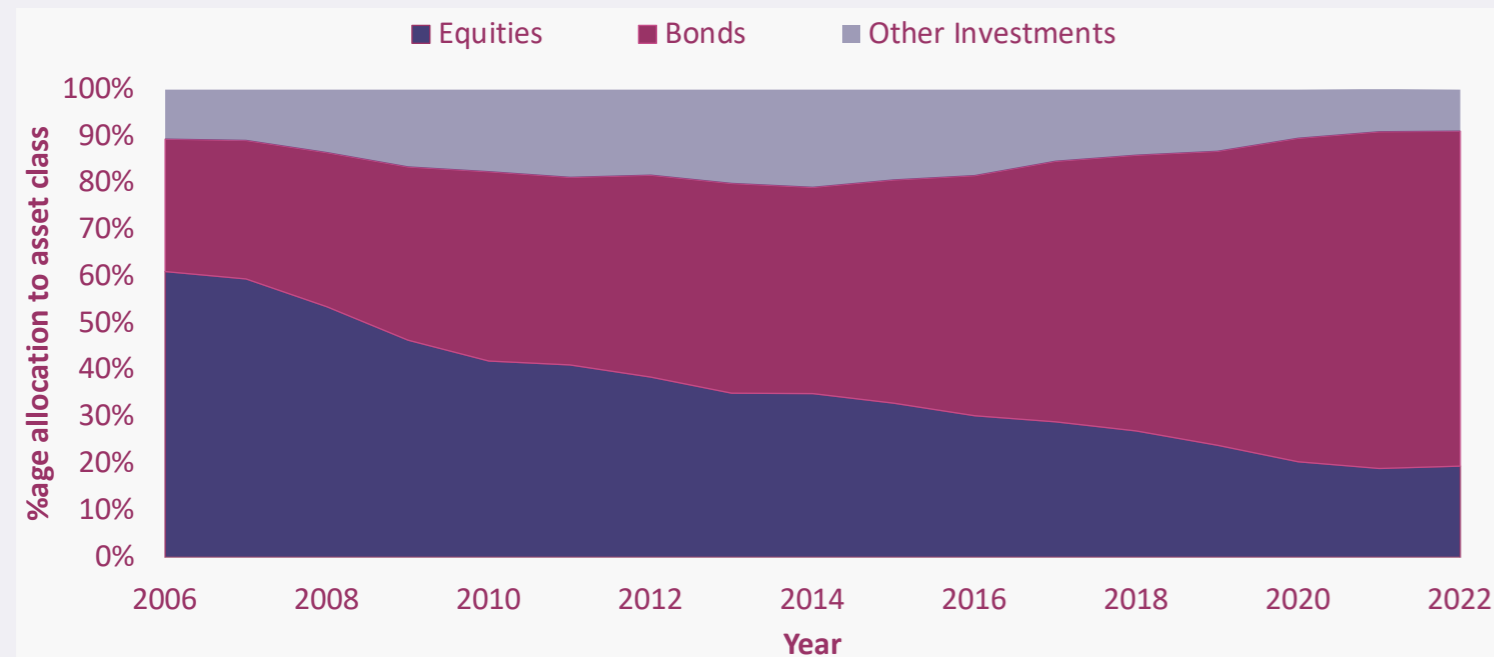
DB schemes have faced the perennial challenge of asset volatility when publishing their funding position.

It has led to increasingly defensive asset allocation strategies [Figure 2.4]. A number of DB schemes have active and deferred members below pension age which means they may have a longer liability profile than a decumulation-only CDC scheme. This should result in them being less affected by investment volatility as they are able to mitigate asset and investment volatility over a longer period. Yet still, those schemes that had leveraged liability driven investment (LDI) strategies, found themselves to be vulnerable to market activity in September and October 2022.

Figure 2.4₂₉

DB schemes asset allocations have become increasingly defensive to reduce asset and investment volatility

Percentage of assets by asset class for funded DB schemes



²⁹ PPF (2022)

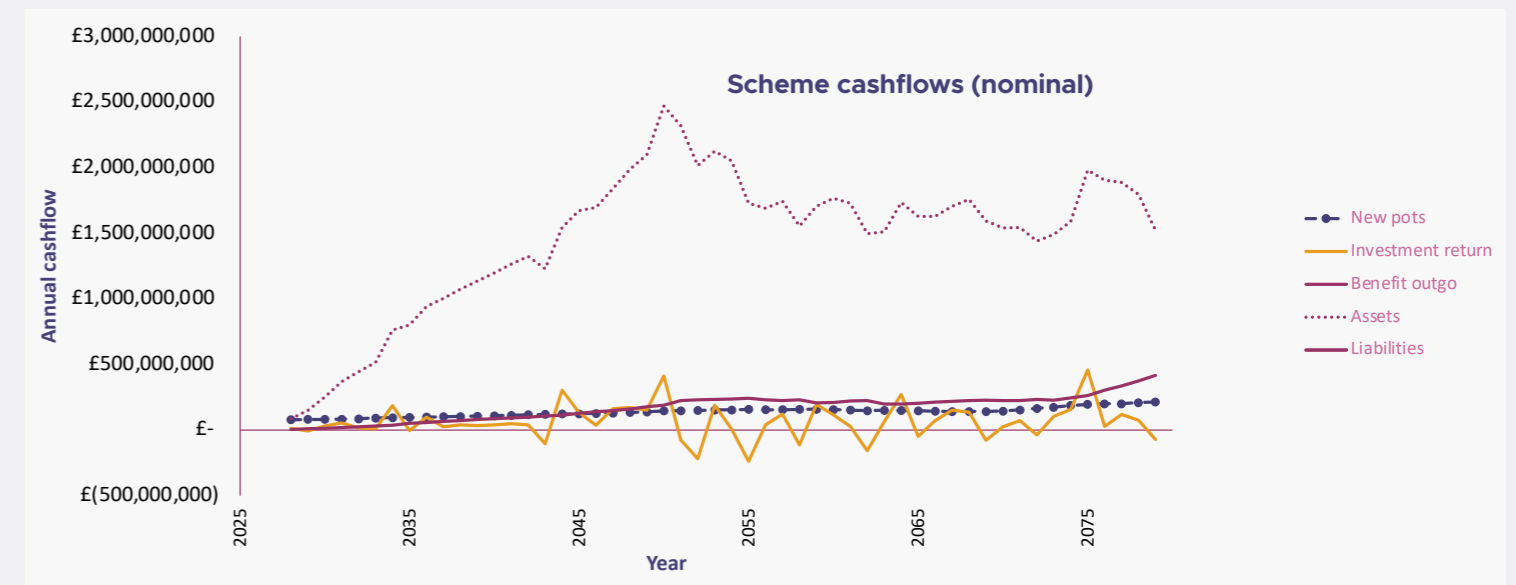
The value of scheme assets is influenced by the volatility of investment returns on the fund.

The scheme asset position at the end of each year is based upon three primary cashflows: pots transferred in by new members, which should be balanced by a corresponding movement in liabilities; benefit pay out, which should be predictable over the course of one year; and investment returns (net of charges), the most unpredictable of the cashflows. Together these determine the asset position of the scheme in each simulation [Figure 2.5].

Figure 2.5

The asset balance of a CDC Scheme is most predominantly affected by investment performance

Future cash flows of a model CDC scheme by year, in a single example of a stochastically generated economic scenario



The value of future liabilities depends upon the rate of future benefit increases.

When assets turn out to be higher or lower than expected, then the benefit for that year will be uprated by CPI plus or minus an adjustment factor. This adjustment factor is calculated so that, in every subsequent year, under best estimate assumptions, each member's benefit can continue to be uprated by CPI plus or minus this same adjustment factor. The adjustment factor is identified which, with a precision of 0.1%, most closely matches the liabilities to the assets of the scheme [Figure 2.6].

Where the combined effect of the increase in CPI and the adjustment would result in a nominal benefit cut, there is no nominal benefit cut applied in the first year. These may otherwise manifest when inflation is negative or the adjustment when applied to best estimate future CPI increases results in a negative projected benefit increase (e.g., a CPI increase of 1% combined with an adjustment of -1.5%). The scheme instead places a floor on the benefit change, in effect a double lock of price inflation with benefit adjustment and zero.

Figure 2.6

The benefit of each member is valued each year in order that the total scheme liabilities match the total scheme assets

Example valuation for a scheme with one member

Benefit payable during year	Closing assets	Potential future benefit adjustment	Benefit payable for next year	Liability	Benefit increase for future years
£414.57	£5,766.91	CPI + 1.3%	£422.30	£5,679.11	
		CPI + 1.4%	£422.72	£5,730.78	CPI + 1.4%
		CPI + 1.5%	£423.13	£5,783.08	

Effectively there is a 50:50 chance whether the increase available will be better or worse than the current best estimate being used.

Because the model predicts the investment return of any given year to be the median investment performance in that year, there is an even chance of this adjustment factor being positive or negative.

To prevent distortions the long-term future benefit increases are set within the range of CPI ±2%.

There is a consensus that the inclusion of a limit to long-term future benefit increases is appropriate when applied to whole-of-life schemes.³⁰ These bounds were proposed in the Government consultation and respondents recognised that this would result in new members joining a scheme with a target rate of future benefit increases not too significantly deviating from CPI.³¹ Under current monetary policy, the Bank of England is responsible for managing inflation with a target rate of 2%.³² Under these conditions the lower bound would represent a benefit amount which is level (CPI at 2% with a benefit adjustment of -2%).

When the value of future liabilities cannot be made to match the value of assets by using a future benefit increase rate in this range, an additional one-off benefit adjustment is applied.

If the adjustment factor would need to be greater than ±2% to balance scheme assets and future liabilities, then the adjustment factor for long-term benefit increases is set at this bound. On top of this, to ensure that the value of future liabilities matches the scheme assets, a one-off benefit adjustment factor, which scales the next year's benefit level and is subsequently carried forward into future benefits, is applied [Figure 2.7]. This one-off adjustment factor is calculated as the value of scheme assets divided by the value of future liabilities (calculated with the long-term benefit adjustment at the bound).

