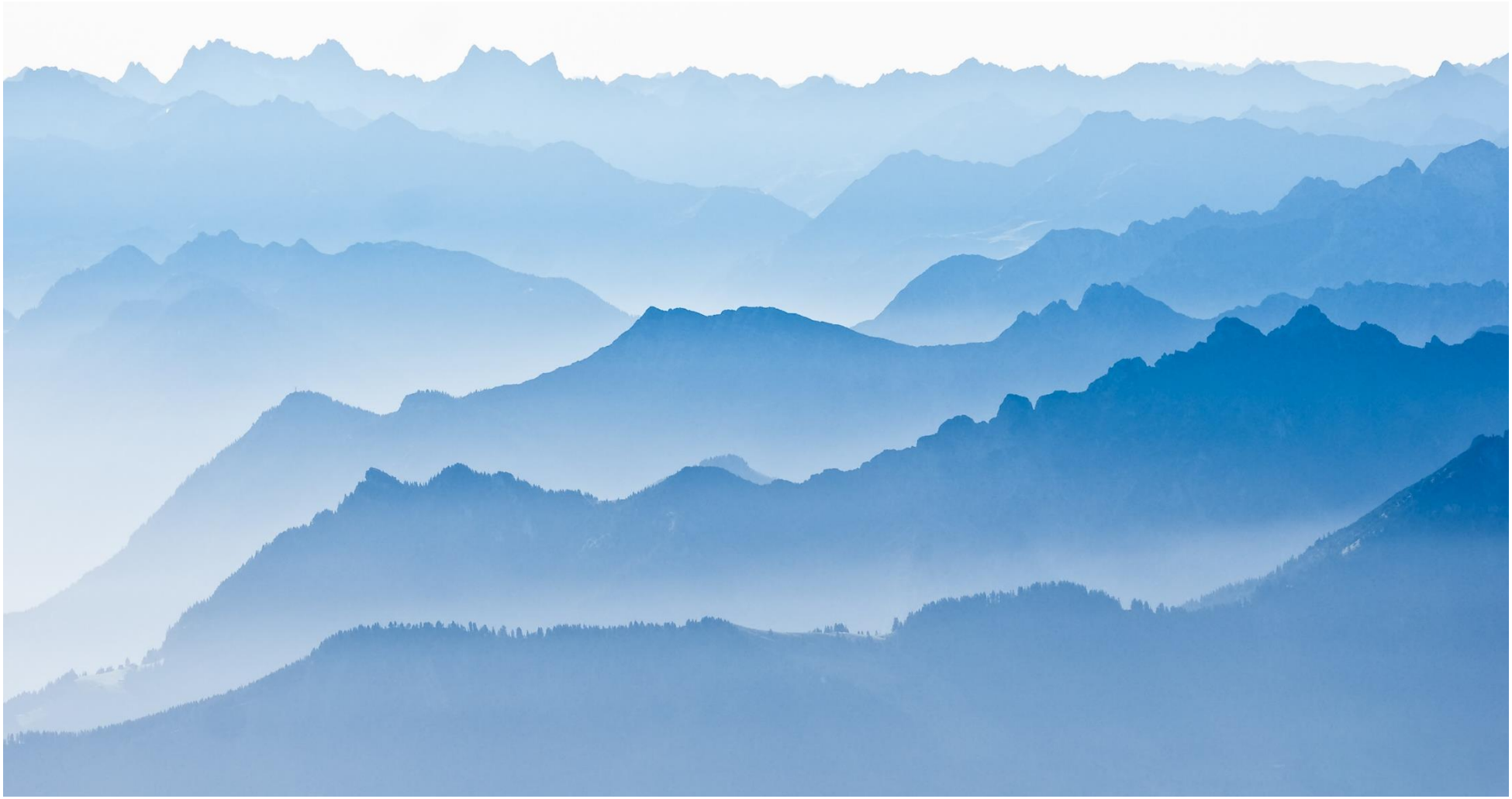
Thinking Ahead Institute

Pensions aren't what they used to be… a glimpse into the future

Output from the future of pensions working group

Pre-publication version: December 2023



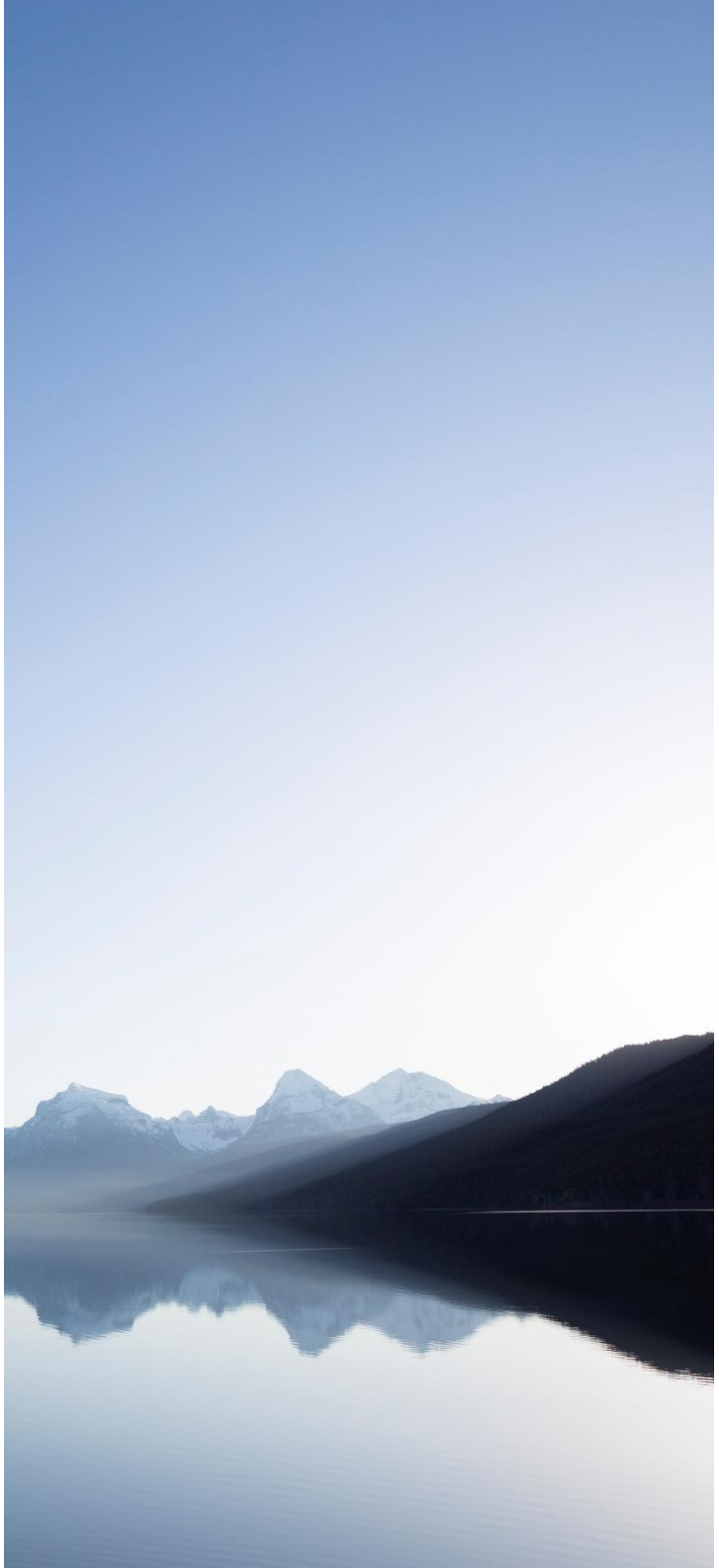
Thinking Ahead Institute

The future of pensions working group

This paper – *Pensions aren't what they used to be… a glimpse into the future* - has been written by members of the Thinking Ahead Group (Tim Hodgson, Jessica Gao and Anastassia Johnson) following the research and discussion conducted by the Thinking Ahead Institute's future of pensions working group. The authors are very grateful to the members of the working group for their input and guidance but stress that the authors alone are responsible for any errors of omission or commission in this paper.

The members of the working group, chaired by Tim Hodgson of TAI, were as follows:

- Robert Brown (Unilever)
- Mirko Cardinale (USS)
- Edd Collins (WTW)
- Davide Deagostino (Brightwell)
- Bhavin Dhanani (USS)
- David Hutchins (AllianceBernstein)
- Michael Jabs (Kraft Heinz)
- Alasdair Macdonald (WTW)
- Herschel Pant (AXA IM)
- Jeroen Rijk (PGB)
- Debra Woida (WTW)
- Kevin Zhu (OPTrust



Executive summary

The key objective of this working group (the 'Group') was to explore the future viability of pension provision and, assuming it is viable, what form it is most likely to take. To do this, the Group considered what might be universally true (such as delayed consumption) alongside the pension mechanisms in different geographical and time contexts.

The paper briefly considers the basics of pension provision – deferred consumption that should be secure, affordable, fair and net positive; where the risk can be borne by an institution (defined benefit systems) or by the individual pension member (defined contribution systems). Recent history has seen a shifting of the risk on to individuals.

The paper lists the characteristics of 'good' pension provision (affordable, stable and predictable pension income, flexible, income for life, and more), and provides case studies from around the world where innovative pension provision attempts to provide many of these characteristics.

The recent rise in government bond yields has thrown a lifeline to defined benefit (DB) pension arrangements. Could this be enough to see a swing back to greater DB provision in the future? The Group's short answer is "no". Expectations for the near term future are essentially a continuation of trends in the recent past: more de-risking of DB schemes, growth of DC as the dominant savings form, and further consolidation of DC assets into larger and larger providers.

As a bridge between the near term and long term, the paper includes a section considering climate change, demographics, and systemic risk more generally. Pension provision – the deferring of consumption over multiple decades – must factor in the likely impacts on future returns, and what that means for the long-term future of pensions.

