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Approaching the endgame: The future of Defined Benefit pension schemes in the UK

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The Pensions Policy Institute (PPI)

The PPI is an educational, independent research organisation with a charitable objective to inform the policy debate on pensions and retirement income provision. The PPI's aim is to improve information and understanding about pensions and retirement provision through research and analysis, discussion and publication. It does not lobby for any particular issue or reform solution but works to make the pensions and retirement policy debate better informed.

Pensions affect everyone. But too few people understand them and what is needed for the provision of an adequate retirement income. The PPI wants to change that. We believe that better information and understanding will lead to a better policy framework and a better provision of retirement income for all. The PPI aims to be an authoritative voice on policy on pensions and the provision of retirement income in the UK.

The PPI has specific objectives to:

- Provide relevant and accessible information on the extent and nature of retirement provision
- Contribute fact-based analysis and commentary to the policy-making process
- Extend and encourage research and debate on policy on pensions and retirement provision
- Be a helpful sounding board for providers, policy makers and opinion formers
- Inform the public debate on policy on pensions and retirement provision.

We believe that the PPI is unique in the study of pensions and retirement provision, as it is:

- Independent, with no political bias or vested interest
- Led by experts focused on pensions and retirement provision
- Considering the whole pension framework: state, private, and the interaction between them
- Pursuing both academically rigorous analysis and practical policy commentary
- Taking a long-term perspective on policy outcomes on pensions and retirement income
- Encouraging dialogue and debate with multiple constituencies

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Executive Summary

Private sector Defined Benefit (DB) pension schemes have been in decline for a number of years, in terms of the number of schemes and members. The vast majority of schemes are either closed to new members or to new accrual, and most are cash-flow negative, payments to pensioners exceed contributions from members and the sponsoring employer. Against this background, many pension schemes are turning their attention to how they can ensure that they continue to provide the benefits to members while minimising the costs and risks to the sponsor. Traditional approaches to this 'endgame' scenario have been insurance solutions, such as bulk annuity purchase. However, there is growing interest in the use of alternative consolidation mechanisms; either merging schemes or transferring liabilities to a third party.

The endgame market is evolving, and it is predicted that the number of schemes considering at their options will continue to grow. The number of private sector DB schemes that will be in a position over the next ten years to enter an endgame scenario – whether that be through an insurance solution, investment or administration merger or consolidations – is anticipated (although not guaranteed) to grow as funding levels improve.

However, the shape of the future market will depend on a number of factors, the impact of which are currently difficult to predict. These factors include:

- Sponsor appetite for specific approaches, particularly the extent to which the employer covenant is compromised.
- The availability of greater consolidation and the potential emergence of 'Superfunds'.
- The capacity of the insurance sector to meet increased demand for bulk annuity solutions and the effect on pricing.

If scheme funding improves as anticipated, sponsors will have more endgame and de-risking options available

PPI modelling suggests that under scenarios where future changes are similar to past experience, funding levels for private sector DB pensions will continue to improve, resulting in more schemes to be in a position to meet their future liabilities.

Additional PPI modelling of these scenarios projects that by 2030 the number of schemes in surplus is expected to rise, with the proportion of schemes in a position to secure full buy-out can be expected to rise from a current level of 6% to 72% by 2030. As assets exceed liabilities, more schemes will also be in a position to become self-sufficient or be able to enter into consolidation vehicles, allowing for potentially greater security for scheme members. In these scenarios there is a potential buy-out market of £770 billion over the next decade.

The choice of endgame strategy will depend partly on the financial situation of the scheme, and also on the appetite of the sponsor to maintain a strong covenant or to cede partial or total management of the scheme to third parties.

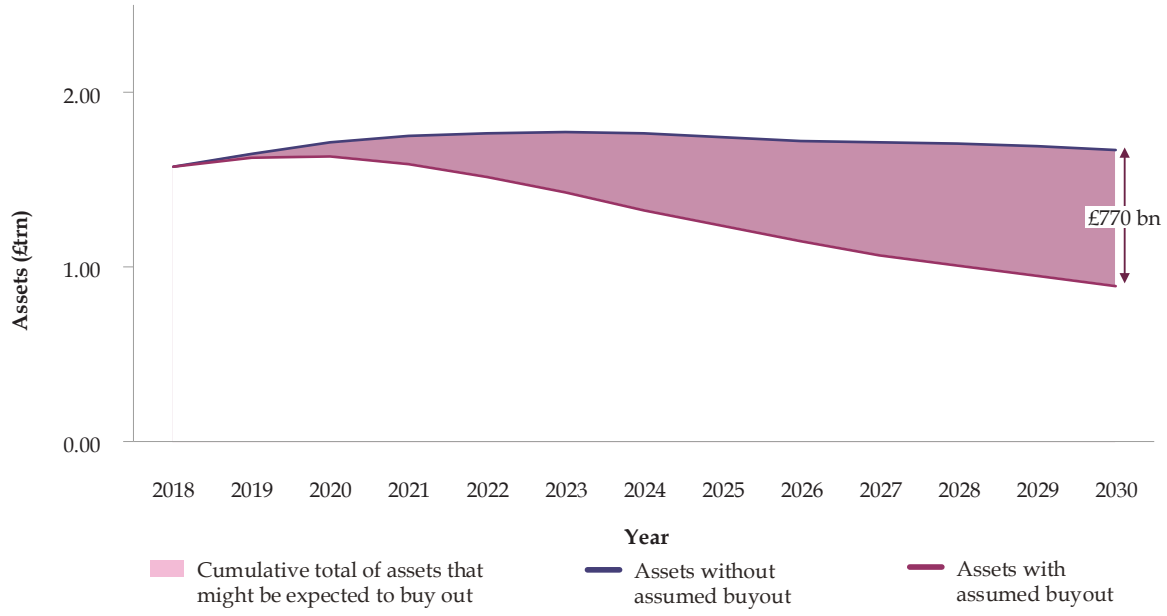
PPI modelling suggests that there is a potential buy-out market of £770 billion over the next decade

Buy-outs have traditionally been seen as the most secure way of ensuring that benefits are paid to members, because the entire scheme is bought out by an insurer that assumes responsibility for all future liabilities. Many sponsors will aim towards achieving a full buy-out of the scheme as their final destination.

As funding levels increase, more schemes might be in a position to achieve buy-out. Total DB assets, as modelled by the PPI, are projected to reach £1.67 trillion by 2030. When the assets assumed to be capable of full buy-out are removed, total assets fall to £900 billion, suggesting that there is a potential buy-out market of £770 billion over the time period (Chart Ex1).

Chart Ex1[1]
The buy-out market is projected to reach £770 billion by 2030

Total assets with and without assumed buy-out, 2018-2030 (current earnings terms)



Some schemes may not reach a position for full buy-out, or may have sponsors that do not wish to cede control of the scheme, particularly if the scheme is still open to new members or new accrual. Options available for schemes in these positions include buy-ins and longevity hedging that insure specific groups within the scheme, or adopting specific investment strategies to meet future expected liabilities and cash-flow. These may be undertaken as ends in themselves, or as stages on a journey to buy-out.

With more schemes looking towards their endgame, multi-scheme strategies are increasingly being seen as a viable option.

1 PPI modelling

Current options available include;

- Administrative mergers
- Asset mergers
- Scheme consolidation

Mergers and consolidation of schemes can mitigate against risk through economies of scale and different opportunities for investment

The choice of whether and how to consolidate or merge will depend on the appetite of scheme sponsors for ceding control over key aspects of the scheme. This may be of particular value to smaller schemes where costs are disproportionately high and pooling elements of the scheme with others can drive these costs down.

Another multi-scheme strategy, though not one that is currently in widespread operation, is the 'Superfund' which could potentially have a significant effect on the future DB landscape.

Superfunds would see entire schemes transferred into a single large scheme, and could provide a cheaper and more readily accessible endgame option, especially for smaller schemes. This could for some types of Superfund, reduce the numbers of pension schemes aiming for self-sufficiency or insurance solutions. However, Superfunds are not yet specifically regulated in their own right, and their potential impact for members, schemes and the wider endgame market is difficult to predict. If Superfunds do become more prevalent, this could limit demand for bulk annuity purchases.

A rise in the number of schemes finding themselves able to achieve full buy-out may be expected to increase pricing as appropriate assets become more sparse and more expensive. However, the introduction of Superfunds as a cheaper alternative for some schemes may mean that this situation may not arise, as schemes may opt to enter a superfund as their endgame.

For many schemes, the endgame could prove to be a long game.

Although DB pension schemes are preparing for their endgame scenarios, PPI modelling suggests that even those schemes that are closed for further accrual will likely be in existence for another 26 years, rising to 35 years for the few open to new entrants. For many schemes, sponsors and members, the DB endgame could be a long journey (Table Ex1).

Table Ex1:[2] Expected longevity of pension scheme by current status

Scheme Status	Expected time in current status (years)	Expected time until scheme is wound up (years)
Open to new entrants	9.7	35.5
Closed to new entrants, open to accrual	7.3	30.8
Closed to further accrual	25.4	26.1
Winding up	2.2	2.2

2 PPI modelling

Introduction

This report is informed by desk research, PPI modelling, and interviews with industry representatives.

This report looks to briefly cover the history of private sector Defined Benefit pension (DB) schemes, to examine the reasons for the decline in DB schemes and to suggest how the landscape might change over the next decade.

DB schemes have been in decline for a number of years, both in terms of the number of schemes and members. The vast majority of schemes are either closed to new members or to new accrual, and most are cash-flow negative, in that payments to pensioners exceed contributions from members.[3]

Against this background, many pension schemes are turning their attention to how they can ensure that they continue to provide the benefits due to all members while minimising the costs and risks to the sponsor. This has led to the development over time of a range of options available to schemes that can reduce the risk to the sponsor. Traditionally these have been insurance solutions, such as bulk annuity purchases - either buy in policies (where an insurance product makes payments to the scheme) or buy out policies (where an insurance product makes payments to members). In the last two years there has also been an interest in the use of alternative consolidation mechanisms, either merging schemes or transferring liabilities to a third-party trust.

There are also a number of investment strategies that can be used to meet expected liabilities or cash-flows either as an end in themselves or as part of a tactic to move towards a full buy-out.