Figure 2.7

The adjustment is capped at 2%, with any additional shortfall in liabilities made up by a one of extra benefit adjustment

Example valuation for a scheme with one member

Benefit payable during year	Closing assets	Potential future benefit adjustment	Benefit payable for next year	Liability	Benefit increase for future years
£340.70	£6,192.24	CPI + 1.9%	£347.44	£5,144.98	
		CPI + 2.0%	£347.78	£5,414.58	
		CPI + 2.0%	£414.57	£6,192.24	CPI + 2.0%

When a bound has been struck there is only a 50% chance of leaving it in the next year – whether the best estimate return is bettered or worse.

If the adjustment applied has reached a bound (±2%) the probability of returning to a more central rate of benefit increases in the subsequent year is approximately 50%. This reflects the probability of the actual investment returns being higher or lower than the best estimate median return. So, for every year in which there is an additional benefit adjustment is made there is a 50% chance there will also be a need for an adjustment to be made again in the next year. This can distort the number of boundary case adjustments observed where an additional benefit adjustment will need to be made despite the actual return not varying from the best estimate by a large amount.

New members are only priced to the future benefit indexation of CPI ±2%

This places bounds on the pricing impact of the scheme's past performance. If a scheme were to try and price for a very high rate of future benefit increases this would lead to a very low opening benefit amount, and vice versa.

To avoid this unintended impact on a scheme's operation, including its ability to attract new members, it is proposed to realise gains or losses that cannot be accommodated by the bounded future benefit adjustment by making a one-off alteration to benefit levels. This ensures that the range of benefit increase rates that would be offered by competing decumulation CDC schemes would be broadly consistent, and schemes would not find themselves offering excessively high or low opening benefit amounts resulting from the adjustment to future benefit increases. Though the difference in opening benefit offered with an adjustment of ±2% could still be around ±20% from a central benefit level.

New members can only be priced accordingly in order to prevent schemes from offering higher, but more volatile starting benefits to gain a competitive advantage.³³

³⁰ DWP (2023)

³¹ Grant (2023)

³² BOE (2023)

³³ Grant (2023)

The operation of this baseline scheme under these conditions

The modelled scheme generates future benefit increases in the range CPI ±2% in 68% of future years.

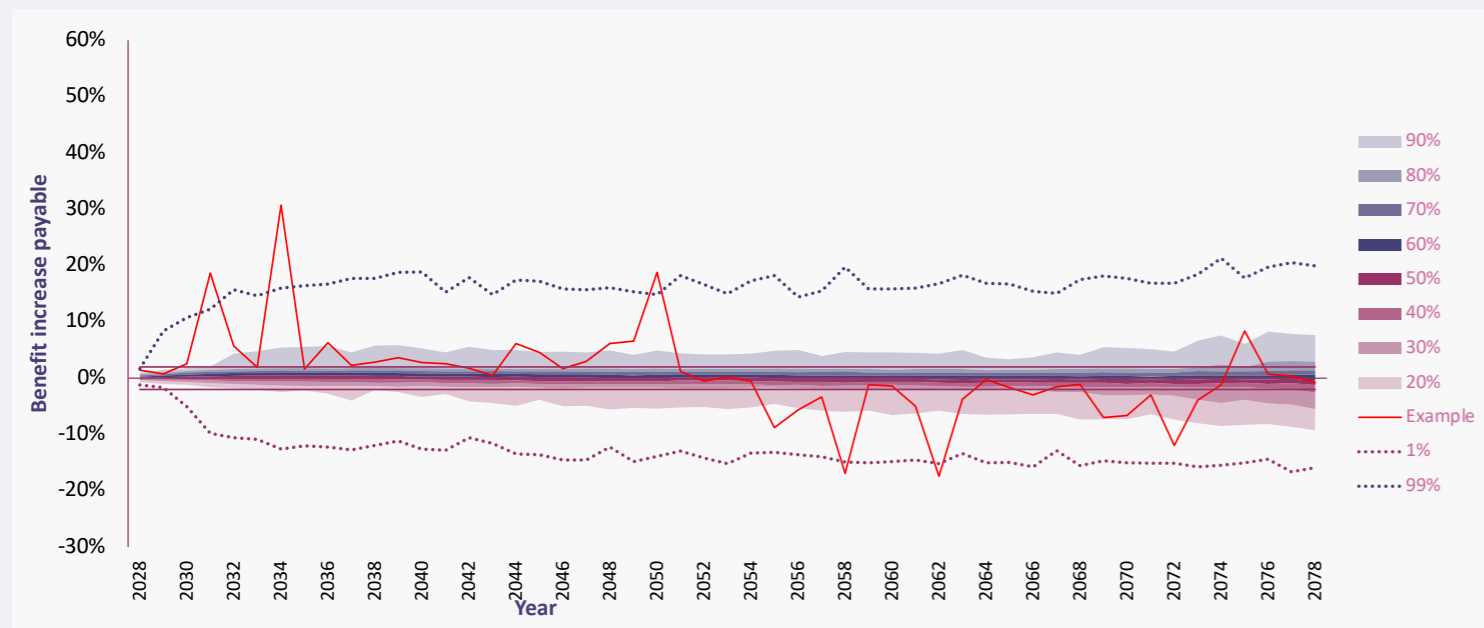
The rate at which the benefit adjustment is outside of these bounds, therefore, is a good indicator of how predictable the future benefit stream is for a member. A scheme that must frequently adjust the benefit by more than 2% will provide a retirement income to members that is less stable, including potentially severe benefit reductions that could have implications for members' ability to pay for regular life expenses. To assess a scheme's stability, the ratio of benefit adjustments made over the years that are outside this 2% range can be measured. For the scheme design proposed in this paper, targeted adjustments are outside of this range to be incurred approximately one third of the time.

When we consider the impact of one-off adjustments beyond ±2% we observe material benefit adjustments in years where investment returns have been either particularly high or low. In the most extreme deciles of outcomes in any year we see adjustments around 5% or greater from CPI, with even greater variation in the tails of the distribution [Figure 2.8].

Figure 2.8

The modelled scheme provides future benefit increases within CPI ±2% in two out of three annual valuations

Benefit increases payable by year for different percentiles of stochastically generated CDC scenarios



If a scheme can provide some perception of stability to the member by not having too many large fluctuations in the benefit, another key factor in how the benefit will be perceived is the likelihood of making a nominal benefit cut. The avoidance of cuts, especially cuts to the nominal value of the benefit, would be a distinct but related goal to that of keeping a stable benefit level. For the base scheme identified in this report, the nominal benefit rises steadily on average, with it being very rare for the nominal benefit to ever dip below the opening benefit, [Figure 2.9]. The real benefit, after adjusting the nominal benefit for CPI, is more equally likely to increase or decrease year on year, as this reflects the best estimate for future benefit increases [Figure 2.10].

Figure 2.9

A scheme will see steady increases in nominal benefit in a large majority of scenarios

Deciles of the index of the nominal benefit of the base scheme

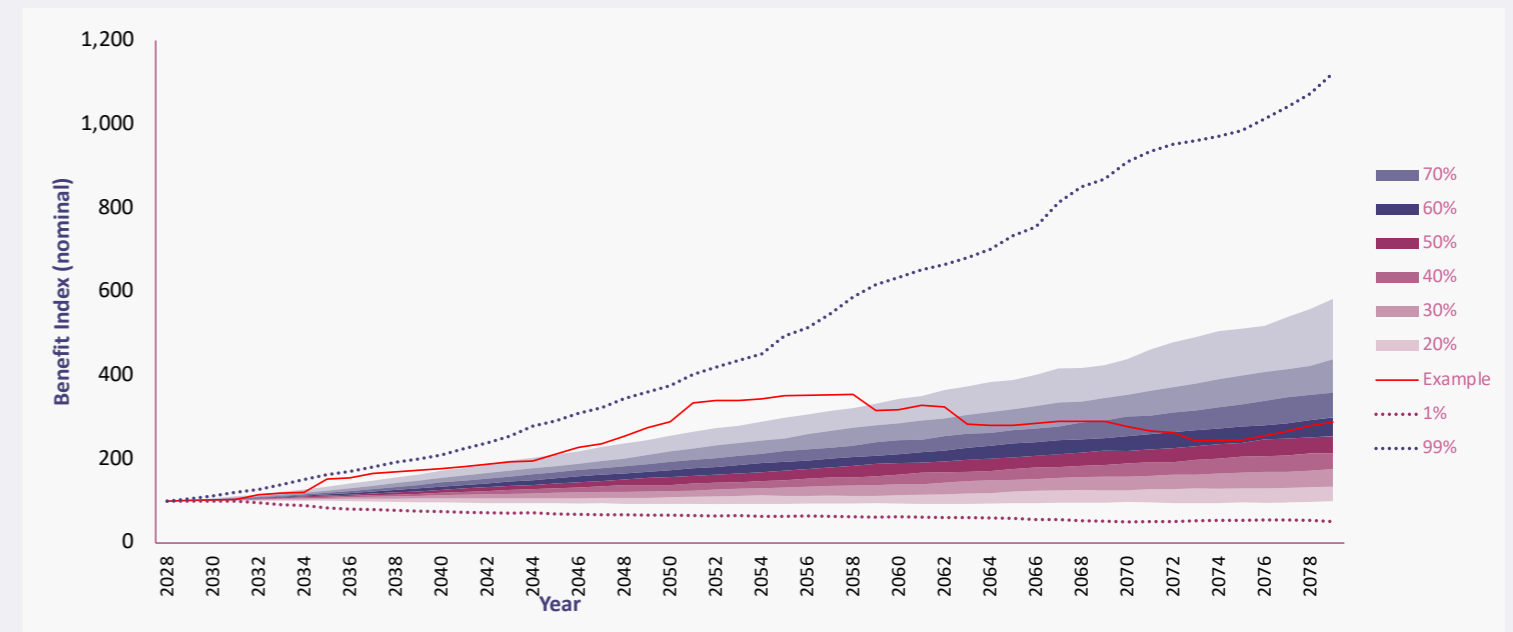
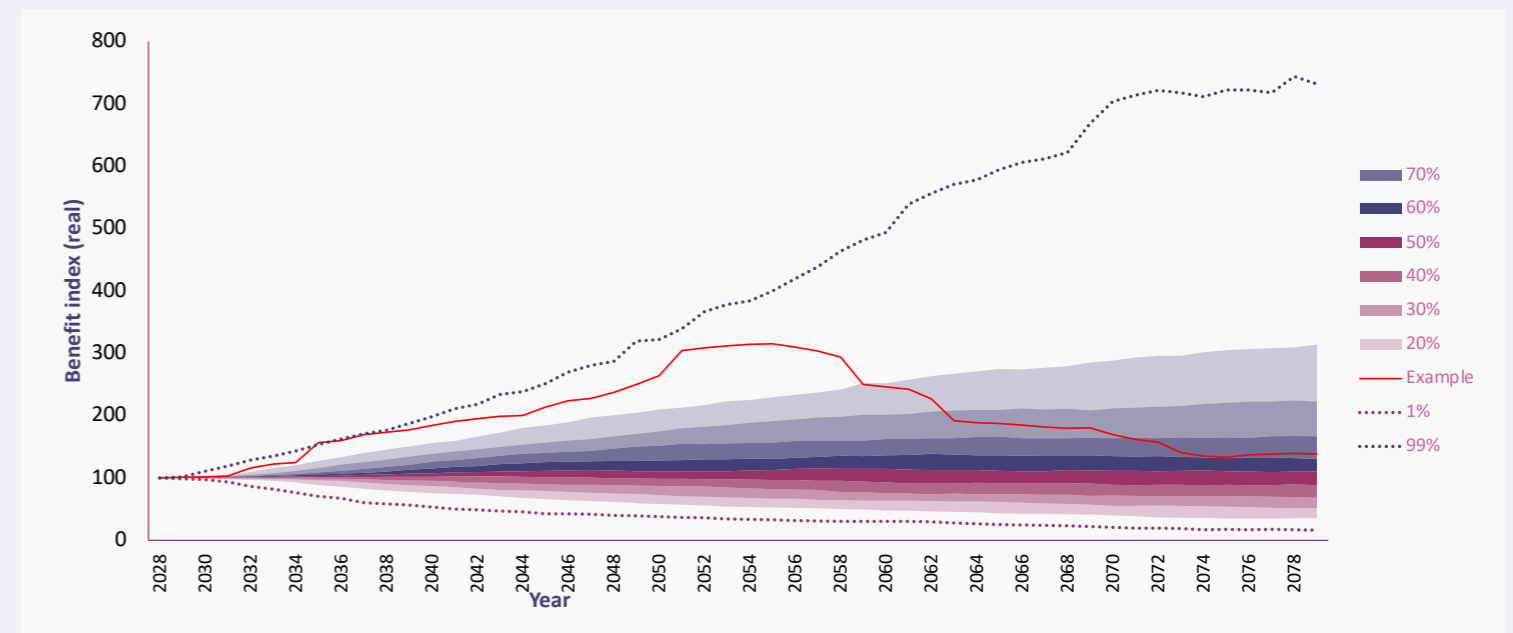