The final section brings all the threads together. As a unit of pension costs the same whether delivered via DB or DC, the choice between them shouldn't matter all that much. And yet it does. Institutions will not rush back to DB provision in case bond yields fall to low levels again. And individuals have not been informed quite how much they should be saving in DC for a comfortable retirement. Nor are they well equipped to deal with investment risk. DC falls short in delivering the income for life that retirees require. Consequently, the strong conclusion of the paper, and the Group's desire, is that the future of pensions should be hybrid.

This paper calls for hybrid design to become the default pension option, but it does not suggest the form that the design should take. Given the uncertainty ahead we believe that diversity in hybrid design will itself be an attractive feature of a sustainable pensions system. We conclude with an aside on pensions inequality; a truly sustainable pensions system might require a redistribution of the costs of pension provision, as the Netherlands case study implies.

The basics of pension provision

pension (noun) | a regular income paid to someone who no longer works

Language is a fascinating thing, especially its fluidity. Some of the words our parents used have completely changed their meaning. Some of the words children use are impenetrable to the older generation. And so, we should approach the word 'pension' with care. It is an old word, and its meaning is likely to have changed.

The 'pensions system' has been changing for decades, with the emerging result that less and less of retirement income can be described as 'regular'[1]. As such, unless we find a way to pay a regular income for the whole of an individual's retirement, then we are more accurately running a 'savings system'.

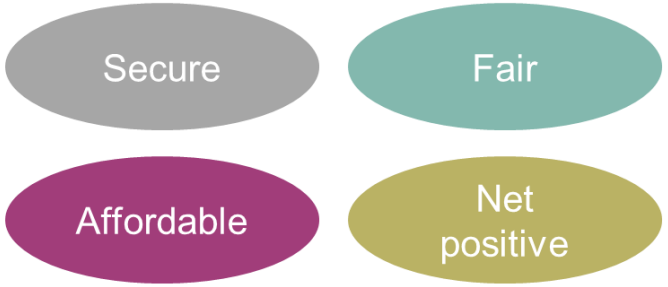
Whether we are facilitating savings, or genuinely providing a pension, the underlying mechanism is the same. An individual agrees to defer a proportion of their potential current consumption. Instead of spending the whole of their current income, individuals set aside a portion of it, in the hope that it will grow through positive investment returns and allow adequate future consumption when they are no longer earning a work-related income.

We can layer multiple complexities on top of this – tax treatment, age of access, changes of employment and so on – but the underlying mechanics show that the pensions system has two important functions:

1. Helping the individual invest, and grow, their savings (accumulation)
2. Helping the individual convert their savings into consumption in retirement (decumulation).

Further, the pension system should exhibit four important characteristics as shown in the figure below.

Characteristics of a good pension arrangement



- Secure | this relates to protecting the member's entitlement during the accumulation phase and ensuring that they receive all they are entitled to during the decumulation phase.
- Affordable | very secure, but small, pensions can be provided by investing in very safe assets, which tend to offer low rates of return. Affordability is

[1] The Thinking Ahead Institute's *Global Pension Assets Study 2023* shows that assets in defined contribution arrangements (generally, no regular retirement income) are now 55% of the total. This has been on an increasing trend for the 20+ years the study has been published

about taking an appropriate level of risk to generate higher returns and larger pensions.

- Fair | the notion of fairness differs between the main types of pensions. In defined benefit pensions a single asset pool supports the promised payments for members of all ages. In this case, fairness is about ensuring decisions do not disproportionately favour one generation over another. In defined contribution pensions, where a member has an entitlement to their own pot of assets, the notion of fairness is more subtle. It is typically very straightforward for the pension provider to treat all individuals fairly. However, retirement outcomes are heavily influenced by the sequence of investment returns, meaning that the year the individual was born, when they paid into the scheme, and how much, all affect the outcome. This can generate a retirement income significantly higher or lower than someone else born five years earlier or later than them.
- Net positive | as the individual's consumption is being deferred for decades, it is appropriate for the pension system to have a long term mindset. Two phrases are illustrative here: (1) the investment returns we need can only come from a system that works, and (2) a unit of retirement income is worth more in a world worth living in. In other words, investment approaches that cause nature to be exploited could be highly profitable for one cohort of members, but highly risky and, possibly, value destructive for a younger cohort. There is therefore a strong financial case, and fairness case, for pension systems to run investment approaches that are net positive (sustainable).

Where we are and how did we get here?

Before we start to consider the future of pensions, it is useful to consider the history and current context. We provide an analysis of employment-based pension provision across eight countries in the appendix. One or two of us on the working group joined the pensions/investment industry before Robert Maxwell fell off his yacht[2]. A yacht that may have been funded with money stolen from the Mirror Group pension fund. This event set off a chain of legislative changes in the UK designed to make pension assets more secure. Regrettably, these changes also had the effect of making traditional defined benefit pension schemes less affordable.

While the above makes for an interesting narrative, the truth is that there are always multiple factors at play in the complex systems we inhabit. For example, as the defined benefit pension schemes grew in size relative to that of the sponsoring business, financial market volatility was able to have a significant effect on the sponsor's cashflow (via the funding position and subsequent required contributions). This interferes with business planning, which chief financial officers tend not to like.