This report examines the history of DB pensions, the options available for de-risking and the potential future market for endgame solutions.

Chapter One provides a brief overview of the steady decline of private sector DB pension schemes in the UK. It provides analysis of the main economic, political and legislative and regulatory changes that have impacted on schemes' ability to meet their duties to members.

Chapter Two looks at how pension schemes and their sponsors can de-risk and what strategies are available. The majority of UK DB schemes are cash-flow negative and this number is set to increase, meaning that sponsors and trustees are seeking different pathways to ensure that schemes can meet their obligations.

Chapter Three uses PPI modelling to make a series of projections as to how the DB pension world will change over the next decade, looking at scheme status, membership, assets and liabilities and funding levels, and how these might affect the wider DB market.

3 Mercer (2019)

Chapter One: Why has the number of Defined Benefit pension schemes declined and how has this affected members and employers?

This chapter provides a brief overview of the decline of private sector Defined Benefit (DB) pension schemes in the UK. It provides analysis of the main economic, political and legislative and regulatory changes that have impacted on schemes' ability to meet their duties to members.

DB pensions provide a sense of security in retirement, allowing pensioners a guaranteed income until death and often benefits for surviving spouses and partners. The decline of private sector DB pension schemes in the UK means that fewer people will be able to enjoy this security. Likewise, the fact that DB schemes have proved less affordable for employers means that there is a growing deficit in many DB schemes, with the majority paying out more in benefits to pensioners than they are receiving in payments from members.

DB pension schemes provide a member with a guaranteed income, lump sum or combination in retirement

Typically, both the employer/sponsor and the employee/member make contributions to the pension pot, and it is the sponsoring employer's responsibility to ensure that the scheme is able to pay accrued pensions in full, irrespective of contributions made by scheme members and the quality of investment returns.

The amount that an individual can receive in retirement will depend upon:

- The number of years that an individual has been contributing,
- Their pensionable earnings (either their final salary or their salary averaged over their career),
- The accrual rate (the proportion of salary that an individual will receive for each year in the scheme (often 1/60th or 1/80th) (Box 1.1).

Box 1.1 Calculating DB retirement income

For example, an individual who has been contributing to a final salary DB pension for twenty years, with a final salary of £36,000 and a 1/60th accrual rate would receive a pension of £12,000 (£36,000 x (20/60)).

The DB market in the UK is shrinking

DB schemes grew throughout the 19th century, with railway companies being the first industrialists to offer pensions, followed by Reuters in 1882, WH Smith in 1894 and Colmans in 1899. A pension scheme was seen by some sponsors as a useful means of retaining staff through encouraging loyalty to the employer, while others were motivated by concern for long-standing staff.[4] However participation rates did not rise until the introduction of tax relief on pension contributions in 1921. This saw a considerable rise in the number of schemes offered, and participation in workplace pension schemes rose to a peak of around 8 million active members in 1967.[5]

The early 1970s saw the beginning of a steady decline to the point where the number of schemes and members have fallen, with the last decade having seen a fall from 7,400 to 5,450 schemes, with the number of active members having halved, from 2.7 million to 1.3 million (Table 1.1).

Table 1.1: Active UK private sector DB schemes and their status[6]

	2008	2018
Total schemes	7,400	5,450
Open	31% (2,294)	12% (654)
Closed to new members	50% (3,700)	46% (2,507)
Closed to future accrual	17% (1,258)	41% (2,235)
Winding up	2% (148)	1% (55)

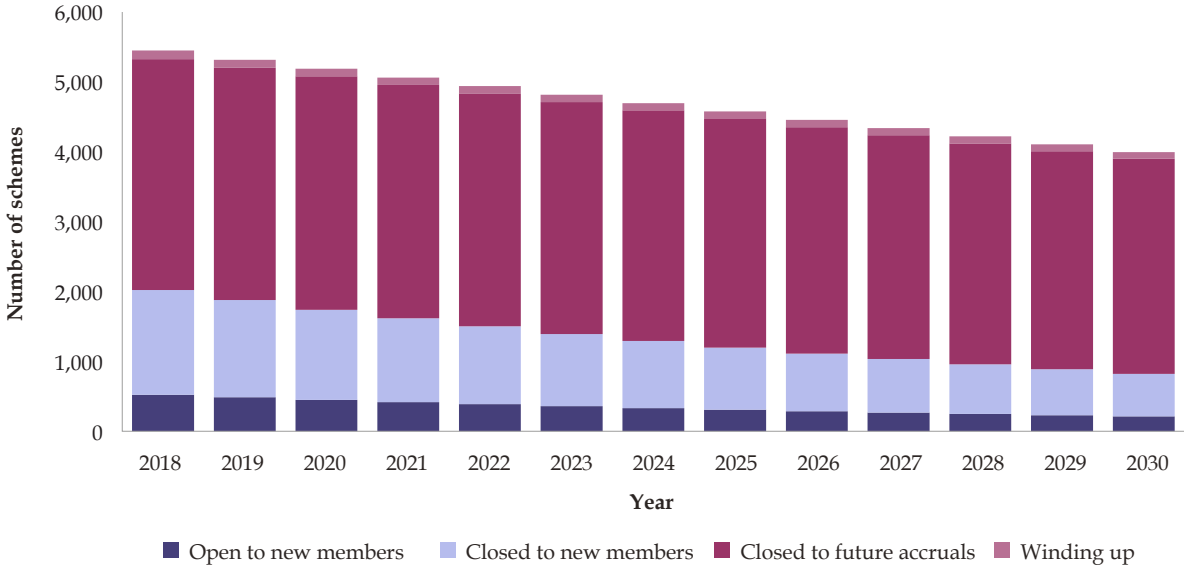
Only one in eight (12%) of private sector DB schemes are currently open to accrual and new members in 2018, a total of 654 schemes compared to 2,294 schemes in 2008 - a drop of 71.5% in a decade.

The number of active DB schemes will continue to decline

From a base of 5,450 active schemes in 2018, PPI modelling projects a further fall in the number of private sector DB schemes to fewer than 4,000 by 2030, meaning that fewer people will be able to take advantage of a pension that guarantees a fixed income in retirement. The modelling further projects that there will be fewer than 850 DB pension schemes that will still be open to new members or new accrual, with the vast majority likely to be looking towards their endgame (Chart 1.1).

Chart 1.1[7]
The number of active schemes will continue to decline

Number of DB pension schemes by status

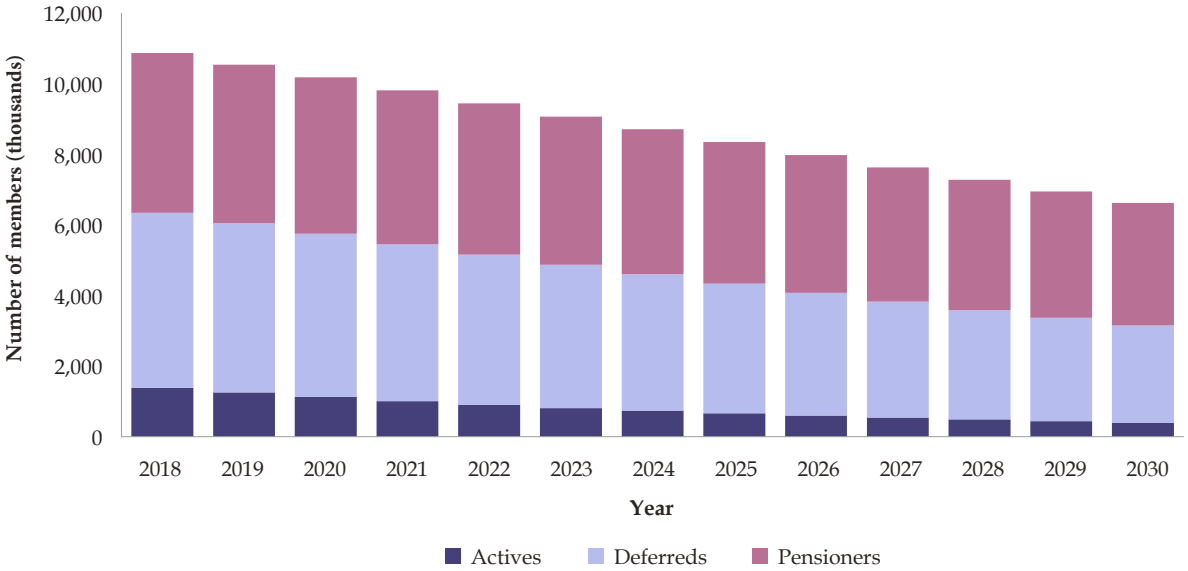


The numbers of contributing members will fall as the proportion of pensioners rises

As the numbers of contributing members continues to fall and the proportion of pensioners rise, attention has turned towards making sure that schemes remain able to meet their responsibilities to all members whilst ensuring that sponsors remain solvent. PPI modelling projects that the percentage of active members will halve from 13% to 6% between 2018 and 2030, while the proportion of pensioners will rise from 42% to 52% over the same period (Chart 1.2).

Chart 1.2[8]
The numbers of DB pension scheme members will decline

Number of DB pension members by status, thousands



7 PPI modelling
8 PPI Modelling

While the numbers of people in DB schemes is predicted to fall, the numbers of pensioners will remain relatively static. This means that payments to pensioners will continue to outstrip contributions from members, leading to increasing scheme deficits without greater input from scheme sponsors.

There are many reasons for the reduction in the number of private sector DB pensions. No one factor is necessarily pre-eminent as a cause, but taken together they combine to create an environment in which decline is difficult to avoid.

There are a number of reasons for the decline of DB pensions in the UK over the past 50 years.

- Economic and labour market changes
- Decline and volatility in asset growth
- Quantitative easing
- Increasing longevity
- Changes to scheme retirement age
- Changes to the ways pension schemes operate
- The provision of benefits became non-discretionary
- Dividend tax credits and contracting out were abolished
- Levels of costs increased and financial buffers were reduced

Economic and labour market changes have seen work patterns change

People now have longer working lives and work for many more employers during their lifetimes, and employers see more staff turnover in a dynamic economy, meaning that a pension that rewards employee loyalty is less relevant in today's world.