Figure 2.10

A scheme may see increases or decreases in terms of real benefit

Deciles of the index of the real benefit adjusted for CPI of the base scheme



The scheme can achieve its objectives with a carefully managed portfolio designed to reduce volatility and a sufficiently large pool of members to mitigate the longevity risk.

Conclusions

Decumulation CDC Schemes can choose more return seeking assets than other lifetime income products.

Because there is no promise to deliver a fixed income, a CDC scheme can afford to accept more risk and deliver a higher overall benefit to members as a result.

Taking on too much risk will result in an unstable member benefit.

A member's benefit increase each year is highly dependent on recent investment performance. Although a more return-seeking, volatile investment portfolio for the scheme could lead to a higher overall benefit across retirement, it would also cause more variation in the member's benefit year on year.

A scheme where everyone joins at retirement age will take a long time to mature and have a stable age distribution.

Until it can reach a point where the first cohort of joiners has largely died out, a CDC scheme will have a membership that is younger than in the scheme's long term stable state. Given current life expectancy estimates, this would take approximately 30 years.



CHAPTER THREE: THE SENSITIVITY TO ASSETS AND MEMBERS

This chapter examines the impact of how particular sensitivities to investment portfolios and membership impact the observed outcomes for the sample scheme.

We consider the level of benefits offered and the predictability of future benefit levels.

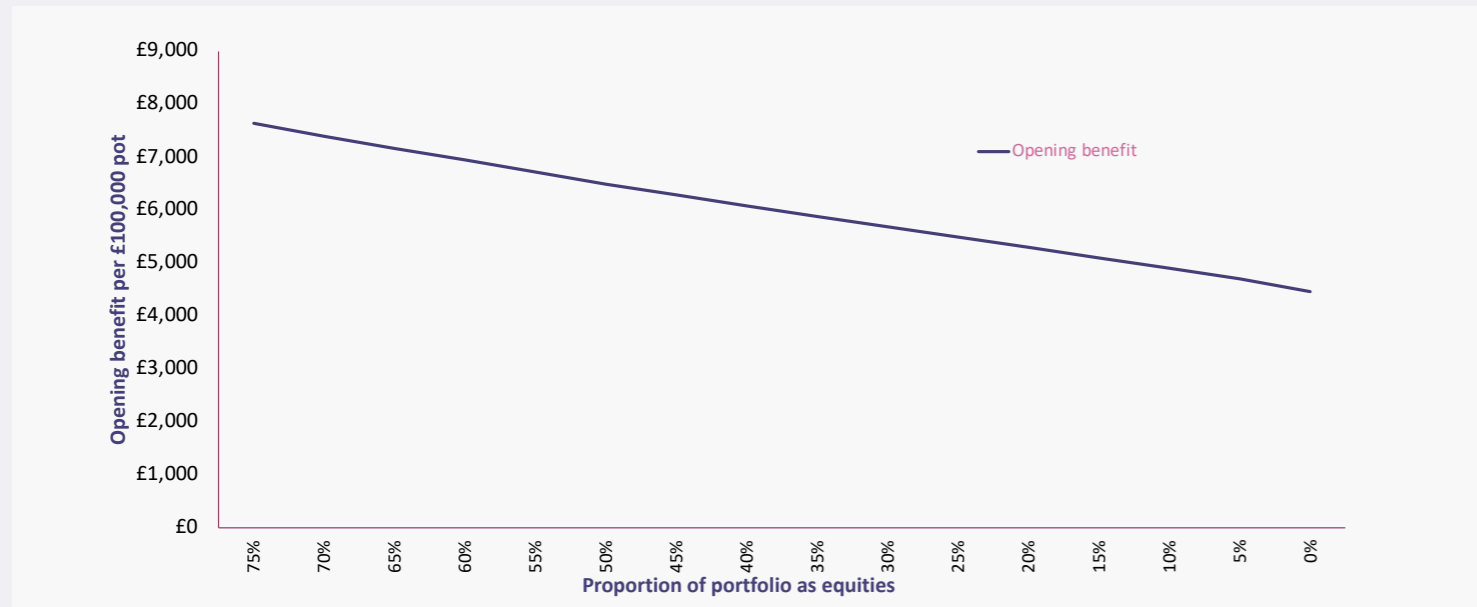
A more return-seeking investment strategy results in higher opening benefit amounts, which can vary by 38% across a 25% to 75% equity investment strategy

If a scheme starts with a more return-seeking asset mix, this will be factored into the pricing basis which employs best estimate assumptions. Since the scheme will be expecting higher returns ahead of time, the opening benefit is always higher for a more return-seeking portfolio. The opening benefit can range from £5,500 per £100,000 of pension pot for a scheme with 25% of its assets invested in equities, to £7,600 for a scheme with 75% of its assets invested in equities [Figure 3.1]. Lower growth portfolio selections can be made bring the asset mix closer to the backing assets for annuities where predictability is paramount.

Figure 3.1

A more return-seeking portfolio leads to a higher opening benefit

Opening benefit of schemes with different proportions of their assets invested in equities



In a competitive market, a higher opening benefit level could make a more attractive proposition to members. This could lead to a competitive desire to focus on higher benefit levels at the cost of predictability.

With greater investment in return-seeking assets the volatility of portfolio returns is increased, leading to a less predictable benefit level to a member. This may be more preferable, generating a higher overall income depending on the member’s needs and other financial provision, or may be less preferable where a member is unable to absorb income volatility. Using the asset mix selected for the base scheme presented in this paper – specifically, 40% equities, 40% gilts, 15% bonds and 5% cash – a balance is struck between the increased return from the freedom of a Collective Defined Contribution (CDC) to invest more ambitiously, and the stability that a member may be able to accept in their benefit level. This portfolio split offers a spread of investment returns under different stochastically generated economic scenarios, which, as well as offering a reasonable proposal for a CDC scheme that aims to provide high member satisfaction, gives a range of experimental conditions to be able to test the effectiveness of the CDC under a wide range of investment performance scenarios.

A more volatile investment strategy results in less predictable future benefit increases

By varying the volatility of the portfolio returns directly, rather than through adjusting the investment strategy, it is possible to isolate the impact of investment volatility.

A one-third increase in the volatility of portfolio returns increases the rate of one-off adjustments from 33.1% to 39.6%.

The result of using a more growth-seeking asset portfolio in a CDC scheme is that the investment return in any individual year will be less predictable, as growth assets are associated with higher volatility. The benefit increase each year is heavily dependent on the investment performance of the year prior to valuation and the consequential impact upon the asset position of the scheme.

Isolating the impact upon the unpredictability of future benefit increases as a result of the investment risk is achieved through manipulating the distribution of the rates of investment return. Increasing or decreasing return volatility directly impacts the distribution of benefit increases. The impact is dampened to a degree by spreading over the future period of benefit payments, however it remains the most significant driver to the predictability of future benefit levels [Figure 3.2].