Consequently, the landscape of pensions has undergone significant transformation in many countries around the

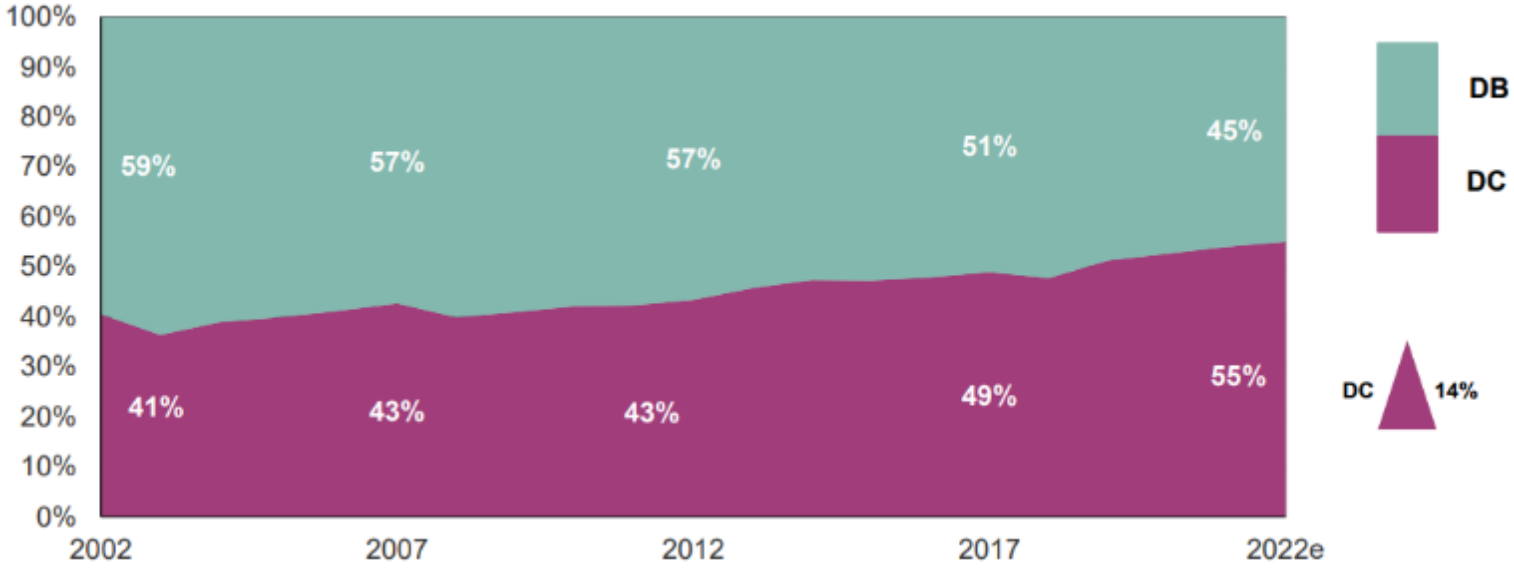
[2] See https://en.wikipedia.org/wiki/Robert_Maxwell

world in the past few decades, characterised by a continued shift from defined benefit (DB) to defined contribution (DC) schemes (see figure 1). The cost (affordability) and volatility drivers above were compounded by a shift in demand from a modern workforce which valued the flexibility and portability of DC schemes.

Many, if not most, DB schemes around the world are now closed which means there will be no new cash coming in to build funds for new members. The new asset building will predominantly be within DC funds, and so the relentless trend shown in the chart is set to continue into the foreseeable future.

This is a partial answer to 'what is the future of pensions?'. We will now fill out this answer by considering the near-term future, what good pension design would look like, and then look into the more distant future.

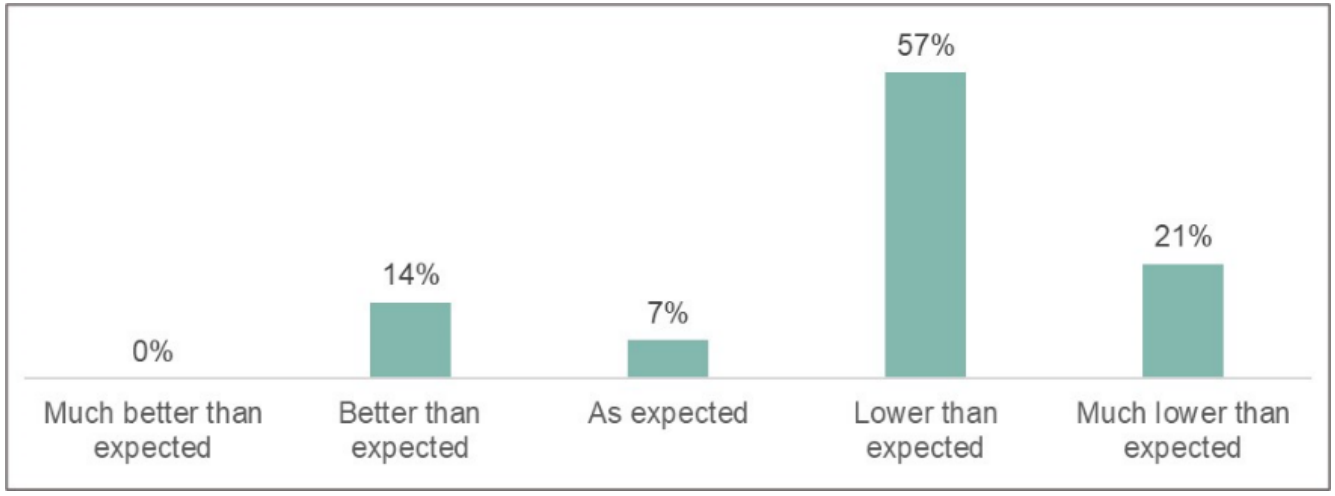
Figure 1: The trend between DB and DC assets in the top 7 pensions markets