Changes in the UK and global economies during the second half of the 20th century and into the 21st have had significant impact on DB pension schemes. Moving from a manufacturing/industrial economy to a post-industrial service-based economy with a more flexible labour market has seen the nature of work change, and jobs for life are scarce. People can now expect to work for eleven different employers over the length of their career, which means that the strong bond between employer and employee that stood at the heart of many DB pensions is weakened or lost.[9]

The decline in asset growth and investment volatility have resulted in lower than expected investment returns

Lower-than-expected returns on investments can lead to higher deficits in pension funds, meaning that sponsors will need to fund the shortfall. Extra injections of capital into the fund are likely to suppress the appetite for DB pensions, particularly if deficit repayments threaten the solvency of the sponsor.

Investment markets are volatile, and this factor can impact the investment returns for DB schemes, which in turn affects the rates at which sponsors and members make contributions. During the last quarter of the last century, when DB membership was high, the average return on UK equities was 13%, whereas over the past decade it has averaged 5.8%[10] This meant that some schemes had set contributions on an assumed higher investment return than they experienced, creating a shortfall in funding levels and meaning that the sponsor was required to fund the deficit.

Longevity increases have happened faster than was anticipated

People are living for longer – indeed longer than had often been expected at the time that contribution rates were set. The longer that pensioners live beyond their projected lifespan, the greater the implications for the funding of a scheme.

At the time of peak participation in DB pension schemes in 1967, the average life expectancy at State Pension age (SPa) (age 65 for men and 60 for women) was 12.39 years for men and 21.08 years for women. In 2018, at SPa, life expectancy has risen to 19.86 years for men and 21.97 years for women.[11] With people living longer into retirement, the cost of providing guaranteed pension incomes has risen significantly. This is partly because calculations about future contribution levels based on life expectancy made fifty years ago will have proved inadequate to meet current levels of longevity. This means that the value of benefits provided

9 Department for Work and Pensions (DWP) (2011)
10 Barclays (2019)
11 ONS Life tables, 2016-based projections

by a DB scheme are generally much higher than previously anticipated. A one year rise in longevity is estimated to result in a 4.5% increase on the liabilities of a DB scheme.[12]

Social and demographic changes alone are not responsible for the decline in DB schemes in the UK. Changes in fiscal policy and a tightening of regulatory and accounting standard have also increased the pressure on scheme trustees and sponsors to maintain high levels of funding.

Increases in retirement age have not been sufficient to offset other factors

Although there have been increases in retirement age in some private sector DB schemes to match the increase in eligibility for the State Pension,[13] where the scheme rules allow, these have not been sufficient to offset the financial effects of increased life expectancy and the amount of time spent in retirement, though they have somewhat mitigated the speed at which this has been increasing.

Economic and demographic changes are not the only factors that have served to make DB pension schemes less financially viable. Government fiscal policy, changes to legislation, regulation and accounting standards have also served to place pressure on schemes' trustees and sponsors, further impacting the value and security of pension income for members.

Quantitative easing can increase scheme deficits

Quantitative easing (QE) is a monetary policy designed to stimulate growth by encouraging greater lending and investment, whereby a central bank creates new money to purchase Government bonds and other securities from existing holders, increasing the supply of money in the economy. The Bank of England undertook significant programmes of quantitative easing between 2009 and 2012 and in 2016.

Quantitative easing can lead to increases in a scheme's assets as the value of any gilts it holds goes up, but this increase is relatively small compared with the resulting decrease in discount rates used for calculating pension scheme liabilities.[14] These low rates have contributed to increased liability valuations and resulted in greater deficits. Estimates suggest that for each 0.1 percentage point reduction in gilt yields raises liabilities by 2.0% and raises assets by 0.7%.[15]

A 0.25% fall in gilt yields could increase DB scheme deficits by as much as £45 billion. The first round of Quantitative easing, in 2009-10, increased pension deficits by an estimated £74 billion, even after adding the corresponding investment gains.[16]

The provision of benefits became non-discretionary, making meeting liabilities mandatory

During the peak of DB provision, employees' entitlement to promised benefits was discretionary, meaning that, depending on its rules, a scheme could be wound-up without the sponsor necessarily having to secure all member benefits with an insurer, even if the sponsor was solvent. The Pensions Act (1995) made it mandatory for benefits to be delivered so long as the sponsor is solvent, including increases in line with inflation measures introduced in the 1990s. The Pension Schemes Act (1993) also made it mandatory that 'early leavers' (scheme members with more than three months of contributions, but less than two years) have benefits they have accrued within the scheme preserved, something that had previously been at the discretion of scheme specific rules.

Dividend tax credits and contracting out were abolished, leading to an increase in funding costs

Prior to 1997, dividend payments received tax relief in order to offset the corporation tax already paid by companies on their profits. However, as pension funds were tax-exempt, they received a tax-credit of 20% on dividends

in place of tax relief. The abolition of tax relief on dividends in 1997 led to schemes having to increase their contributions in order to offset the resulting shortfall.

With the introduction of the new State Pension in 2016, contracting out of the Additional State Pension for DB scheme members came to an end. When this change occurred, schemes had to ensure that they could meet HM Revenue and Customs requirements regarding the minimum amount that pension schemes had to provide to members in exchange for paying reduced levels of National Insurance contributions. For many schemes, this exercise led to an increase in funding costs because paying the cost of the benefit exceeded the rebate received.

Legislative changes placed further pressure on DB schemes by reducing financial buffers and increasing costs

The Finance Act 1986 introduced restrictions on surplus levels. The maximum acceptable funding level was set at a conservative value of 105% of present liabilities.[17] This was introduced to prevent companies from using pension funds to hold profits tax-free until they could take advantage of lower levels of corporation tax. The main result was that employers reduced and sometimes stopped or suspended paying contributions in an effort to reduce surpluses during times of high funding. This meant that employers had less of a financial buffer as liabilities increased.[18]

Changes to accounting standards have also restricted investment

The introduction of Financial Reporting Standard (FRS)17 in 2005 (since replaced by FRS102) established tighter restrictions on accounting standards and greater transparency in pension funds. Surpluses and deficits in pension schemes must be reported on sponsoring employers' balance sheets. This fundamentally changed the way that pension liabilities are viewed, making them more transparent to shareholders, as well as changing the investment strategy in relation to bonds for DB schemes in cases where trustees agree to invest in such a way that would help sponsors to meet their broader accounting objective.

Employers have a responsibility to ensure that the costs of running a pension scheme do not endanger their core business, which would place current employers and pension scheme members at risk.

Employers are faced with balancing the needs and interests of many, often competing, stakeholders. The financial needs of the DB scheme must be balanced against the needs of current employees, investment in the business, and shareholder dividends. While it is important that the sponsor upholds its commitment to DB scheme members, it must also ensure the continued success of the company.

The Pension Regulator's (TPR) Code of Practice on funding states that a 'strong, ongoing employer alongside an appropriate funding plan is the best support for a well-governed scheme'.[19]

Funding of a DB scheme should not threaten the ongoing survival of the sponsoring company, making it insolvent or unprofitable, nor should it lead to poor compensation for current employees, most of whom are unlikely to be members of the DB scheme. To this end, TPR is introducing a Long-Term Objective framework that will see scheme trustees having to take a long-term view of funding and investment to ensure that future liabilities are met.

The combination of changes to the UK labour market, financial conditions and a requirement for pension schemes to meet stricter conditions has served to make DB pensions less affordable to sponsors. This has meant that many sponsors are looking to restrict or wind up their schemes while still seeking to meet their current and future obligations to members.

17 Finance Act, 1986 – Part II Schedule 12
18 Deloitte (2018)
19 The Pensions Regulator (TPR) (2014)

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Chapter Two: What is the 'endgame' and how are DB schemes approaching it?

This chapter looks at how pension schemes and their sponsors can de-risk and what strategies are, or might become, available. The majority of UK private sector Defined Benefit (DB) schemes are cash flow negative and this number is set to increase, meaning that sponsors and trustees are seeking different pathways to ensure that schemes can meet their endgame; meeting their long-term goals and continuing to deliver on their promises to provide a retirement income to all members without compromising the viability of the employer. This chapter examines different endgame strategies and their ramifications for DB schemes.

For many employers, DB schemes have become uneconomic

The fall in the number of open DB pension schemes is a direct result of economic, social and regulatory changes outlined in Chapter One. The focus has therefore turned to how they can continue to meet their obligations to current pensioner and deferred scheme members. To this end, sponsors and trustees have looked to de-risk (to move investment into portfolios that are more able to match predicted liabilities) or to transfer risk entirely to a third party.

The majority of UK DB schemes are cash-flow negative, with payments to pensioners higher than income from contributions

73% of pension plans were recorded as being cash-flow negative in 2018, and projections have this figure rising to 90% by 2028.[20] Given this landscape, a majority of schemes are seeking to de-risk within the next ten years, with 75% expecting to achieve full buy-out or self-sufficiency within ten years.[21]

It is important to consider that not every DB scheme will be seeking to enter into an endgame scenario in the foreseeable future, and 34% of UK schemes believe that they will continue to fund the scheme through ongoing investment on a technical provisions basis in the long-term.[22]

20 Mercer (2019)
21 LCP (2019)
22 Mercer (2019)

A number of de-risking and endgame options are available, and the strategies covered in the rest of this chapter are:

- Bulk annuity purchases (buy-ins and buy-outs)
- Longevity hedging
- Investment reform (Liability-Driven Investment (LDI) and Cash-flow Driven Investment (CDI))
- Changes to asset allocation
- Consolidation and Superfunds
- Fiduciary management
- Changes to scheme design
- The Pensions Protection Fund

However, none of these options exist separately from each other (apart from a full buy-out) or necessarily represent an end in themselves. A pension scheme could, over its de-risking journey, use a variety of strategies, as shown in the case of the Dairy Crest Group Pension Fund (Example 2.1).

Example 2.1 The Dairy Crest Group Pension Fund[23] has used a variety of de-risking strategies

The Diary Crest Group Pension Fund was Formed in 1993 with the transfer of assets and liabilities from the Milk Marketing Board. In order to adopt de-risking strategies, they:

- Closed its pension scheme to new members in 2006.
- Closed its pension scheme to new accrual in 2010.
- Entered into two bulk annuity policies in 2009 and 2010 securing pensions in payment as at August 2008.
- Developed a deficit Recovery Plan in 2016 with a deficit of £100m being addressed by contributions from the sponsor.
- Are now aiming for progressive de-risking post-2022 with a Liability-Driven Investment strategy.