Figure 3.2

High volatility, even with the same overall return, leads to higher volatility of member benefit

Effect on member benefit stability of artificially altering volatility by a factor of 1/3, while keeping mean returns the same

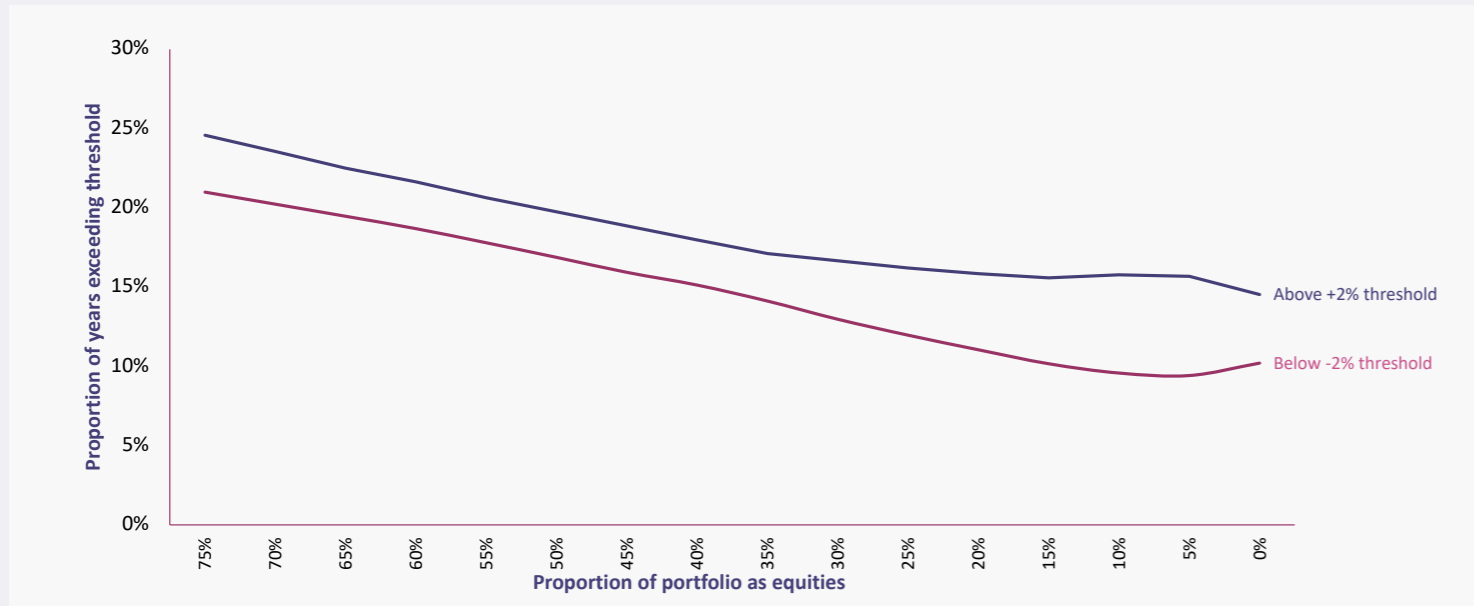
Membership change	% of years where adjustment was outside ±2% bounds
High volatility	39.6%
Base case	33.1%
Low volatility	29.0%

In reality, the volatility of portfolio returns is linked to the volatility in the returns of the underlying assets. Using a higher proportion of growth-seeking assets (equities) leads to a higher volatility of the total portfolio return and a greater proportion of annual valuations, where an adjustment of ±2% is inadequate to balance assets and liabilities [Figure 3.3]. Approximately half of these adjustments represent a bonus to members, while half represent additional cuts to benefits.

Figure 3.3

More return-seeking portfolios lead to higher levels of instability for member benefit

The percentage of years in which an extra adjustment outside the 2% bound needs to be made by the proportion of high-volatility equity investments



Considering the impact of the portfolio in greater detail [Figure 3.4] shows that the distribution of benefit adjustments inherits the same skew as the distribution of portfolio returns. That is, a longer positive tail. Where the spread of benefits is greatest, this is associated with the highest opening benefit levels offered [Figure 3.1]. This is the trade-off of predictability versus benefit level that a CDC scheme would need to address when setting their scheme objectives.

Figure 3.4

Reducing the risk profile of the portfolio reduces the volatility in member benefit adjustment

Spread of benefit adjustment deciles when using different amounts of assets as a proportion of the total investment portfolio



While all members may benefit from a higher income, many may not be able to accommodate the unpredictability that may be associated with them.

The State Pension will provide a predictable underpinning income

It is unknown to what degree a member would rely on the income from a CDC scheme, however there is a growing dependency on Defined Contribution (DC) pension savings with a corresponding drop in dependency on Defined Benefit (DB) schemes. They could buy into multiple retirement products, possibly even multiple CDC schemes, and, perhaps most crucially, they will receive some or even most of their retirement income from the State Pension. Those with below median retirement income on average receive half of their income from the State Pension.³⁴

Where a member requires greater predictability of income and is unable to sustain potential drops in income, choosing the portfolio that delivers the highest return may not be appropriate. This model shows the sensitivity of member benefit levels to investment performance in individual years. By choosing the most return-seeking portfolio, members would be exposed to more uncertainty about their retirement income, which may not be worth the potentially higher overall benefit. If a member is relying on this income to cover regular living expenses, the volatile benefit that comes from volatile investments could have serious implications for their living standards.

Individual drawdown offers greater flexibility in managing investment return volatility.

In a DC drawdown arrangement, an individual is essentially free to choose how much income they draw down and when. This means that, as long as the member has several years' worth of income remaining in their fund, they can essentially manage their own regular income, taking what they need when it personally suits them, and independently of the recent performance of their investments. This does come with greater risk, as investment returns may not improve and make up for an experienced shortfall, leaving a member further exposed as a result of having withdrawn more assets.

Decumulation CDC does not allow this flexibility because it risks intergenerational unfairness.

This freedom to draw a flexible income level does not exist in UK CDC design proposals. A member receives a regular benefit of an unspecified amount, which is strongly linked to investment performance. Without buffers or reserves in a CDC scheme, any volatility must be crystallised annually into the future benefit level. To not do so would place an unequal burden on members which varies according to the length of their future life. This would result in unfairness between differing cohorts and members within a scheme, and hence these features will not exist in the current imagining of UK CDC.

Investment strategy and performance will be critical for any decumulation-only CDC scheme achieving its objectives.

The modelling has shown that a member's benefit is most heavily linked to investment performance. However, this is not the only factor in determining member outcomes; the number of people coming in and out of the scheme and impacting the demographics of the membership also affects the benefit paid. However, we see that any large fluctuation in investment performance is immediately followed by a large benefit adjustment. The evidence suggests, therefore, that investment performance will be critical to the final member outcome of a CDC scheme, both in terms of overall benefit and the stability of that benefit. To understand exactly how crucial this is, it is also important to examine the effects of any other variables.

³⁴ Pike (2018)

Variation in the rate of new members joining the scheme is secondary to investment risk in determining the predictability of future benefit levels

If the model is run with extremely small numbers of members, this results in only a modest increase in instability of the benefit. We see that even in an impractical example of one new joiner every five years, the benefit adjustment only breaches the 2% boundary 36.7% of the time, compared to the 33.1% of the time that this would occur in the case of 100 members every year [Figure 3.5]. However, the scale of the more extreme swings is increased and associated with poor mortality pooling. Given that this most extreme example of instability from small membership is still not comparable to the potential increase in instability from choosing a more volatile asset portfolio, it can be concluded that the effects of small membership are secondary to the effects of investment strategy.

Figure 3.5

Altering size of the membership of the scheme has little effect on the stability of the benefit

Effects on benefit stability of varying membership size and rate of new members

Membership	% of years where adjustment was below -2% bounds	% of years where adjustment was above 2% bounds
1000 members every year	17.9%	15.2%
100 members every year	17.9%	15.2%
10 members every year	18.0%	15.1%
1 member every year	18.4%	15.7%
100 members every five years	18.5%	14.7%
10 members every five years	18.8%	14.9%
1 member every five years	21.2%	15.2%

Longevity risk pooling operates effectively with any practical membership size.

Given that extreme edge cases in terms of membership size do not affect the stability of the scheme, the minimum size constraints imposed on a CDC scheme will instead be imposed by the costs of running the scheme that define economic viability. The costs of setting up and starting to operate a new pension scheme are significant. For context, the four largest master trusts have spent around £1bn between them in their first 10 years of operation (over the period 2010 to 2019).³⁵ There is also a fee for authorisation of £77,000³⁶ for whole-of-life CDC schemes which is calculated to cover the costs of the Pensions Regulator (TPR). Assuming a decumulation CDC scheme were to be subject to the same charge alongside other initial costs, this would need to be accounted for when undertaking the business case to implement a new scheme.

³⁵ Adams, PPI (2020)

³⁶ The Occupational Pension Schemes (Collective Money Purchase Schemes) Regulations 2022

³⁷ TPR, 2022

³⁸ Pike, PPI (2021)

The main issue that arises from not achieving adequate scale is the ability of the scheme to be financially viable, rather than being able to pool mortality and investment risk effectively.

Assuming annual charges of 0.75% of assets under management (AUM), a scheme with assets of £15,000,000, which operates with functional mortality risk sharing, would generate an annual charge of £112,500. This scale would not be sufficient for a master trust to operate, given that these costs would have to cover, among other things: the costs paid to asset managers or an in-house team to manage the scheme's funds; the costs incurred to implement the investment strategy; the costs of advice taken on investments; the remuneration and overheads associated with paying trustees and staff; the cost of professional services commissioned by the trustees, such as actuarial, audit and legal advice; the cost of scheme administration, activities associated with receiving and reconciling payments, compliance and communications to members; and any costs incurred by the employer, including planning, communication, marketing and any dedicated support provided by them to the scheme.³⁷ Since this would almost certainly not be sufficient for a master trust, it would likely not be economically viable to run a CDC scheme on this basis either.

For small schemes, economies of scale may require a larger pot per member to make them financially viable

The minimum average active pot size needed for a master trust pot to be economically viable was £4,100 in 2019.³⁸ Schemes may implement minimum values for pots to ensure that they are economically viable by reducing the proportion of their overheads which are fixed (generally administration costs) when a charging structure may be based upon AUM.