What does a good pension look like?

The pension landscape is rapidly transitioning from DB to DC, but the working group believes that the future retirement outcomes for DC members may fall short of their expectations under the current standard DC design. Some even anticipate that these outcomes could be significantly lower than expected. There is also a perception that DC members may not fully grasp the issues with the current DC setup or have yet to contemplate the long-term implications.

Figure 2: What is your belief about future retirement outcomes relative to member expectations from current DC design (combined assessment of level and variability over time)?

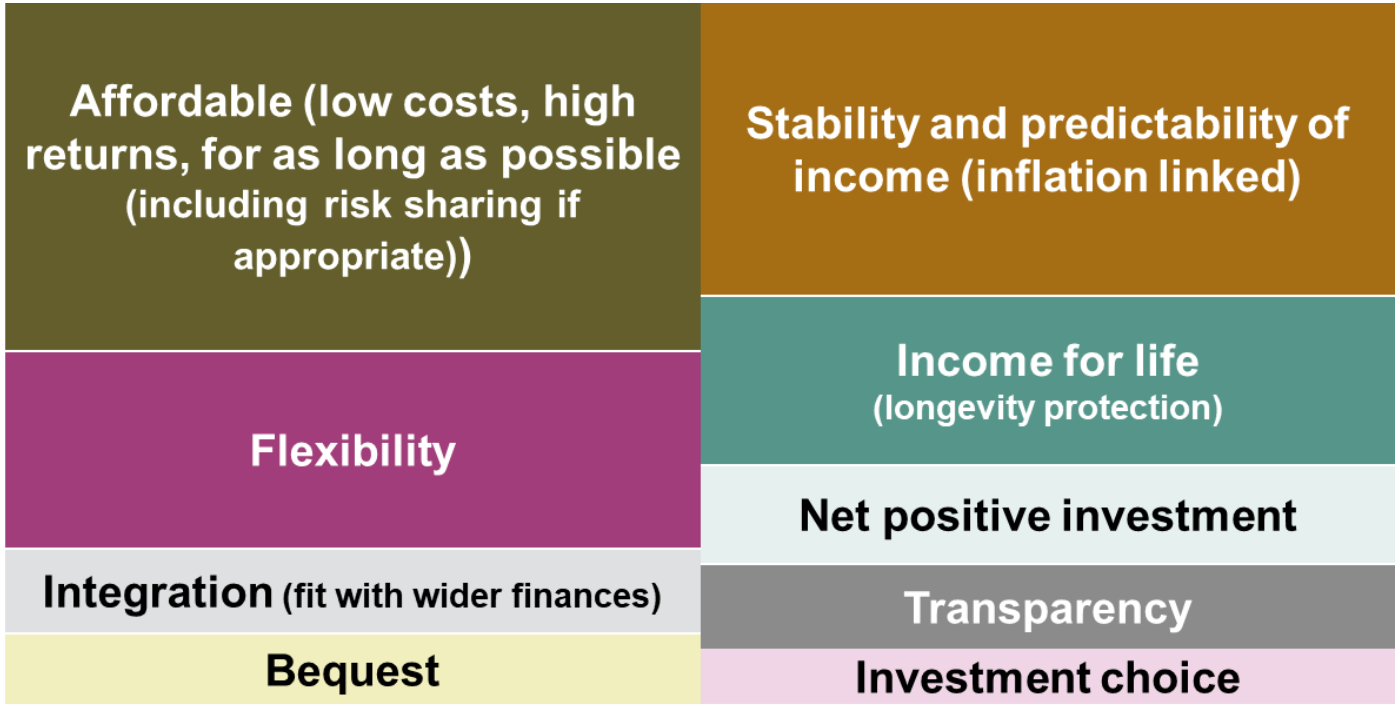


Has the pendulum swung too fast towards DC without allowing for adequate consideration of the fundamental purpose of pensions? What does a good pension look like? Can we harness the best parts of both DB and DC? We tasked the working group with ranking key pension design elements, shown in the chart. The size of each element represents its relative importance.

Some of these pension design elements can be contradictory. For example, a pension that is highly stable with very predictable income is unlikely to allow for very flexible arrangements for members.

There is no one-size-fits-all approach to pension design. The best pension design will vary depending on the specific circumstances of the pension scheme and its members, influenced by local policy.