Bulk annuity purchases see assets transferred to an insurer

Bulk annuity purchases occur when the trustees 'sell' the assets of the scheme to an insurer, which then takes the responsibility for ensuring that benefits are paid.

For those schemes that undertake a bulk annuity purchase, the funding of the pension scheme remains guaranteed, with the responsibility for payment of pensions being transferred to a third party, usually an insurer. In all cases, the motive is that the scheme can continue to honour its obligations to members, even if they experience greater than expected longevity. A buy-in of a specific cohort of members (such as pensioners) can be a step on the way to a full buy-out.

However, bulk annuity purchases are rarely instantly available – the sponsor has to pay a premium to the insurer above the best estimate value of the scheme's liabilities. The Pensions Protection Fund (PPF) reports that in 2018, the aggregate funding level of schemes for estimated full buy-out was 73%, the highest percentage seen, and significantly greater than the 62% observed in 2008.[24] Chapter Three will examine how the buy-out market may evolve over the next ten years.

2018 saw the UK bulk annuity market reach a record £24.2bn,[25] and the market is expected to continue to grow (Chart 2.1).

23 http://dairycrestpensiontrustees.co.uk/ accessed 10.10.2019
24 PPF (2019)
25 The 2018 figure was inflated by two large schemes totalling £6.8bn achieving buy-out

Chart 2.1. Market activity: Buy-in and buy-out volumes[26]
Recent years have witnessed a significant increase in the size of the bulk annuity market

UK bulk annuity transactions by year in £billions (nominal amounts)

Buy-ins are often used to insure pensioner cohorts rather than whole schemes

In a buy-in scenario, the scheme trustees pay an insurer a premium to cover the liabilities of the scheme. The insurer then issues a buy-in policy that itself becomes an asset. The premium is then reinvested by the insurer which also pays a monthly lump sum to the scheme that covers the cost of the pensions for members in effect, the scheme itself takes out an annuity. The trustees then pay out the pensions.

It is not unusual for a scheme to de-risk by undertaking a series of buy-ins each for a different cohort of the scheme as they reach retirement. This may be with the same or with different insurers. Buy-ins may also be used to reduce future liabilities in order to facilitate a self-sufficiency strategy or to move towards full buy-out. A scheme does not have to be fully funded in order to enter into a buy-in agreement.

Full buy-outs see pension schemes wound up with no risk to members

In a buy-out scenario, the scheme trustees make a single premium payment to an insurer, which then assumes responsibility for all aspects of the scheme. The insurer creates individual annuity policies for every member, all of whom become policy holders of the insurer. The insurer makes payments directly. The buy-out is the last stage of de-risking. If all members of the scheme have their annuities bought out, then the scheme can be wound up.

Recent trends have seen the cost of bulk annuity purchases reduce, bringing them within the ambit of more schemes.[27] However, there are concerns that the insurance industry may lack capacity to meet increased demand, which may again affect affordability detrimentally.[28]

26 LCP (2019)
27 https://www.mercer.com/content/dam/mercer/attachments/global/Retirement/monthly-report/gl-2019-mercer-global-pension-buyout-index-may.pdf Accessed 10.10.2019
28 LCP (2019)

Whether a scheme is aiming for buy-in or buy-out will impact upon its investment strategy

In order to achieve full buy-out, common practice is for the scheme to adopt an investment strategy that both reduces exposure to interest rate and inflation risk, and mirrors the assets that an insurance company would use in pricing a buy-out. There is no fixed rule or ratio for buy-out purchasing, and other factors can affect pricing, such as changes to life expectancy, the availability of suitable assets and market capacity.

Longevity hedging can reduce the risks associated with members living longer

Longevity hedging transfers the risk of pension scheme members living longer than expected from a pension scheme to an insurer or bank provider. The trustees of the pension scheme agree to pay a fixed series of payments, representing the expected benefits payable under the pension scheme plus a fee, in return for the swap provider paying the benefits that in fact fall due, based on actual scheme mortality.

As well as providing greater certainty for pension scheme members, longevity hedging benefits the sponsor by managing the level of pensions risk for shareholders and mitigates against the costs associated with higher pensions payments being passed on to customers. For employers operating in a highly competitive market, reducing exposure to longevity risk can be a decisive factor in keeping costs down, a factor cited by the UK's National Grid Electricity Group after insuring £2bn of its pensioner liabilities in 2018.[29]

The longevity swap market is significantly smaller than the bulk annuity market, with £2.7bn of transactions carried out in 2018 and £70.1bn over the past decade.[30]

Investment reform can provide a means of self-sufficiency for healthier schemes, maintaining both employer covenant and trustee control, either as an end in itself or as a means of moving towards a buy-out

Liability Driven Investment (LDI) seeks to invest to meet future liabilities

Rather than focus solely on growing the asset side of a fund's balance sheet, LDI concerns itself with the assurances made to scheme members. These assurances become the liabilities that investors target. Rather than seek continual and steady growth over time, investment is targeted to hedge against fluctuations in the value of the liabilities over time.

While there may be different approaches to LDI, the desired outcomes remain the same:

- The control of risks to liabilities.
- The generation of returns to meet liabilities.

In order to do this, asset managers will design a pathway for the scheme as a whole, projecting current liabilities into the future in order to predict the assets required to meet expected liabilities. That will drive an investment strategy that mirrors or exceeds this pathway. Risk management requires that changes to interest rates and inflation are predicted and included in the calculations.

The need to reduce exposure to changes in interest rates and inflation means that hedging is a common tactic in LDI strategies. Historically, interest-rate risk avoidance was often achieved through the use of bonds, but LDI has seen more use of swaps and other derivatives.

Example 2.2 The Plumbing & Mechanical Services (UK) Industry Pension Scheme

Between 2015 and 2019, the Plumbing and Mechanical Services (UK) Industry Pension Scheme made significant changes to its investment strategy, moving from a mixed return-seeking and matching asset portfolio based in equities, corporate bonds and gilts to a low-risk approach focused on liability-driven investment based on index-linked and fixed interest gilts.[31] [32]

29 https://www.artemis.bm/news/zurich-in-2bn-longevity-swap-with-national-grid/ accessed 10.10.2019
30 Hymans Robertson (2019)
31 Plumbing Pensions (2015)
32 Plumbing Pensions (2019)

Cash-flow Driven Investment (CDI) is often used as a strategy within a broader LDI approach

CDI works by using bonds to mirror pension liability cash flows because bonds (especially gilts), can offer a series of regular interest payments before a final redemption payment is made. By using contractual bonds and their predicted output, the expected liability cash flows can be matched.

Corporate bonds can also provide the same basis for CDI, but come with the risk of failure. However, even taking account of this, CDI portfolios generally provide better investment outcomes than gilts.[33]

CDI typically incorporates shorter term investment in higher yield corporate bonds to meet the short-term liabilities incurred as the scheme reaches maturity. Corporate bonds are more attractive to pension schemes because they provide higher expected cash flows and therefore require less outlay to match future liability payments.

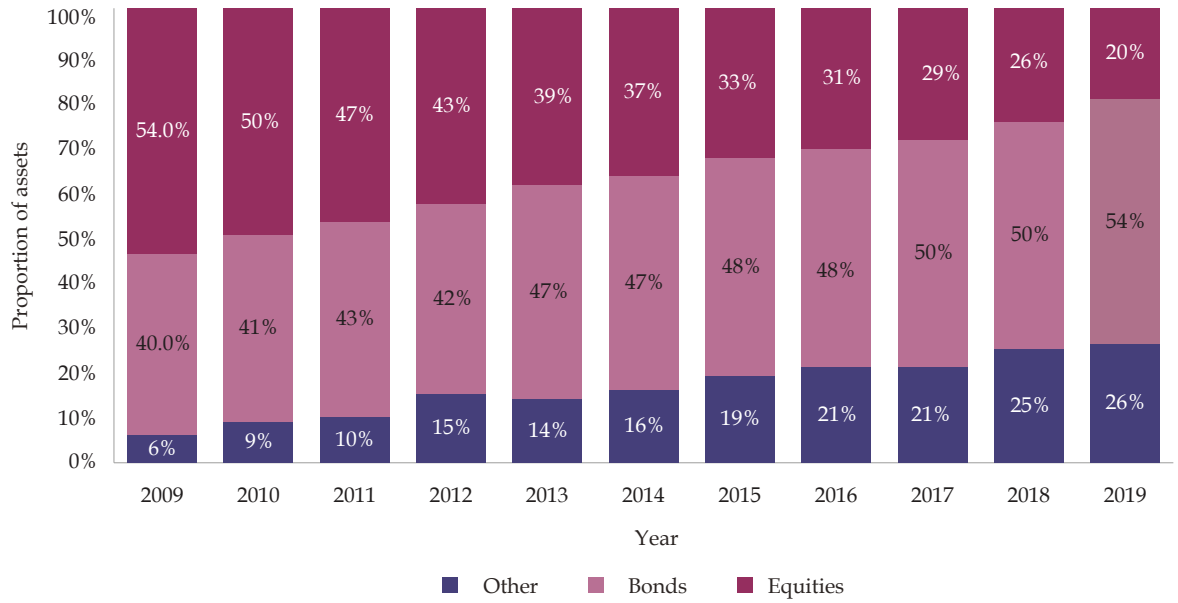
CDI has been portrayed as a 'buy-and-maintain' approach.[34] However, it has been pointed out that as the level of future pension payments cannot be guaranteed and new patterns may evolve, CDI strategies will require active monitoring and refinement.