An unstable number of new entrants does not significantly disrupt the effectiveness of the scheme

A scheme in the commercial sector is likely to face fluctuating rates of new joiners. This may be in response to reported fund performance and competitors spending on marketing. To model these effects a number of scenarios have been modelled, reflecting increases and decreases in the number of new members. It was found that linearly ramping up, linearly ramping down, and introducing a period of especially high or low membership in the middle of the scheme's life had little effect on its predictability of future benefit increases [Figure 3.6].

Figure 3.6

Altering the rate at which new members come into the scheme has little effect on the stability of the benefit

Effect on benefit stability of changing rates of new members

Membership change	% of years where adjustment was below -2% bounds	% of years where adjustment was above 2% bounds
Consistent rate of new members	17.9%	15.2%
Ramping down	18.4%	15.1%
Ramping up	16.8%	15.9%
Temporary drop in new members	17.9%	15.2%
Temporary increase in new members	17.9%	15.2%

These sensitivities alter the average duration of liabilities as the average member age is varied. It therefore follows that the impact of new members joining at a wider variety of ages would also be secondary to the impact of investment return volatility.

Where a scheme is economically viable it will have passed the threshold for membership above which there is effective risk pooling to manage mortality risk.

Investigation into more sophisticated investment strategies could quantify improvements in benefit predictability

The modelling presented includes simplifications and limitations. This is reflected in the investment options considered. This has consequences for the pattern of investment returns, particularly in the light of scheme objectives, that an investment portfolio might generate.

Alternative portfolio options could include infrastructure and illiquid funds as well as asset classes designed to hedge against investment volatility.

The portfolio modelled is restricted to certain asset classes. Asset classes which are currently used in limited quantities in pension products, but may be well suited to the needs of a CDC scheme, have not been included, and the impact of these could be investigated in further work. This includes classes such as: infrastructure; property; private markets; and commodities. Further, the use of hedging assets, which may be used to reduce the volatility of portfolio returns by hedging against equity volatility, or to better align the asset returns to match the movements in the future value of liabilities, could be considered as an effective investment strategy.

To account for some of this impact, the volatility of portfolio returns has been modified downwards in the results presented.

The impact of asset- and liability-matching strategies could reduce the volatility of the valuation of scheme liabilities.

Cashflow-driven investment strategies can make use of dynamic discount rates to value future liabilities. This links movements in asset yields to the value of future liabilities, reducing the volatility of the funding position of a scheme. This would reduce the volatility of benefit adjustments in a decumulation CDC scheme, generating a more predictable future benefit level.

Conclusions

Investment volatility is the primary factor in member benefit stability.

We see that reducing volatility, without altering overall investment return, decreases members' benefit instability. This further highlights the trade-off that CDC investment managers will have to make between return and stability, considering the needs of all their members.

The constraints on a scheme originating from membership rates are secondary and driven by overhead costs rather than features of the scheme itself.

We see that even in impractical illustrative examples, unusual membership conditions do not affect scheme stability to the same degree as investment volatility. Other operational limits on the minimum number of members are identified which trump any limit imposed by the scheme design itself.



CHAPTER FOUR: FURTHER CHALLENGES TO OVERCOME

This chapter examines other issues associated with the implementation of Collective Defined Contribution (CDC) decumulation schemes in practice. Many issues have been raised within the 2023 DWP consultation 'Extending Opportunities for Collective Defined Contribution Pension Schemes'.

Several additional challenges exist to the potential implementation of decumulation-only CDC schemes. These are generally highlighted within the 2023 Department for Work and Pensions (DWP) consultation ‘Extending Opportunities for Collective Defined Contribution Pension Schemes’³⁹ and this chapter reflects upon a number of them in a wider context.

Other product features require further consideration beyond the scope of the modelling presented

The statutory right to transfer out is unlikely to be available to CDC decumulation members.

The option to transfer out of a pension in payment in the UK is currently limited. In the March 2015 Budget, the Government announced plans to permit a secondary annuity market⁴⁰. Although these plans were cancelled in October 2016 after consultation and engagement with the pension industry.⁴¹ Potentially a more valid comparison could be made to the transfer out of a Defined Benefit (DB) pension scheme where the statutory right to transfer benefits out is predicated on having one year or more years before the scheme’s normal pension age.⁴² That is to say, those members currently in receipt of their benefit will not have a statutory right to transfer their benefit.

The Government stated a need to ensure protections apply to members in decumulation-only schemes, which was deemed to be a significant stumbling block to the proposals of a secondary annuity market. The understanding of the approach to annuities when considering decumulation-only CDC⁴³ would indicate that the statutory right to transfer out is unlikely to be available.

That is not to say that the scheme may allow transfers out or commutations at the discretion of the scheme trustees, but there is the potential for buyer’s remorse owing to the nature of the product.

Without consistent underwriting there may be systemic unfairness in a decumulation CDC scheme.

Within the fairness considerations of a scheme, it is imperative that the sharing of longevity risk be fair. Because the longevity risk is a factor in the volatility of future benefit increases, it would therefore need to be an equivalent risk for all members. That is, their personal longevity risk when compared to the aggregate longevity risk within the scheme must be consistent with other members. To achieve this would require an equivalent degree of underwriting for all new members, or else the volatility of future benefit levels (which would be applied uniformly) would not reflect the degree of mortality risk (which would not be uniform).

Without fair underwriting there is the chance of adverse selection risk to the scheme. Members would be predisposed to join the scheme where they hold the view that their mortality risk compares favourably to the pricing of benefits. They would have an unfair advantage within the longevity risk-sharing pool, expecting a subsidy from those with shorter life expectancies. Where a scheme is aware of the uneven distribution of this risk, this would reflect inequality in their underwriting and an unfairness within the scheme.

Within the annuity market, mortality risk is borne by the insurer who may set their own risk preferences. Within a CDC scheme, mortality risk belongs to the members and must be managed on their behalf by the trustees.

There are practical considerations that would need to be overcome, such as the cost and availability of appropriate underwriting.

Single-life, index-linked payouts may not be the only benefit options if decumulation CDC schemes are to provide true competition to annuities.

If the decumulation-only CDC scheme is to be a competitor to annuity products it is natural to consider the options that are available on the annuity market and consider whether these could be applicable to a CDC arrangement. Options available on the annuity market include:

Guarantee periods: These ensure a minimum value of benefit payout to an annuitant in the case of death shortly after taking out the policy. Within a CDC arrangement this would reflect a limit to the longevity risk sharing. As schemes must be priced on a best estimate basis, variation between members on the degree of longevity risk sharing would not be within the spirit of a CDC scheme. It could potentially instead be managed through a term assurance product sold alongside the CDC scheme. The premium for the term assurance would need to be taken from the pot value of the member as they transfer in, with the residual amount used to purchase CDC benefits.

Joint-life arrangements: For an annuity, this maintains the benefit payment until the death of the second member (rather than some or all of the benefits terminating on the first death). This could be managed within a CDC arrangement, as joint-life tables can be used for best estimate future mortality to enable risk-sharing calculations. Analysis would need to be undertaken to ensure that such members would not present potential unfairness to other members. Should it be necessary, it could be managed through sectionalisation of the scheme, subject to scale.

Impaired, enhanced and underwritten lives: Underwriting is used to assess the particular mortality of individuals and price the benefit level accordingly. This is consistent with the philosophy behind setting initial benefit levels for new members of a CDC pension scheme.

Alternative benefit escalation rates: Annuities may be sold with level, fixed, or indexed benefit increases. Within a CDC scheme where the value of future liabilities is determined through adjusting the target rate of benefit increases, it is imperative that all members are subject to the same treatment when setting future benefit increases to ensure fairness. The investment objectives needed to meet varying benefit increases would similarly need to vary. It may be possible to produce a sectionalised scheme to accommodate different indexation targets, though it may be necessary to segregate members to ensure fairness when adjusting future benefit increases.

Implementing such options could come at an increased cost and increase complexity of the decisions a member would need to take.

Smoothing benefit changes over multiple years.

Within current regulation for whole-of-life schemes is the option to apply a multi-annual reduction to benefits, rather than realising a significant adjustment in one go. This could be used to smooth the impact of poor investment performance over multiple adjustments, reducing the income shock members would otherwise need to absorb in one year.

³⁹ DWP (2023)

⁴⁰ HMT (2015)

⁴¹ HMT (2016)

⁴² TPR (2023a)

⁴³ DWP (2023)

A sophisticated investment strategy will need to match the scheme’s objectives while delivering value for money to members.

In the event of a scheme opening, there is no doubt that the portfolio blend and investment strategy would be more sophisticated than used in this illustrative modelling. The implemented investment strategy would be tied to, amongst other things:

- Setting a competitive opening benefit amount
 - » Assuming that the rate of increase of benefit is predetermined by the scheme rules, adjustment to the investment portfolio would be reflected in the opening benefit available to new members. The more growth-seeking the investment strategy, the higher the opening benefit.
- Managing the predictability of benefit increases
 - » The investment strategy may be set to ensure that the predictability of future benefit increases. This would require a cashflow-driven investment strategy to match the assets more closely to the liabilities.
 - » This is reflected in the value of future liabilities where the liabilities are discounted according to the best estimate asset returns. Matching the growth in asset cashflows to the growth in liability cashflows reduces the uncertainty in this valuation.
- Delivering value for money
 - » Decumulation products which are not defaults are outside of the current charge cap regime, however there is an onus placed upon trustees by The Pensions Regulator (TPR) to assess value for money. Trustee boards are expected to consider investment governance when assessing value for money for members.⁴⁴

Cashflow-driven investment strategies are becoming more prevalent in matching DB liabilities and may contribute to the investment strategy to ensure the product functions as intended.

The needs contained within the investment objectives to provide predictability in the future benefit payable to members may result in investment strategies that are consistent with those observed in the more mature DB market. Cashflow-driven investment strategies make greater use of hedging assets to reduce volatility, this in turn can deploy dynamic discount rates which deliver greater funding stability.⁴⁵ This approach necessitates a move away from growth assets, which would have a consequential impact in the level of benefit offered as the price of offering greater predictability.

Reducing growth assets and increasing the predictability of benefits would drive the benefit structure towards that offered by an annuity which offers an insurer-backed guarantee of benefit levels. For a decumulation CDC product to have a place in the market it must offer greater exposure to growth-seeking assets than used to back annuities, which will inevitably lead to a degree of uncertainty in future benefit increases.