Figure 3: Pension design elements



There are organisations in our industry that are leading the way in offering innovative solutions to meet members' needs, while certain countries are transitioning wholesale to hybrid pension solutions. Below, we explore a range of case studies to gain insights from their customised pension solutions. A high-level comparison of all the case studies is included in the appendix.

Case study 1 | CAAT Pension Plan's 'DBplus'

If DB pensions are the gold standard, could their best features be preserved for DC members? With over 330 participating employers, the CAAT Pension Plan is designed to offer a pension solution that preserves the security and predictability of DB but allows cost certainty for employers. CAAT Pension Plan retains a DB arrangement ('DBprime') for the employees of its sponsors

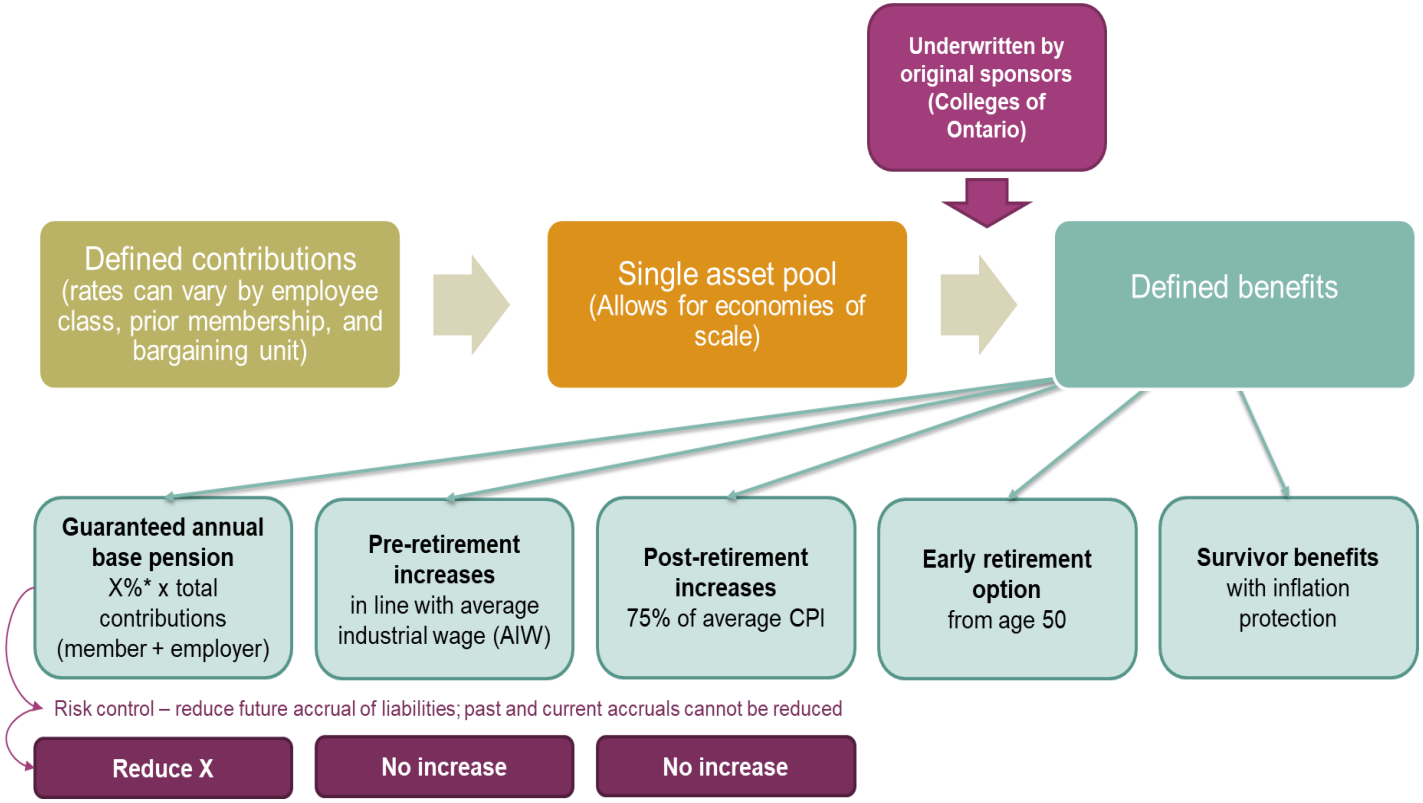


Figure 4: CAAT Pension plan 'DBplus'

(Colleges of Ontario[3]). A large surplus on the DB fund allowed the sponsors to take the strategic decision to create DBplus. The greater size of assets under management would enhance the sustainability of the internal team serving DB prime.

New participating DBplus employers have no obligation to provide support for the Plan's liabilities, they simply pay in contributions. Each year's contributions accrue a future annual pension payment[4] ('X' in the figure). Risk for the sponsors is controlled through varying the rate of future accrual, and whether conditional benefit increases are applied.

CAAT claims that contributions to DBplus deliver twice as much retirement income as group Registered Retirement Savings Plans or DC plans.