Recent changes to asset allocation have focused on reducing risk

Over the past ten years, UK pension schemes have been gradually disinvesting in equities in favour of bonds. From 54%/40% split in 2009 to 20%/54% in 2019 (Chart 2.2). In the meantime, the proportion invested in other alternative assets has grown from 6% to 26%, the first time it has overtaken equities.[35] This is broadly in line with market seeking de-risking strategies by turning to in longer-term and fixed-return investments. Investment strategies that take account of anticipated future cash flow needs are becoming more commonplace, with a growing number of schemes opting to invest in risk-reducing and cash flow-matching assets such as gilts, corporate bonds and illiquids.[36]

Chart 2.2[37]
DB pension scheme asset allocation has become more risk-averse in recent years

Asset allocation in DB schemes 2009-2019



33 PLSA (2017b)
34 PLSA (2017b)
35 Mercer (2019)
36 AON (2019)
37 Mercer (2019)

Alternative assets can provide a means of seeking better investment returns

Schemes may opt to invest their way out of difficulty seeking better returns on less conventional assets. These may include:

- Infrastructure. Large scale infrastructure projects can bring long-term rewards and are less volatile than equities. However, they have traditionally come with higher investment costs than other assets, and may only be financially accessible to larger or merged schemes.
- Commercial real estate. The fact that banks have reduced the amount they lend against real estate has created greater opportunity for pension schemes to invest. However, these are long-term investments with a limited secondary market that means liquidating can prove difficult.
- High yield debt instruments, including corporate loans, structured finance and commercial real estate debt. These can yield higher returns than gilts and bonds, but come with greater risk, which may in turn expose a scheme to a higher levy from the PPF.

Changes to asset allocation may affect the setting of the discount rate used to value future liabilities (see Appendix One).

As well as financial strategies, schemes may opt to merge or consolidate (either in part or in whole, sharing costs and risk) potentially in preparation for buy-in or buy-outs.

Consolidation can improve scheme positions by pooling costs and assets

Consolidation of schemes can mitigate against risk through economies of scale and different opportunities for investment.

The Pensions and Lifetime Savings Association (2017) identified four forms of consolidation open to DB schemes, each exhibiting various levels of complexity. These are:

- Administrative mergers
- Asset mergers
- Scheme consolidation
- Superfunds

The choice of whether and how to consolidate or merge will depend on the appetite of scheme sponsors for ceding control over key aspects of the scheme, with administrative mergers requiring less realignment than asset mergers. Consolidation would see a greater loss of autonomy, and in the case of a superfund for example, the original scheme is effectively wound up as far as the sponsor covenant is concerned (Table 2.1).

Table 2.1 Different approaches to mergers and consolidation will require the sponsor to cede different degrees of control

	Governance	Operational costs	Investment control	Administrative control
Administrative merger				x
Asset merger			x	x
Consolidation		x*	x	x
Superfunds	X	x*	x	x

* Operational costs for schemes entering into Consolidation and Superfunds will be associated with initial transfer costs, rather than ongoing costs that would be met by the consolidator.

The idea behind administrative mergers is to save costs associated with managing the pension scheme

Administrative mergers can take two forms. In the first, individual pension schemes contract large scale third-party administrators to provide services. In the second, schemes collectively procure third-party administration and advisory services together. The types of services that the administrator would be expected to provide would include scheme communications, technical support, pensioner payroll, scheme accounting, scheme administration and data management.

Although relatively simple in theory, the fragmented DB market means that schemes may have very different administrative systems which may make it difficult to align existing practices, particularly among smaller schemes that would benefit most from this form of consolidation. Furthermore, trustees may not be comfortable ceding control over the day-to-day management of the scheme. More successful administrative mergers have occurred where one company has historically run more than one pension scheme, or where a company has taken over another and incorporated their scheme into its own.

The savings for smaller schemes can be considerable. The Pensions Regulator calculated that the mean annual running cost per member for a scheme with less than 100 members was £1,054, compared to £281 for those with between 1000 and 4999 members and £182 for schemes with 5000 or more members.[38]

With the proportion of smaller schemes set to rise over the next decade (Table 2.2), there might be a growing appetite for administrative mergers that could see significant cuts to costs. PPI modelling projects that there are currently 88,000 members in schemes with fewer than 100 members, and that this number will fall to 73,500 by 2029. Consolidating the administrative charges associated with members of these small pension schemes could see significant annual savings.

Table 2.2:[39] Distributions of number of schemes by membership (and total assets £bns 2019 earning terms)

Numbers of members	2019	2024	2029
0 to 99	2,025 (£22bn)	1,872 (£24bn)	1,766 (£25bn)
100 to 499	1,717 (£79bn)	1,514 (£89bn)	1,271 (£90bn)
500 to 999	539 (£74bn)	433 (£77bn)	338 (£73bn)
1000 or more	1,036 (£1,476bn)	877 (£1575bn)	733 (£5106bn)

Asset mergers can provide smaller schemes access to new asset classes with higher returns for lower costs

Asset mergers see the assets of multiple pension schemes consolidated into asset pools which are managed centrally on their behalf. The schemes in the pool retain control of their investment strategies, governance, administration and other functions.

Asset pooling can provide improved bargaining power when purchasing fund management services, with access to higher quality advice and wider range of investment opportunities that are not available to, or cost effective for smaller schemes. A pooled asset structure could see a reduction in costs for investment administration and commission and see higher returns for lower investment risk over the long-term.

While asset pooling retains multiple providers and platforms to support the day-to-day running and administration of the scheme, the appointment of a common set of investment advisers helps ensure a consistent and cost-effective approach to asset management across the pool. This model also allows the pool to

38 The Pensions Regulator (2014)
39 PPI modelling

build a bespoke investment model that meets the needs of all participating schemes. In addition, with a wholly delegated asset management function, participating schemes have increased capacity both to respond to changing market conditions in a timely fashion and to concentrate on setting and monitoring their funding strategy.

Asset mergers can be combined with administrative mergers in order to increase gains

Asset mergers are generally more complex than administrative ones, with greater technical and legal barriers that may exclude smaller schemes as larger ones with more expertise may dominate. Where schemes are unconnected, there may well be conflicts of interest and approach to investment that could impede a successful merger, and there could still be a sense that trustees are ceding control of the scheme.

Consolidation sees schemes maintain their responsibility for their liabilities, but under a single trustee

Consolidation is where a single trustee board operates across a number of schemes and is responsible for overseeing the investment, administration and managing a common set of advisers. Each separate scheme within the consolidated trust is treated as a unique section within the new scheme. This means that the individual characteristics of each scheme remains in place, and that different sponsors are not responsible for each other's liabilities. Also, in the event of an employer becoming insolvent, their section of the scheme would remain eligible for entry into the PPF or must be wound up with benefits having been secured.

A single common governance framework could provide gains throughout all aspects of scheme management, improving strategic decision-making and coordination as well as delivering cost savings from administration and asset management. A governance merger would also offer the opportunity to increase governance standards and thereby create conditions for improved investment returns.

Historically, this model has been used in single-industry schemes, such as the Railways Pension Scheme that was formed after the transfer of assets from the former nationalised British Rail scheme, and which includes members from 150 rail companies across the UK. An advantage of a single-industry scheme is that it can facilitate pension retention for members changing employers within the scheme. At the moment, there are very few multi-employer schemes that operate across different industries, and schemes looking to join will have to be prepared to relinquish independence to the existing governance structure.

There is also a limited number of DB master trusts in the UK that cater largely for schemes that want to benefit from joint enterprise and economies of scale, but which still want to maintain the link with the sponsor employer and the value of a strong covenant with members.

Superfunds would see far greater integration of schemes

In the Superfund scenario, employers would pay a fee (either upfront or in the form of secured debt) to substantially reduce underfunding and discharge themselves from responsibility for the scheme. With agreement from trustees and potentially members, the scheme and all its assets and liabilities would be transferred to a Superfund. Members' benefits could be retained or aligned to a common Superfund structure. A Superfund would be managed to and maintained at a funding level which gives members improved prospects of receiving their benefits. Under a Superfund, the existing covenant is replaced by a third party capital investment seeking to return a profit. However, as of 2019, there is no specific regulatory system for Superfunds, although some Superfunds have been able to undertake limited scale activity under the existing regulatory framework for pensions.

Entry into a Superfund could be less expensive to access than buy-out, because they may be unlikely to be subject to the same stringent capital rules that govern insurers.

The Superfund will need to be in a position to specify the terms of entry for each scheme and obtain full disclosure of the assets, liabilities and commitments of transferring schemes. Schemes in deficit are likely to have to secure some form of commitment from their sponsor to reach an appropriate entry level. If a cash payment is not possible, then there could be alternative payments via, for example, tradable capital instruments with appropriate financial backing. Alternatively the superfund could agree terms for payments from the employer over a short period.

There are two current approaches to Superfunds in the UK. In the first, the provider's objective is to buy-out the pension obligations with an insurer when it is practical and profitable, the "Clara-Pensions" model. The other seeks to administer the pension funds under their management until the last pension payment is made the "Pension Superfund" model.

There is ongoing debate about how best to regulate Superfunds. One point of view is to see them as a form of master trust, subject to pension regulation, while others see them as practically indivisible from an insurance scheme, thereby subject to more rigorous regulation and capital requirements that could drive up costs and therefore fees for pension schemes wanting to enter. The difference between the two ends of the spectrum is the degree of certainty that the benefits would ultimately be paid in full.

If and when Superfunds are specifically regulated and therefore able to take a more active role in the market (and having been excluded from the 2019 Pensions Schemes Bill, it is not clear when this may be), they could possibly have a significant impact by providing pension schemes with a lower cost but a less certain alternative to insurance solutions, thereby increasing the numbers of schemes that could be in a position to reduce or remove their liabilities.

The different forms of mergers and consolidation approaches may also be seen as a continuum – as individual schemes become more aligned, it may be that they will pursue the advantages of greater affiliation.

Fiduciary management can give schemes access to greater investment expertise and greater flexibility

Fiduciary management sees a pension scheme delegate some or all of its everyday investment decision-making and implementation to an investment expert, such as an asset manager. This could mean outsourcing a segment of the scheme, or entering into a full partnership. Fiduciary management relieves the trustees from having to make active investment decisions within their wider strategy, and in doing so can increase flexibility in that expertise is available to meet shorter-term opportunities and changes in investment climate. Growing complexity in the DB market, and the use of new strategies such as LDI and CDI has seen more schemes turning towards fiduciary management to help them meet their long-term goals.[40]

Fiduciary management has become increasingly popular over the past eight years, and the types of schemes that have been accessing this option has been changing. Whereas fiduciary management had been thought of as being of particular use to smaller schemes that may not have access to high levels of investment expertise,[41] recent trends have shown that medium-sized schemes are now the most likely to use fiduciary management, with the largest growth now being among large schemes. Of all schemes, 51% have reported having some degree of fiduciary management in place.[42]

Scheme changes could cease or mitigate against future accrual

Changes to the pension scheme can mitigate against future costs by altering the nature of the scheme or the way that contributions are calculated.