Introducing decumulation CDC to the pension market will make a complicated decision more complex

For any potential new scheme member considering the market, or those guiding them, they will need to be able to make valid comparisons between two schemes to understand how the schemes may suit their particular needs. This necessitates engagement from the saver, yet a quarter of people have not accessed any information, advice or guidance when planning for retirement. On accessing a pot, most people (71%) will have received information, advice or guidance from a financial advisor, their pension provider or Pension Wise prior to accessing their savings,⁴⁶ and it will be important to consider where decumulation CDC is positioned within these markets.

The use of advice is associated with the purchase of more complex retirement products.

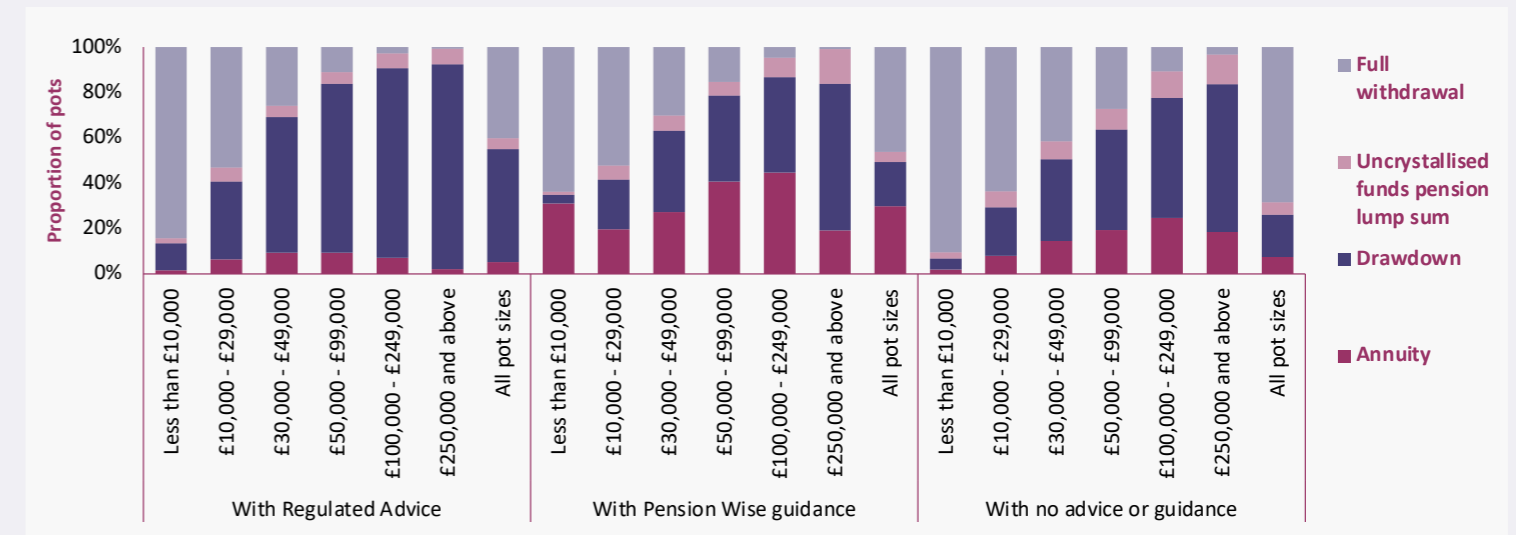
When accessing pension pots for the first time to purchase an annuity or enter drawdown, nearly two thirds (64%) will have received advice or guidance.⁴⁷ There is a correlation between taking regulated advice and entering drawdown, and receiving guidance through Pension Wise and purchasing an annuity [Figure 4.1]. While this does not imply causation as there is a selection bias in the people who seek guidance or pay for regulated advice, it raises an issue of how decumulation CDC should be positioned between the certainty of an annuity and the flexibility of an individual drawdown product.

Figure 4.1⁴⁸

After advice people are more likely to enter drawdown After guidance people are more likely to purchase annuities

Action on accessing pension pots for the first time after receiving advice or guidance when purchasing retirement products, split by pot size (excludes tax free lump sum for annuity and drawdown products).

April 2020 – March 2021



⁴⁴ TPR (2023b)
⁴⁵ Mercer (2023)

⁴⁶ DWP (2022)
⁴⁷ PPI analysis of data from Tables 10-13 of FCA (2022)
⁴⁸ PPI analysis of data from Tables 10-13 of FCA (2022)

It will not only be necessary to compare competing CDC schemes, but make meaningful comparisons to options derived from combinations of annuity and drawdown.

The decision to use a decumulation CDC scheme is unlikely to completely answer the needs of a new member. Since freedom and choice was implemented, combinations of drawdown and annuity products have been proposed which have become more sophisticated and tailored over time with the aim of meeting consumers' needs, including a desire for flexibility. There is a strong use of advice driving the market and the Financial Conduct Authority (FCA) is undertaking a thematic review of income advice to assess the quality of outcomes consumers are getting.⁴⁹

The FCA has previously recognised the need for support to consumers when faced with decumulation investment decisions. This has resulted in the development of investment pathways, designed to help non-advised drawdown customers to make investment decisions.⁵⁰

While it can be argued that the member does not need to make an investment decision within a decumulation CDC scheme, as trustees will have responsibility for investment strategy, to be able to compare a CDC scheme to a drawdown product it is essential to make meaningful comparison between the investment strategy of the scheme to those associated with drawdown.

An alternative to marketing decumulation CDC schemes to individuals on the open market would be for a default decumulation arrangement including CDC schemes.

The need for a default decumulation strategy has been raised as a key need for DC savers for many years, as individuals value choice but many don't want to make complex decisions about how they access their savings.⁵¹ There is a potential need for a solution for members to be defaulted into a suitable product mix where they do not take active decisions themselves as they are a risk, yet the expertise is possessed by providers and others embedded within the pension industry.⁵²

For CDC schemes to play a part in this blended product vision of default decumulation they would only be taking a share of the potential market alongside annuities and drawdown. For decumulation CDC this would result in: a smaller overall market measured by value; and smaller amounts per member representing only a part of their pot value. This default arrangement would presumably apply to the non-advised market which is already biased towards smaller pots (23% of pots less than £10,000 are accessed with advice, compared to 58% of pots between £100,000 and £250,000). Around a third of unadvised annuity purchases and entries into drawdown are for pots less than £30,000 (most of the multitude of small pots are fully withdrawn).⁵³ Within a master trust the assets of a single member need to be in excess of £4,100³⁷ (2019 figures) for an active member to not require subsidising from members with larger pots.

While pots transferred in may be larger than this, comparison must be made over the complete future lifetime of the member. The value of future liabilities associated with a particular member can be considered as a proxy for assets. This value reduces over time as future life decreases with their age. The introduction of a large number of members with small pot values may not immediately present a challenge to the economic viability of a scheme, however over time the average assets per member will decrease as the scheme matures, which may present a greater financial challenge.

The feasibility of the use of default arrangements, particularly for master trusts, is being explored by DWP.⁵⁴ Using a decumulation CDC scheme as a default may put members in an irreversible position, as the statutory right to transfer out is unlikely to be available

A decumulation CDC scheme may not need a large market share to achieve financial viability

274,000 pension pots, in aggregate representing pension savings of £37bn, were accessed for the first time and used to purchase either an annuity or a new drawdown policy in the year from April 2021.⁵⁵ This represents the current scale of the market in which a decumulation CDC product would need to operate.

It would not necessitate a large slice of this market to ensure the financial viability, which is more than the current assets under management (AUM) at Nest (£31.5bn as at end June 2023)⁵⁶ up for grabs every year. However, this would be split across competing CDC schemes with a varying market share year on year.

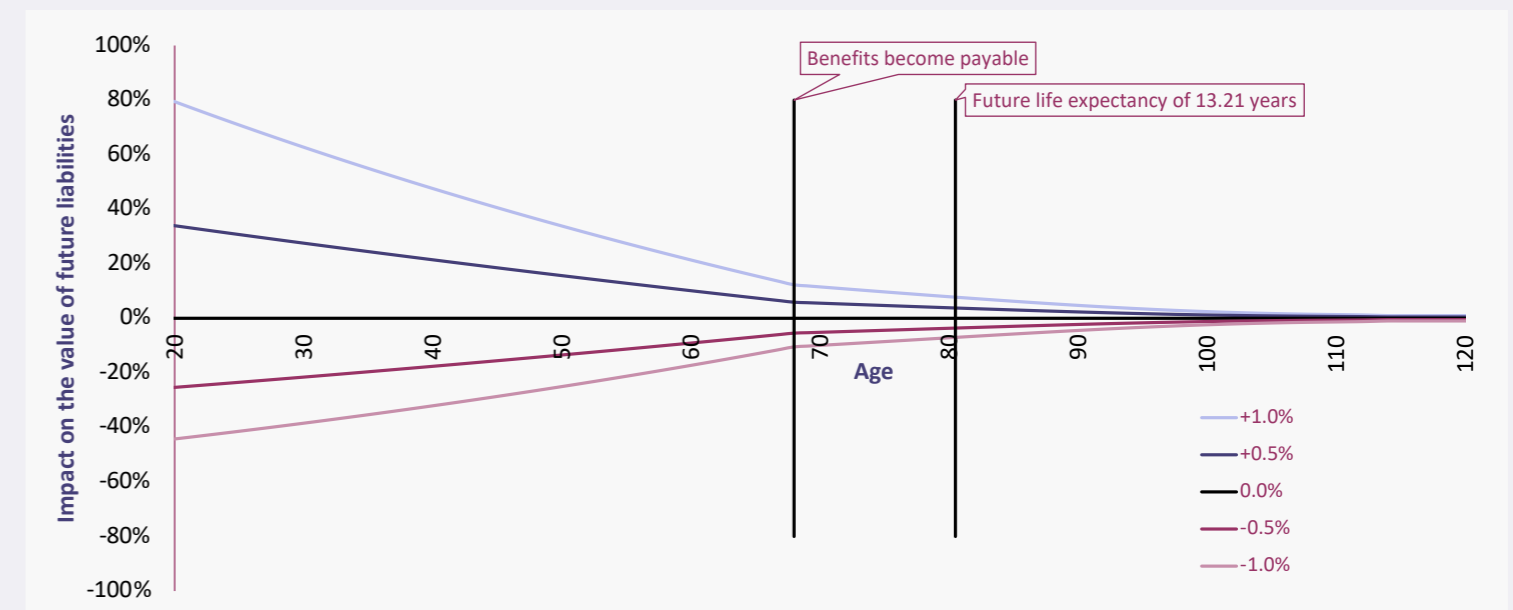
Chapter Three illustrates that the scheme would be stable under these circumstances, however there may be more reputational issues to consider.