The Plan offers phased-in contribution rates to enhance participation. It's also portable among CAAT employers and can be transferred to another Canadian registered pension plan (for those under 65, subject to plan acceptance) to meet the flexibility needs of younger generations.

[3] The scheme has 3 sponsors - the College Employer Council (CEC) on behalf of the college boards of governors, the Ontario College Administrative Staff Association (OCASA), and the Ontario Public Service Employees Union (OPSEU). All 3 are equally represented through members and employers on the governing bodies.

[4] Currently 8.5% of the contributions, rising to 9.5% from 1 Jan 2025. Source: https://www.caatpension.ca/news/general-news-listing/Strong-and-secure-with-more-for-members-and-employers

Case study 2 | USS hybrid pension structure

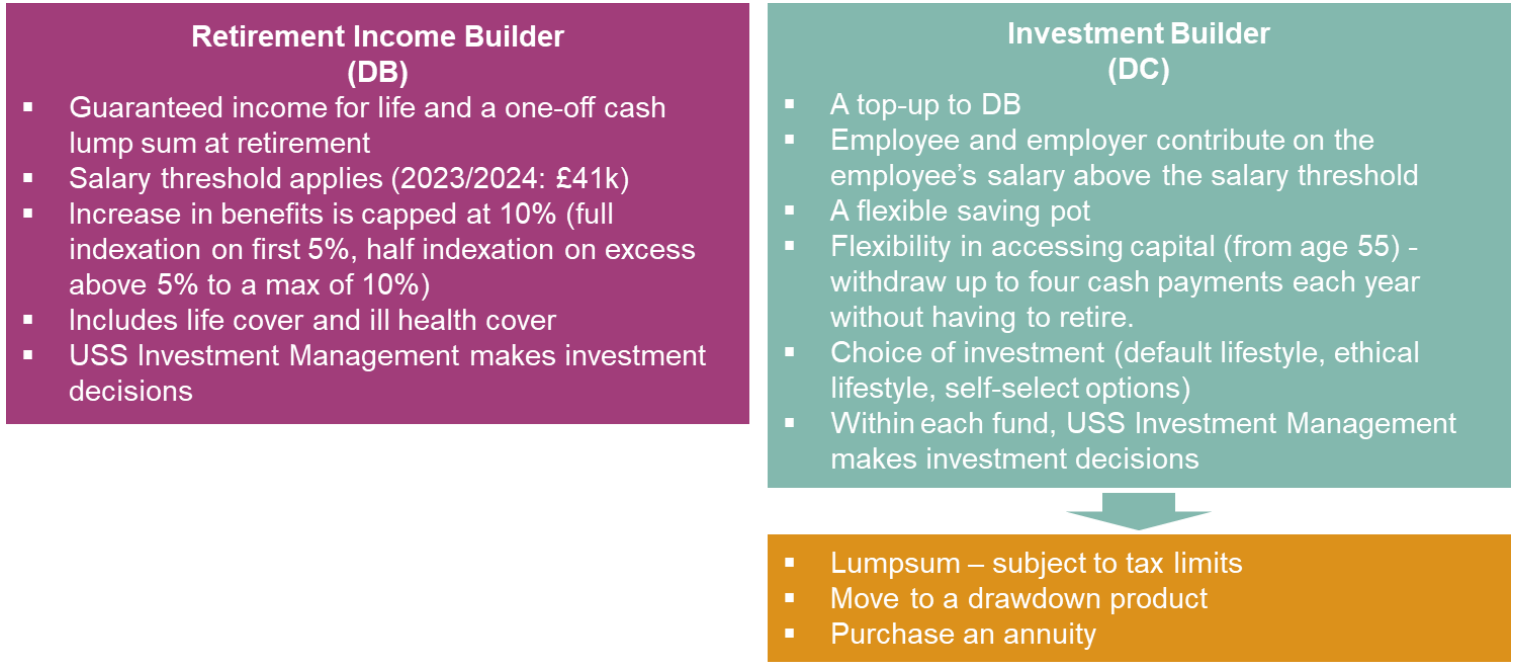
The USS pension structure offers an alternative approach to controlling the sponsor's risk relating to offering DB. It also offers more versatility and the potential for customisation, making it more appealing to younger generations seeking financial flexibility.

The USS design comprises two parts:

- Retirement Income Builder (DB), which provides a guaranteed income in retirement
- Investment Builder (DC), which provides a flexible savings pot.

The DB part has a salary threshold, meaning that all employees can participate and accrue a pension income related to their earnings below the threshold. Earnings above the threshold generate defined contributions which accumulate within the DC part. The salary threshold can be moved up and down depending on the funding status.

Figure 5: USS hybrid pension structure



Case study 3 | Royal Mail CDC

Rather than transitioning to a standard DC plan with no risk-sharing mechanisms, a collective DC (CDC) plan was proposed. Notably, the Royal Mail CDC plan in the UK offers:

- Risk pooling: contributions from all members are pooled together and the retirement benefits are determined based on the collective fund's performance. Investment and longevity risks are shared across the entire membership group.
- Lifetime income: a regular and more predictable income throughout retirement. Benefits are offered based on a target income and adjusted based on the plan's performance with an initial expectation that this will be broadly in line with inflation over the long-term.