There is little scope for scheme sponsors to make changes to the benefits that members have already accrued – however, changes to the design of the scheme can help offset future losses.

40 PLSA (2017a)
41 PLSA (2017a)
42 AON (2018)

As shown in Chapter One, many private sector DB pension schemes have closed to new members or to new accrual, and some sponsors have moved towards Defined Contribution (DC), hybrid (a combination of DB and DC), or Collective Defined Contribution (CDC) approaches.

In these systems, risk is mitigated by moving the responsibility for a pension on to the scheme member. Rather than receive a pension income, members will receive a lump sum at retirement which they can either draw out (subject to tax) or use to purchase a financial product, which may be an annuity, or may take the form of structured drawdown. This reduces the prospect of the sponsor having to make ongoing deficit payments and the problem of longevity becomes an issue for the member rather than the sponsor.

Defined Contribution (DC) pension schemes have shown a marked rise in recent years, particularly following the introduction of automatic enrolment into workplace pensions in 2012, and the availability of relatively low-cost pension schemes.

A further change to the scheme would be hybridisation. An example of a hybrid pension scheme is where a member accrues DB benefits up to a specific income level and above that accrues DC benefits. The Universities Superannuation Scheme (USS), the largest private pension scheme in the UK in terms of assets, made the move from a DB to a hybrid scheme in 2016.[43]

Another option could be Collective Defined Contribution (CDC) pension schemes, where risk is shared between members. CDC schemes work from economies of scale, whereby contributions are pooled and invested in order to achieve a target level of retirement income. There is no guarantee that targets will be met. Unlike DC schemes, CDC will provide a retirement income rather than a lump sum, but unlike DB schemes, the amount is not fixed, and may vary according to investment performance.[44]

There is currently only one CDC scheme in the UK, being set up by the Royal Mail Group. It is expected that following legislation in 2019, more may emerge over the coming years. In the Royal Mail case, continuing with the DB scheme as was would have seen employer contributions treble to over 50% of salaries by April 2018. It was felt that this was unsustainable, and that CDC offered the best opportunity for the scheme to continue to provide members with a retirement income while allowing for the risk to Royal Mail Group being reduced.[45]

There is also the possibility of members transferring their DB pension to DC. This may be attractive to some members, in that they can take advantage of greater flexibility, and for employers who will no longer have to bear the risk of the ongoing costs associated with providing a retirement income. However, this must be an active choice made by individual members, and for those with a transfer value of more than £30,000 they must take financial advice.

Other approaches could be to change the payment structure by

- Increasing contributions for members in accrual
- Moving from final salary to career average
- Reducing the accrual rate (i.e. from 1/60 to 1/80)
- Increasing normal pension age

However, while these strategies can reduce or eliminate against further accrual, they do little to reduce existing and ongoing liabilities.

One approach that can have an impact on future liabilities would be to reduce the way that accrued benefits are increased annually, such as moving from the Retail Price Index (RPI) to the lower Consumer Price Index (CPI). However, this is a controversial tactic that may be subject to legal challenge. For example, a bid by the sponsors of the BT pension scheme failed in their attempt to move to CPI in 2018 after decisions in the High Court and the Court of Appeal.[46]

43 https://www.uss.co.uk/members/members-home/the-uss-scheme accessed 10.10.2019
44 Wilkinson, L. (PPI) (2018)
45 https://www.plsa.co.uk/Portals/0/Documents/Membership/Local-Groups/2018/Royal%20Mails%20Journey%20-%20June%202018.pdf?ver=2018-06-29-093729-933 Accessed 09.10.2019
46 https://www.theregister.co.uk/2018/12/04/bt_pension_scheme_court_appeal_judgment/ Accessed 10.10.2019

Significant changes to the way that a scheme is run can also deliver savings, through closing the DB pension scheme to new members of new accrual and moving towards a DC scheme wherein members receive a pot of money upon retirement rather than an income.

The Pensions Protection Fund will continue to provide a safety net for members when scheme sponsors default

There will be some schemes where the employer becomes insolvent and cannot meet its pension liabilities, thereby eligible for assessment to enter the Pensions Protection Fund (PPF).[47] The number of referrals is increasing. In 2007/08, the PPF paid out £17.4 million in compensation, rising to £725 million in 2017/18 – more than double the compensation paid in 2012/13 (£331.9 million). Entry into the PPF typically means that members will receive 90% of their expected benefits.

The DB market is changing quickly, and even schemes that are not yet entering their endgame will be preparing for it by de-risking. Chapter three examines how the landscape might continue to develop over the next decade, and the ramifications for pension schemes and other stakeholders.

47 Pension schemes that have sufficient funds to secure member benefits in excess of PPF levels may secure these from other third-party providers.

Chapter Three: How might the Defined Benefit landscape change over the next decade?

This chapter uses PPI modelling to suggest how the future landscape of the private sector Defined Benefit (DB) pension market in the UK might look in the next 10 years. It uses the modelling to identify the potential size of the future market, seeking to show the impact of such changes on stakeholders.

Box 3.1: PPI modelling

This report uses a suite of data from The Pensions Regulator sourced from the Pension Protection Fund (PPF) and uses PPI modelling to explore how DB schemes will meet their endgame under the assumption that current trends continue. The chapter also sets out the potential distribution of DB assets and liabilities, under a range of possible future economic scenarios (based on historical data).

The future shape of DB market depends on many variables:

- The rate of deficit reducing contributions
- Changes in gilt yields
- Insurance market capacity
- The introduction of Superfunds and greater consolidation
- The availability of illiquid and long-dated assets

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

The modelling in this report projects current DB pension schemes into the future, based on past experience, to consider what the future DB pension schemes market might look like. The projection is done by taking recent data on the evolution of scheme numbers, assets, liabilities and membership provided by The Pensions Regulator to create historically grounded rates of change, which are then applied to the current set of pension schemes.

Rates of change are applied that are based on the status of the pension scheme. The modelling also allows for limits on funding levels to ensure scheme funding does not increase unrealistically, and for assumed changes in economic conditions that affect the relative funding level. Further information is available in the Technical Annex.

Rates of change are based upon observations from the past, allowing for future economic developments. This means that there is uncertainty in the estimation of these parameters and a stochastic projection has been used to understand the scale of uncertainty. Central results presented in this report do not necessarily convey the range of potential future outcomes, that could arise from significant behavioural changes which may impact the market as well as any external shocks to the system.

In recent years DB pension schemes have experienced negative cash flows as a result of people taking transfers from DB to DC pensions in order to take advantage of pension freedoms, and separately as a result of the liability winding down in mature closed pension schemes. The original data includes the effect of DB to DC transfers as it presents the actual scheme data during the period of such transfers occurring. The rates derived from the data also include a targeted effect from the maturation of DB pension schemes as a result of using status specific rates of change of liabilities, however over the period modelled the maturation has a smaller impact on liabilities than transfers out because of freedom and choice.

Further details of the modelling are available in the Technical Appendix.

The shape of the DB endgame will depend upon many factors

With PPI modelling indicating that the number of active DB schemes will fall below 4,000, the number seeking to enter their endgame by meeting a target of readiness for self-sufficiency or full buy-out is expected to rise dramatically. The shape of the insurance market and its ability to meet expanded capacity as well as the potential emergence of Superfunds will both play a role.

PPI modelling is based on three levels of scheme funding

Buy-out represents the highest level of funding, the level at which a pension scheme can afford to achieve a full buy-out to an insurer and be wound up.

Technical Provisions funding refers to the expected cost of the scheme as an ongoing concern. To be fully funded on a technical provisions basis suggests that a scheme is in a good position to meet its commitment to beneficiaries.

Section 179 is a test of the potential stress for a pension scheme for the PPF. Because PPF compensation is lower than expected payments from the scheme, an s179 valuation may produce a lower liability than technical provisions.

By the end of 2030, the number of schemes in surplus is expected to rise, allowing schemes greater opportunity for buy-out

The PPI modelled scenarios projects that the number of schemes (Table 3.1) in surplus according to various funding targets will continue to increase (Chart 3.1), partly as a result of scheme sponsors making additional deficit reduction payments to improve funding levels. **An important underlying assumption is that when schemes reach a funding level suitable for buy-out, sponsors will adopt asset strategies to maintain that level rather than continue to accumulate.**

Table 3.1:[48] number of projected schemes in deficit and surplus by year

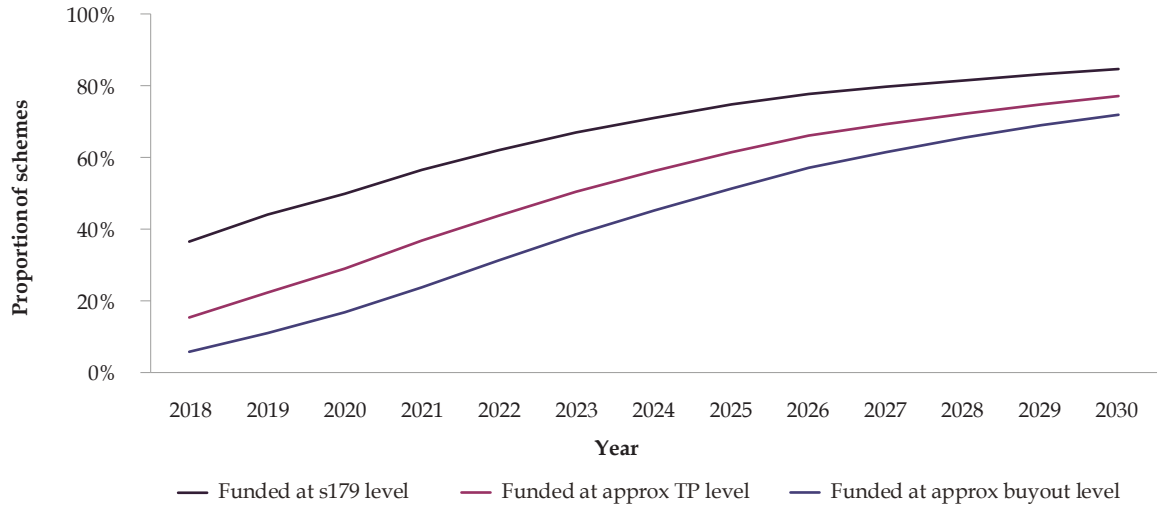
Number of schemes	2019	2024	2029
Schemes in surplus	1,181	2,640	3,079
Schemes in deficit	4,135	2,057	1,029

The proportion of schemes projected to be in a position to secure full buy-out is projected to rise from a current level of 6% to 72% by 2030. The proportion of schemes that are projected to be funded to a Technical Provisions (TP) level is projected to reach 77% over the same time period. The Technical Provisions are the expected cost of meeting the pension schemes liabilities as they fall due based on scheme assets. The buy-out valuation assumes a lower returning investments, which lead to a higher cost. Therefore schemes are generally in a better position to meet their Technical Provisions rather than the higher buy-out liabilities.