A further area of competition may stem from whole-of-life CDC schemes. While the Government has been explicit that it does not intend to facilitate decumulation-orientated schemes by the back door with multi-employer schemes,⁵⁷ a member would potentially still be able to choose to join a whole-of-life scheme for decumulation purposes. This would offer a different risk profile to a decumulation-only scheme, with the opportunity for greater risk sharing with younger members. Adjusting the rate of future benefit increases by ±1% around the Consumer Prices Index (CPI) impacts the value of future liabilities according to their timeframe. For a member aged 40, the value of liabilities varies by 80% across this 2% range of future benefit increases. This is reduced to a 23% spread on the value of liabilities by the time benefits come into payment, and further to 15% at age 80½ years old when a member's future life expectancy is 13.2 years [Figure 4.2].

Figure 4.2

At younger ages altering the rate of future benefit increases has a far greater impact upon the value of future liabilities

The impact of using a ±1% adjustment to CPI for future benefit increases upon the value of future liabilities by age



The inclusion of younger members with a greater capacity to absorb volatility could be leveraged to provide a more predictable benefit level for pensioner members. However, this comes with its own issues as a younger member may not feel that they receive a fair deal in this intergenerational transfer of risk.

⁴⁹ FCA (2023)
⁵⁰ FCA (2019)
⁵¹ Nest (2015)
⁵² PLSA (2021)
⁵³ PPI analysis of data from Tables 10-13 of FCA (2022)

⁵⁴ DWP (2023)
⁵⁵ FCA (2022)
⁵⁶ Nest (2023)
⁵⁷ DWP (2023)

A CDC decumulation scheme only guarantees an income for life while the scheme has not been wound up

The guarantee of an income for life only holds where the scheme remains a going concern. A scheme may wind up when it is no longer economically viable or desirable to the administrator. For a closed scheme running off, there will become a stage when the charges that may be levied will no longer cover running costs and the members will need to be wound up. The options available to the trustees will determine how members fare under these circumstances as they will not have their income guaranteed as happens in the FCA-regulated decumulation market, with the guarantee provided by the Financial Services Compensation Scheme (FSCS).

Provision for schemes that may need to wind up could upset the competitive balance of the market, particularly if there are only a limited number of schemes.

In the case of wind up, the scheme will need to discharge its responsibilities to members. This can either be achieved through transferring members to an alternative scheme, the same as the current approach within the Defined Contribution (DC) accumulation arena, or to buy out benefits in the open market.

The former approach should ensure greater consistency with a member's current situation; however, it would be important to consider the scheme dynamics to ensure the member remains exposed to a similar level of risk. A CDC provider of last resort may need to be established to take on these members, though such a scheme could upset the dynamics of a competitive market.⁵⁸

To buy out benefits would be to transfer to an annuity option for members who have actively chosen to not annuitise their pension savings. They may also face an income cut as the available assets are unlikely to purchase the same level of guaranteed income. Regulation may need to be consistent with whole-of-life schemes

The decumulation market in the UK is currently regulated by the FCA,⁵⁹ whilst the current CDC regulation is under TPR. The regulators work together on a number of issues, although a single regulatory regime may be appropriate to ensure that no competitive advantage can be arbitrated between two systems .

Moreover, to preserve a fair competitive landscape it may necessitate decumulation CDC to be regulated in the same manner as whole-of-life CDC. Any multi-employer whole-of-life CDC scheme that accepts transfers in could be used as a vehicle for a member to access CDC in decumulation by transferring funds shortly prior to retirement. If regulation under alternative regimes offered a competitive advantage, this may disrupt the market and challenge the viability of schemes.

Communication is the single biggest challenge to overcome

Explanation of differing benefit increases will be challenging to members.

Experience from the Netherlands, where communication with CDC scheme members failed to align expectations with the realities of the systems, resulted in reduced trust in their pension system and, ultimately, was a contributory factor to the reforms which will come into force as the new Dutch pension agreement.

The experience of the Netherlands has shown a response to benefit cuts that has reduced an appetite for collectivised pension schemes

The Future Pensions Act drives greater individualisation of pensions saving, away from the previous level of risk sharing. This came into force on 1st July 2023 through an act of the Dutch Senate.⁶⁰

Achieving communication with members will necessitate clear and transparent communication. The need for the communication of risk in a manner than can be compared between schemes is also paramount.

The need for refining this within a decumulation-only CDC environment will be dependent upon two existing (by the time) communication requirements:

- 1. Existing multi-employer CDC communication.** By the time decumulation CDC may become available, multi-employer schemes are expected to have become established, including the ongoing communication associated with such schemes.
- 2. Marketing of retirement products.** The existing decumulation market is regulated by the FCA and they have extensive experience of the communication and marketing of pension products.

While a significant challenge that will need to be overcome, communication surrounding CDC schemes will have evolved from the current experience and it will be upon that stepping stone that decumulation-only CDC communications will need to take their next step.

⁵⁸ DWP (2023)

⁵⁹ With the exception of pension trusts which offer a drawdown facility

⁶⁰ rijksoverheid.nl (2023)

Making comparisons across the spectrum of decumulation products needs to recognise member flexibility, the approach to risk management, as well as the absolute benefit level

While the communication may be the single biggest challenge, this is still only an input to understanding the choices in maintaining an income in retirement. A problem William Sharpe described as the “nastiest, hardest problem in finance”.

Ultimately, the difference in outcomes between annuities, decumulation CDC and drawdown is determined by the investment strategy and the longevity sharing. These comparisons are multi-dimensional and, in the end, the desirability of an outcome will depend upon the risk profile of the individual member. The impact of variation between private pension decumulation options is diluted in retirement income by the State Pension, which provides a predictable income underpin with funding risk (in place of investment risk in a pay-as-you-go scheme), inflation risk and longevity risk borne by the State.

Simple metrics inevitably hide nuances within this three-way comparison.

In terms of total average benefit paid over a lifetime, this is dominated by the impact of pooling. Risk sharing and the potential to subsidise or be subsidised by other members increases the uncertainty of the total benefit a member may receive over a lifetime. The greatest certainty in amount is provided by a drawdown approach as on death any remaining funds will be returned. This is because there is no longevity subsidy between members and an individual ultimately gets back what they put in, with the addition of some investment return. Uncertainty increases in annuities or CDC schemes where an early death would reduce the total benefit and a long life increases the lifetime benefit payout. The income provided in any given year, however, is far more predictable, as the sharing of longevity risk (whether with an insurer or other members) avoids the consequences of pot exhaustion.

The return of remaining funds on death differentiates the benefit stream of drawdown from annuities and decumulation CDC.

So, making a comparison between an annuity and a CDC scheme can be undertaken through comparison of the underlying investment strategy. The difference in lifetime payout is based on the degree of growth assets when benchmarked against the annuity’s backing assets (net of the risk premium). Ultimately, the difference will be based upon the investment objectives set out by the trustees, based upon how they envisage their potential members’ desire for predictability weighed against benefit level.

To make a comparison between decumulation CDC and a drawdown approach needs to balance the risk sharing. Between both schemes the risk is borne by the member, and within a drawdown arrangement the member ultimately has greater flexibility to choose how they wish to manage that risk.

The transparent, rules-based approach of a decumulation CDC scheme offers no flexibility to the member: they must realise the impact of volatility annually. Within a drawdown arrangement, an individual may take an approach that allows them to include a buffer in their approach to responding to unexpected investment returns. This would enable an individual to build in greater predictability to their income stream, albeit it would necessitate a more conservative approach to taking withdrawals.

By being able to smooth investment volatility, an individual in drawdown may feel that they could take on a higher proportion of growth assets in their portfolio, thereby increasing their expected total return.

However, the smoothing of longevity risk poses a somewhat more challenging environment for an individual who does not have the option to share risk and the consequences of managing longevity risk.

Ultimately, within individual drawdown there is greater flexibility for smoothing investment risk over multiple years, though the consequences of mismanaging the risk may be more material, but less opportunity for smoothing mortality risk than in a decumulation CDC arrangement. The impact of longevity risk would have a far more significant impact on future benefit levels at fund exhaustion than investment return volatility, which may cause the level of benefit to fluctuate.

The management of these risks may lead to either drawing an income at a lower rate to ensure funds are not exhausted and there is the capacity to smooth investment risk, or running the risk of an income dropping to nothing should the member exhaust their funds.

Rather than consider these as risks, it is possible to consider longevity uncertainty and investment volatility as opportunities for chasing greater investment returns.

To balance the three decumulation options when compared against one another:

- Individual drawdown offers the opportunity for growth rather than pay a risk premium to mitigate against investment volatility management, while bearing all longevity risk;
- Decumulation CDC offers the opportunity for growth rather than pay a risk premium to mitigate against longevity risk or investment management;
- Annuities offer certainty at the cost of paying a risk premium against both investment and longevity risk to an insurer.

Through these different options it is, perhaps, inevitable that for an individual to optimise their outcome they may need a combination of all three, alongside good financial advice.

Hybrid or multiple retirement income solutions may therefore be necessary to provide flexibility with protection.⁶¹

⁶¹ Hurman (2023)

Conclusions

Decumulation CDC schemes may be able to offer options, such as joint-life products, similar to those applied to in the annuities.

Underwriting and fairness would need to underpin any options, and strategies such as sectionalisation of a scheme may be needed to isolate risks between groups of members where they cannot otherwise be shared fairly.

Decumulation CDC schemes will need to compete not just against other decumulation products, such as annuities and drawdown, but also against whole-of-life CDC schemes which permit transfers in.

Whole-of-life schemes may be able to offer greater predictability of future benefits as they will have a broader membership for risk sharing.

Sophisticated investment strategies may be needed to best match the liability profile of the scheme to improve the predictability of future benefit levels at the cost of overall benefit levels.

This will put pressure on offering higher benefit levels as it will potentially require a move away from growth-seeking assets.

Individual drawdown may offer greater flexibility in managing investment risk, allowing a member greater choice in setting their investment strategy in line with their objectives.

However, the lack of longevity risk mitigation otherwise available in an individual arrangement may necessitate paying a risk premium to manage this when compared to decumulations CDC.

Modelling Appendix

Key assumptions

Mortality

Deaths are assumed to occur mid-year. Central mortality rates are taken from Office for National Statistics (ONS) 2020-based cohort life tables using female population rates.⁶²

- Female population mortality rates are slightly better than population average, so may reflect selection bias that could be expected for Collective Defined Contribution (CDC) schemes.
- Population-based rates are consistent with the assumption that this is a mass market product for the population with Defined Contribution (DC) savings accrued through automatic enrolment.

These rates are applied to individual lives using random variables to derive a stochastic longevity distribution.

Investment strategy and returns

The model maintains a constant portfolio, with an asset split: 40% equity, 40% gilts, 15% bonds, 5% cash. This is assumed to be rebalanced every year.

The portfolio return volatility is reduced by one third. This reflects the potential impact of the use of hedging, alternative assets and improved liability matching.

Rates of return for individual assets are projected using an Economic Scenario Generator (ESG) developed by King's College London's (KCL) financial mathematics department.⁶³ Central rates of return are based upon the Office for Budget Responsibility's (OBR) long-term detements.⁶⁴

Portfolio investment return rate (*i*) is applied according to the used assets within the year:

- Assets that are not used for payout are assumed to gain returns over the full year;
- Assets that are used to pay benefits to members surviving the year are assumed to gain investment returns over a half-year period (reflecting benefits being paid on average half-way through the year);
- Assets that are used to pay benefits to members dying during the year are assumed to gain investment returns over a quarter-year period (reflecting deaths being mid-year and benefits being paid on average half-way through the survivorship period);

Investment Return

$$\begin{aligned}
 &= [\text{Opening Assets}] \times (1+i) \\
 &\quad - [\text{Benefits paid to survivor members}] \times \{(1+i) - (1+i)^{1/2}\} \\
 &\quad - [\text{Benefits paid to death members}] \times \{(1+i) - (1+i)^{1/4}\}
 \end{aligned}$$

Charges

We assume a charge taken as a proportion of assets under management (AUM), set equal to 0.75% of assets.

This is modelled by adjusting the rate of investment return achieved on the portfolio:

- $i' = \frac{(1+i)}{(1+e)} - 1$
 - » *i* - Portfolio investment return
 - » *e* - Annual expenses (proportion of AUM)

New membership

999 new members join each year. This is not expected to reflect a scheme's realistic sales ambitions, but to ensure risk pooling may function adequately in the base case.

All members enter the scheme at age 68. For the cohorts of new members this is around State Pension age (SPa), around which annuity sales are centred.

Buy-in values are derived from the distribution of pot sizes used in annuity purchases, Financial Conduct Authority's (FCA) annuity values from FCA Retirement Market data.⁶⁵

- Of the 999 entrants the mean pot size is £75,652, with pots varying from £5,000 to £624,500 [Figure A.1].
- Buy-in values are in 2021-22 terms and are uplifted in line with earnings growth for each year's cohort of new members.

Figure A.3 pot values for new members

Pot value ('21-'22 terms)	New members
£5,000	265
£20,000	206
£40,000	148
£75,000	202
£174,500	138
£624,500	40

The pot value is converted to an annual benefit amount such that the value of the liability is equal to the value of the asset using the scheme's valuation calculations, including the adjustment to future indexation.

⁶² ONS (2022)

⁶³ Maffra et al. (2021)

⁶⁴ OBR (2023)

⁶⁵ FCA (2022)

Model overview

The model projects the development of the CDC scheme year by year [Figure A.2]

Figure A.2 model flow



1. New members

New members are added to the scheme at the beginning of the year

For each new member:

- Calculate the opening benefit payable that year for each member, based upon:
 - » Their specific mortality and best estimate of future benefit increases.
 - » The **benefit adjustment** calculated at the end of the previous year (calculated in step four of the previous year). In the first year of the scheme, the adjustment is set to 0.
- Add new pots to assets carried over from last year (the **end-of-year scheme assets** calculated in step three of the previous year).
 - » This is the **start-of-year scheme assets**
- Add the new members to the scheme membership (the **end-of-year scheme population** calculated in step two of the previous year)
 - » This is the **start-of-year scheme population**

2. Membership projection

For each member of the **start-of-year scheme population** (calculated in step two, above) determine whether they live or die according to a random probability. Each member's probability of survival is determined by an individual independent random variable.

- If they die, they become the scheme death population for the year.
- If they survive, they become one year older and part of the **end-of-year scheme population**.

3. Asset projection

For each member of the **scheme death population for the year** (calculated in step two, above) pay half their annual benefit from the scheme assets.

For each member of the **end-of-year scheme population** (calculated in step two, above) pay their annual benefit from the scheme assets.

Calculate investment returns based on the **start-of-year scheme assets** (calculated in step one, above) and the benefit payments calculated.

Apply these movements to the **start-of-year scheme assets** (calculated in step one, above) to calculate the **end-of-year scheme assets**.

4. Benefit adjustment calculation

This is the first part of the annual valuation process.

Using the **end-of-year scheme assets** (calculated in step three, above) identify the appropriate **benefit adjustment** using surviving members' benefits and the best estimate future assumptions (mortality and investment return).

This is the adjustment value a , within the bounds $\pm 2\%$, that best satisfies the liability calculation to be equal to the scheme assets. The liability for each member is calculated as:

$$Liability = \sum_{m=1}^{\infty} \left\{ \left[\left(\frac{l_{x+m+1}}{l_{x+1}} \right) \left(\frac{1+i_n}{1+e} \right)^{\frac{1}{2}} + \frac{1}{2} \left(\frac{l_{x+m+1} - l_{x+m}}{l_{x+1}} \right) \left(\frac{1+i_m}{1+e} \right)^{\frac{3}{4}} \right] \times B \right. \\ \left. \times \prod_{n=1}^m \left[\left(\frac{CPI_n}{CPI_{n-1}} + a\% \right) \left(\frac{1+e}{1+i_n} \right) \right] \right\}$$

- B – current annual benefit payable to member
- CPI_t – projected the Consumer Prices Index (CPI) using central determinist assumption beyond valuation date. Effectively a one-year lag.
- i_t – projected annual rate of investment return in year t , using central deterministic assumption
- e – annual expense rate as a proportion of assets. Assumed to be 0.75%, see expense assumption above
- l_x – number of members alive at age x , where x is the age at the beginning of the current year
- m – used to count all future time periods
- n – used to count time periods up to period m

This calculates the **initial end-of-year liability**.

5. Set existing member benefit level

This is the second part of the annual valuation process.

For each surviving member calculate their benefit for the next year by increasing their benefit using CPI and the **benefit adjustment** (calculated in step 4, above).

If the benefit adjustment is ±2% and the **initial end-of-year liability** (calculated in step four above) does not match **the end-of-year scheme assets** (calculated in step three above), then adjust the benefit level of each surviving member by a factor of $[\text{end-of-year scheme assets} / \text{initial end-of-year liability}]$

Calculate **end-of-year liability** as:

- If no further adjustment made: initial end-of-year liability
 - » $[\text{Current benefit level}] \times \left(\frac{\text{CPI}_{t+1}}{\text{CPI}_t} + a\% \right)$ for the central CPI determinant.
- If further adjustment made then calculate liability at the adjusted benefit level. It should be exactly equal to the **end-of-year scheme assets**

6. End of year

Return to step one for the beginning of the new scheme year.

Model limitations

Portfolio options

The portfolio is restricted to limited asset classes. This prevents the asset modelling to include asset classes which are currently used in limited quantities, but may be well suited to the needs of a CDC scheme. This includes classes such as: infrastructure; property; private markets; and commodities. Further, hedging assets may be used to reduce the volatility of portfolio returns by hedging against equity volatility, or to better align the asset returns to match the movements in the future value of liabilities.

To account for some of this impact the volatility of portfolio returns has been modified downwards.

Valuation process

Partially as a result of the simplifications used in the asset strategy, the value of future liabilities is not adjusted to take account of movements in backing-asset values. This would include, for instance, the impact of hedging against benefit inflation.

Comparison with other decumulation products

No direct comparison between the relative value of alternative decumulation options (annuities, drawdown, whole-of-life CDC with permitted transfer in) is presented. This is owing to the complexity of calculations and the potential for misinterpretation, or neglect of communicating other factors.

It is important to consider the mix of backing assets for any decumulation option in terms of the amount of growth assets, as this determines the overall value of benefits expected to be paid to a member.

It is important to consider the degree of volatility in this benefit level from two angles:

- Predictability of annual payment, which allows for smoothing of benefit increases in response to scheme experience;
- Interaction with longevity risk, whereby the scheme will either return any remaining asset on death (drawdown approach) or continue to pay benefit until death without risk of exhausting funds (annuity and CDC approach).

To evaluate these factors and produce a simple statistic is to overlook the nuance of risk, and to then take a preference is based upon the risk appetite of a member.

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Contact: Chris Curry, Director
Telephone: 020 7848 3744
Email: info@pensionspolicyinstitute.org.uk

Pensions Policy Institute
King's College London
Virginia Woolf Building
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London WC2B 6LE

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PENSIONS POLICY INSTITUTE
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All enquiries regarding the Pensions Policy Institute's activities should be addressed to Chris Curry, Director at:
Pensions Policy Institute, King's College London, Virginia Woolf Building,
1st floor 22 Kingsway, London WC2B 6LE

t: 020 7848 3744

e: info@pensionspolicyinstitute.org.uk

w: www.pensionspolicyinstitute.org.uk

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