48 PPI Modelling

Chart 3.1[49]
Funding levels will continue to improve

Projected percentage of schemes that are fully funded by various bases

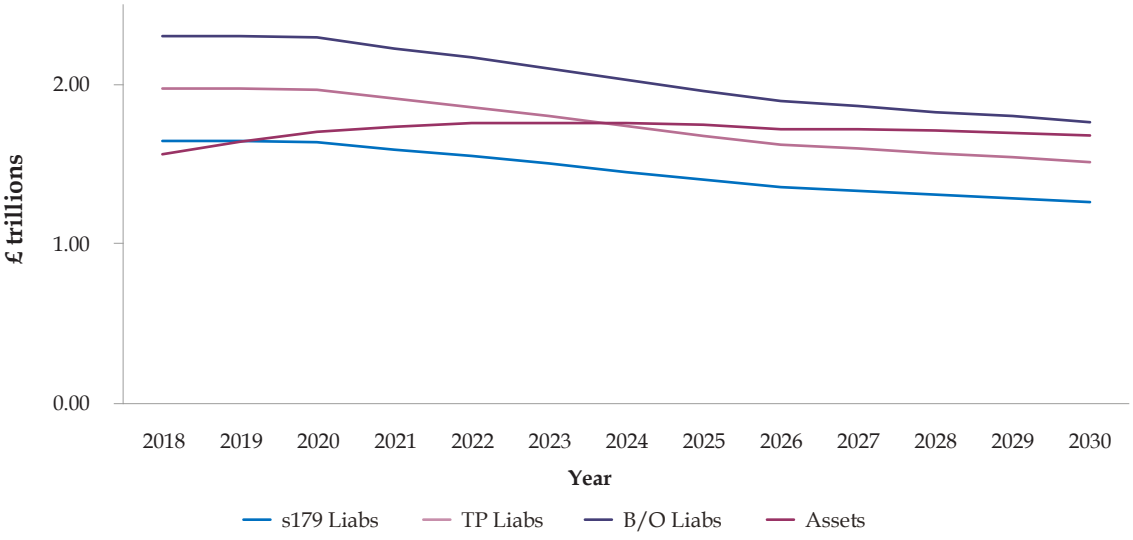


As funding levels improve, aggregated assets across DB schemes as a whole will exceed liabilities on s179 and TP bases

The PPI modelled scenarios also suggest that as a result of the proportion of schemes in surplus increasing, the total assets of the DB sector as a whole will start to exceed the total liabilities in DB schemes within the next five years on both s179 and Technical Provisions bases (Chart 3.2). This is likely to mean that more schemes will be in a position to become self-sufficient or consider which, if any, endgame options they wish to pursue. The rates at which schemes will be able to access these solutions remains uncertain, but they are likely to continue to be less expensive to access than full buy-outs.

Chart 3.2[50]
As funding levels improve, total assets will exceed total liabilities on s179 and TP bases

Level of assets and liabilities over the next 12 years



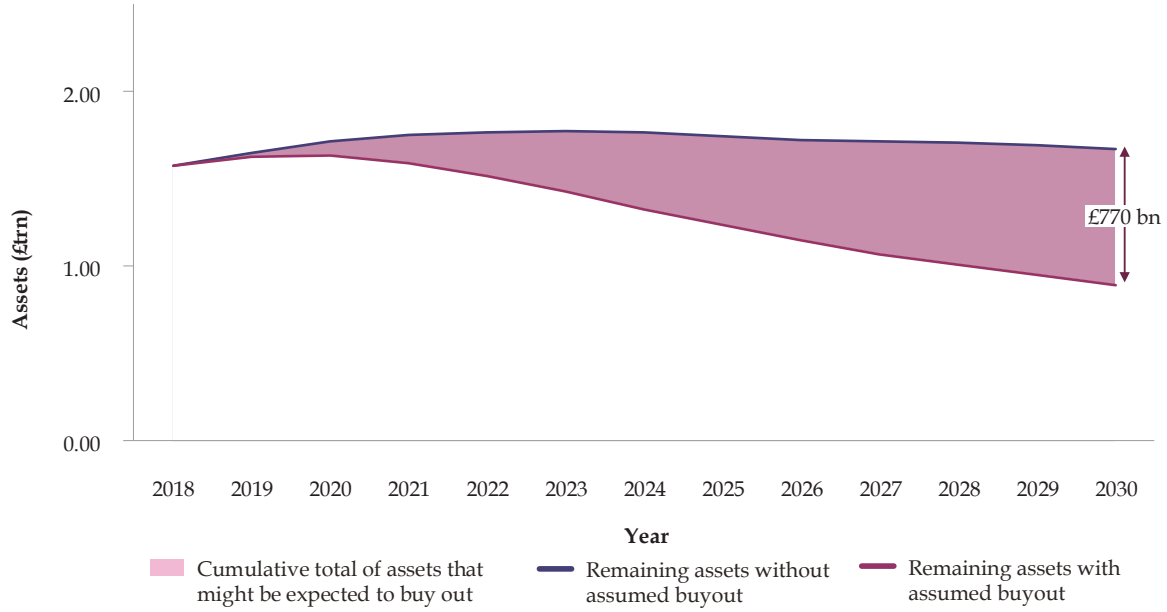
49 PPI modelling
50 PPI modelling

The number of schemes reaching indicative buy-out capability will grow

As assets increase, the capacity for more schemes to enter into full buy-out will rise. Chart 3.3 shows that if investment in schemes were to continue along current rates (with increasing bond yields), total assets would reach £1.67 trillion by 2030. When the assets assumed to be capable of full buy-out are factored out, total DB assets fall to £900 billion, suggesting that there is a potential buy-out market of £770 billion over the time period.

Chart 3.3[51]
The buy-out market is projected to reach £770 billion by 2030

Total assets with and without assumed buy-out, 2018-2030 (current earnings terms)



Many pension schemes will continue to be active for decades

Although DB pension schemes are preparing for their endgame scenarios, PPI modelling suggests that even those schemes that are closed for further accrual will likely be in existence for another 26 years, rising to 35 years for the few open to new entrants (Table 3.2), consolidation notwithstanding. For many schemes, sponsors and members, the DB endgame could be a long journey.

Table 3.2:[52] Expected longevity of pension scheme by current status

Scheme Status	Expected time in current status (years)	Expected time until scheme is wound up (years)
Open to new entrants	9.7	35.5
Closed to new entrants, open to accrual	7.3	30.8
Closed to further accrual	25.4	26.1
Winding up	2.2	2.2

51 PPI modelling
52 PPI modelling

The endgame market is constantly evolving and will continue to grow

The number of schemes that will be in a position over the next ten years to enter an endgame scenario (whether that be through an insurance solution, investment or administration mergers or consolidations) is anticipated to grow as funding levels improve.

However, the shape of the future market will depend on a series of factors the impact of which are currently difficult to predict. These include:

- Sponsor appetite for specific approaches, particularly the extent to which the covenant is compromised.
- The availability of greater consolidation and the potential emergence of 'Superfunds'.
- The capacity of the insurance sector to meet increased demand for bulk annuity solutions and the effect on pricing.

Appendix One: Defined Benefit pension scheme valuations

As part of the running of a Defined Benefit (DB) pension scheme throughout its life of operation there are a number of different valuations that the scheme may be subject to, in order to get a picture of the scheme's health under different situations.

In general terms, valuations are performed by calculating the pension scheme liabilities which are calculated by considering all possible future payments made by a pension scheme, the probability of making each of those payments occurring, and the discounted value in today's terms of the payment. That gives a liability figure which is then compared to the assets of the scheme to assess whether the scheme's funding level; the extent to which the scheme is in surplus or deficit.

The "discount rate" is an important concept in scheme valuations. It expresses the difference in value of money in the future to money now (for example because of the possibility of investment returns) and is used extensively. A low discount rate suggests that £1 in the future is similar in value to £1 today. A high discount rate would suggest that the future £1 is worth substantially less today. So in the terms of a pension scheme valuation, using a high discount rate the resulting liability would be lower; whereas if using a low discount rate the liability would be higher.

The various types of pension scheme valuations include:

- **Scheme Funding valuation (Technical Provisions)** - Where the scheme liabilities are compared to the scheme assets to maintain the ongoing running of the pension scheme.

  The Scheme Funding Valuation is carried out every 3 years. The results of the scheme funding valuation set contributions for accruing benefits, and whether any deficit contributions are required to address a deficit.

  The liabilities and assets are calculated according to assumptions set by the trustees after discussion with the Scheme Actuary.

  The discount rate will tend to reflect the assumed return on the investments held by the scheme. Other assumptions may be made with some level of prudence, with the intention of providing a picture of the scheme funding that is useful for decision making about the scheme, without being wildly optimistic.

The liabilities under this valuation are known as the Technical Provisions, and are compared to the current market value of the assets.

- **Accounting Standards Valuation** - these include FRS17 valuations and IAS19 valuations, they are to recognise the changing circumstances of an employer sponsored scheme within the employer's balance sheet.

  The aim of the Accounting Standards Valuation is to recognise movements in the pension scheme within the employer's accounts. It is an attempt to meld actuarial techniques which project financial circumstances, with accounting techniques which are more concerned with evolving cash-flows in the here and now.

  The assumptions are best estimate, rather than containing any margins for prudence, with the exception of the discount rate, which is set in line with the yield on high quality corporate bonds. This tends to be a low discount rate, and may therefore suggest a larger deficit than an asset based discount rate.

- **Buy-out Valuation** - this is to determine the cost to the scheme of purchasing insurance contracts to cover scheme liabilities in order to transfer those liabilities to an insurance company, thereby extinguishing a liability within the scheme.

  A buy-out valuation may be carried out in a number of circumstances:

  - in the regular ongoing running of the pension scheme to test the health of the scheme,
  - if one employer sponsor of the scheme ceases to participate then any debt they owe the scheme is calculated under a buyout basis,
  - if the scheme is winding up and transferring some or part of their liabilities to an insurance company.

  The buyout valuation aims to quantify the cost of transferring liabilities of the pension scheme to an insurance company. The insurer would likely have margins built in to their assumptions so as to minimise risk, and would use a low discount rate. These assumptions would likely produce a higher liability value than the ongoing valuation.

- **Section 179 (s179) Valuation** - this is calculate to establish whether, on entry to the Pension Protection Fund (PPF) the scheme would have sufficient assets to be able to cover the reduced benefits of the PPF.

  Under a s179 valuation the aim is to test the potential strain of the scheme on the PPF. In an ongoing scheme, this is used to determine the level of the levy (kind of like an insurance premium) payable to the PPF.

  The benefits payable to members of schemes who enter the PPF may be lower than those enjoyed within the existing scheme. Pension increases may be lower, pension amounts are capped, and pensions of those not yet in payment are only at 90% of the accrued value.

  The Section 179 valuation may therefore produce a lower liability than the ongoing scheme valuation.

- **Other valuations** - other valuations may be carried out to test investment strategies or susceptibility to events etc. Self-sufficiency valuation would fall into this category.

  A self-sufficiency valuation where the pension scheme invests in low risk assets would fall into this category. Low risk assets create lower returns, leading to using a lower discount rate to value the liabilities, in turn leading to a higher liability figure.

Technical Appendix

Modelling and analysis in this report has been based on a multi-state microsimulation model developed by the PPI to project the status, membership, liabilities and assets of DB pension schemes. The model uses anonymised data obtained from The Pensions Regulator to establish rates of transition for pension schemes between statuses and further uses the data to establish status specific assumptions for changes in liabilities, assets and membership.

Projection of the schemes individually, before aggregating for the presentation of the results, enables analysis that considers the impact on scheme specific measures. For example to measure the impact of changes in the proportion of schemes achieving a particular funding target level would be very difficult to model if considering aggregated data as a starting point.

Data

The PPI obtained, from The Pensions Regulator, anonymised data for each private sector DB pension scheme that submitted a scheme return over the past decade. The data included the scheme status, membership breakdown, size of liabilities and amount of assets, for each individual scheme and for each year.

The scheme statuses are:

1. open to new entrants,
2. closed to new entrants but open to further accrual,
3. closed to further accrual,
4. winding up,
5. fully wound-up

Assumptions

The modelling uses assumptions about future behaviour of pension schemes, in particular:

- It is assumed that the funding experience observed in the data over the past few years will be indicative of the future.
- It is assumed that average rates of closure etc. will continue into the future.
- The liabilities in the data are presented in terms of s179 liabilities. To convert to buyout and Technical Provisions levels, it is assumed that on average the ratio of buyout liabilities to TP liabilities to s179 liabilities remains constant at around 140:120:100.

Base run assumptions

Bond yields are assumed to increase from around 1.8% in 2018 to around 2.4% by 2026, this has the effect of reducing liabilities and to

a lesser extent the assets. The smaller relative reduction in assets compared to liabilities leads to an improvement in the funding level.

It is assumed that schemes do not continue to increase contributions when they have reached a high funding level. When schemes reach an approximate buyout funding level they are assumed to take measures to maintain that position.

Schemes buy-out run assumptions

The second run is made assuming that pension schemes that are closed to accrual buy out if their pension scheme assets meet their liabilities under a buyout basis. In a year in which such a pension scheme achieves the buyout funding level, their status is changed to fully wound-up, and their assets, liabilities and members removed from subsequent years of the projection.

Method

This microsimulation model uses each private sector DB pension scheme in the UK as a data point with an array of properties: scheme status; number of active, deferred and pensioner members; liabilities; and funding level. The model applies rates of change to these properties in order to project them from year to year at a scheme level, then aggregate the results of all the data points up to summarise the overall private sector DB environment in a given year.

Analysis of data and setting of transition rates

The rates of change are based on anonymised data obtained from The Pensions Regulator, which originates from Scheme Return data. The rates of change we are interested in (membership change, asset and liability change) are to a large degree dependant on the status that a scheme is in, or more precisely for this modelling, the transition observed in the scheme status is regarded as the primary indicator of the level of changes in membership, and scheme funding. For example a scheme which remains open to new entrants is likely to have very different changes to its scheme membership than an open scheme which becomes closed.

The data was analysed to identify rates of transition from one status to another, or remaining in their current status. The resulting table of status transition rates then gives a probability function for the status of a scheme in year $t+1$ given their status in year t.

The data was also analysed to calculate the change in liability value, asset value and membership, producing separate rates of change depending on the status transition. For example, analysing the average growth in liabilities for schemes that remained open to new entrants, and separately analysing the average growth in liabilities for schemes that instead went from being open to new entrants to being closed to new entrants but open further accrual and so on for each possible transition. This enables us to calculate separate transition-specific average rates (and standard deviations) of the change in liabilities, funding level, membership levels.

Projection

The projection then uses these transition-specific statistics to create individualised probabilistic growth figures for each scheme, each year. Each of the growth figures have a "random noise" element so that overall the projected rates of change have the same distribution as the underlying transition specific data. The model is run 1,000 times to create a distribution of possible outcomes.

Adjustments can be made to the assumed transition and growth rates to reflect future changes in economic or behavioural circumstances. Such as the bond rate.

Projecting the liabilities, assets, and membership for each scheme, each year creates a large projection dataset which is then summarised in the charts and tables in this report. Having the projections for all schemes enables cutting the data by criteria based on membership, liability or funding level to create summary tables for different categories of schemes.

Further information

In recent years DB pension schemes have experienced negative cash flows as a result of people taking transfers from DB to DC pensions in order to take advantage of pension freedoms, and separately as a result of the liability winding down in mature closed pension schemes. The original data includes the effect of DB to DC transfers as it presents the actual scheme data during the period of such transfers occurring. The rates derived from the data also include a targeted effect from the maturation of DB pension schemes as a result of using status specific rates of change of liabilities, however over the period modelled the maturation has a smaller impact on liabilities than transfers out because of freedom and choice.

Glossary

Administrative mergers occur when individual pension schemes contract large scale third-party administrators or collectively procure third-party administration and advisory services. The types of services that the administrator would be expected to provide would include scheme communications, technical support, pensioner payroll, scheme accounting, scheme administration and data management.

Asset mergers see the assets of multiple pension schemes consolidated into asset pools which are managed centrally on their behalf. The schemes in the pool retain control of their investment strategies, governance, administration and other functions.

Bulk annuity purchases occur when the trustees 'sell' the assets of the scheme to an insurer, which then takes the responsibility for ensuring that benefits are paid.

Buy-in is when the scheme trustees pay an insurer a premium to cover the liabilities of the scheme. The insurer then issues a buy-in policy that itself becomes an asset. The premium is then reinvested by the insurer which also pays a monthly lump sum to the scheme that covers the cost of the pensions for members in effect, the scheme itself takes out an annuity. The trustees then pay out the pensions.

Buy-out is when the scheme trustees make a single premium payment to an insurer, which then assumes responsibility for all aspects of the scheme. The insurer creates individual annuity policies for every member, all of whom become policy holders of the insurer. The insurer makes payments directly. The buy-out is the last stage of de-risking. If all members of the scheme have their annuities bought out, then the scheme can be wound up.

Cash-flow Driven Investment (CDI) is an investment strategy that works by using bonds to mirror pension liability cash flows because bonds (especially gilts), can offer a series of regular interest payments before a final redemption payment is made. By using contractual bonds and their predicted output, the expected liability cash flows can be matched.

Consolidation is where a single trustee board operates across a number of schemes and is responsible for overseeing the investment, administration and managing a common set of advisers.

Defined Benefit (DB) is an employee sponsored pension in which benefits are calculated based on years of contributions and salary (generally average or final salary).

Defined Contribution (DC) Pension Scheme is a trust-based or contract-based pension scheme that provides pension scheme benefits based on the contributions invested, the returns received on that investment (minus any charges incurred) and the way the savings are accessed.

Freedom and Choice/ pension freedoms - prior to April 2015, those with DC savings of a certain level were required to purchase a secure retirement income product in order to access their DC savings. The new pension flexibilities "Freedom and Choice" loosened restrictions so that those aged 55 and over may withdraw DC savings in any amount they like, taxed at their marginal rate, with 25% tax free.

Liability Driven Investment (LDI) is an investment strategy that concerns itself with the assurances made to scheme members. These assurances become the liabilities that investors target. Rather than seek continual and steady growth over time, investment is targeted to hedge against fluctuations in the value of the liabilities over time.

Longevity hedging transfers the risk of pension scheme members living longer than expected from a pension scheme to an insurer or bank provider. The trustees of the pension scheme agree to pay a fixed series of payments, representing the expected benefits payable under the pension scheme plus a fee, in return for the swap provider paying the benefits that in fact fall due, based on actual scheme mortality.

Office for National Statistics (ONS) is the UK's largest independent producer of official statistics and the recognised statistical institute of the UK.

Quantitative easing (QE) is a monetary policy designed to stimulate growth by encouraging greater lending and investment, whereby a central bank creates new money to purchase Government bonds and other securities from existing holders, increasing the supply of money in the economy. The Bank of England undertook significant programmes of QE between 2009 and 2012 and in 2016.

State Pension age (SPa) is the age when people can claim their State Pension. SPa is increasing and depends on an individual's birthdate.

Superfunds would see employers pay a fee (either upfront or in the form of secured debt) to substantially reduce underfunding and discharge themselves from responsibility for the scheme. With agreement from trustees and members, the scheme and all its assets and liabilities would be transferred to a Superfund. Superfunds are as yet unlegislated for in the UK.

The Pensions Regulator (tPR): The organisation which regulates trust-based pension schemes and the administration of work-based personal pension schemes.

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