It is claimed that CDC can provide a retirement income 70% higher than an individual annuity purchased through DC accumulation. Alternatively, it is estimated that DB would provide the same benefits at 40% greater cost than CDC.

Figure 6: Royal Mail CDC

Contributions	▪ Fixed 15% of pay (joint employer and employee rate)
Benefit	▪ Pension 1/80th of pay (career average) ▪ Normally payable from age 67 ▪ Spouse's pension of 50% of member's
Increases	▪ The same increase/cut applies to all members, contingent on investment returns ▪ Initial estimated average of CPI+1% pa ▪ Pensions can decrease if asset performance is poor
Who bears the risk?	▪ Members collectively
Valuation/increase strategy	▪ Increases revised annually based on updated scheme valuation ▪ Increases set equal to the assessed long-term sustainable rate vs CPI ▪ Pension cuts applied over a period of up to 3 years

Case study 4 | QSuper, now Australian Retirement Trust, Lifetime Pension

The innovative Lifetime Pension product developed by QSuper addresses a fundamental issue associated with standard DC pensions, which often function more like savings vehicles than true pensions. When members of QSuper's accumulation account approach retirement, they have the option to transfer their funds into the Lifetime Pension product, which ensures a lifetime income stream with money-back protection. QSuper also offers a standard DC drawdown Retirement Income account, allowing greater flexibility and access to capital as needed. The member can split their assets across the two offerings.

Lifetime Pension

- Offers a guaranteed lifelong retirement income
- Members can start a Lifetime Pension anytime between their 60th and 80th birthdays
- Payment amount is adjusted each financial year to reflect investment performance (pooled asset), cost and mortality experience
- Additional spouse protection option at the member's cost
- Money-back protection through an insurance policy issued to the Trustee with costs paid out of the pool
- Lumpsum withdrawals are not permitted, but a member can exit the product during the six-month cooling-off period
- Longevity risk pooling: idiosyncratic longevity risk is shared amongst all participants in the product

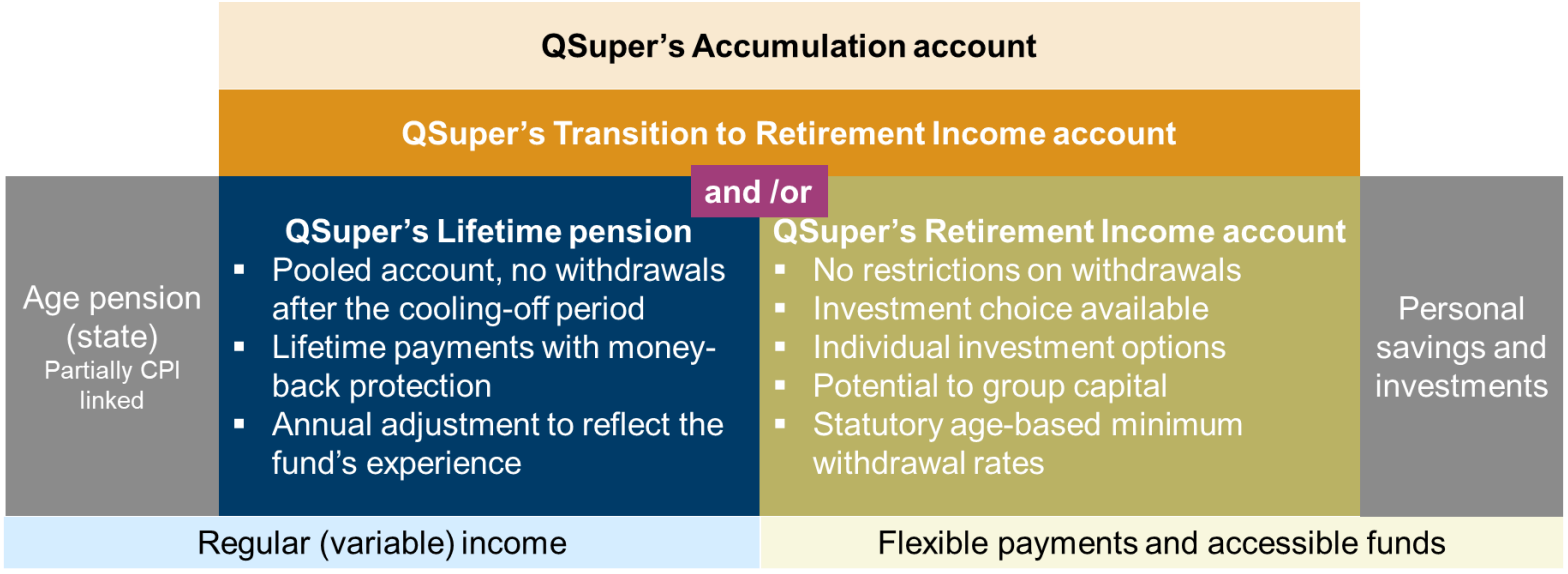


Figure 7: QSuper's Accumulation account

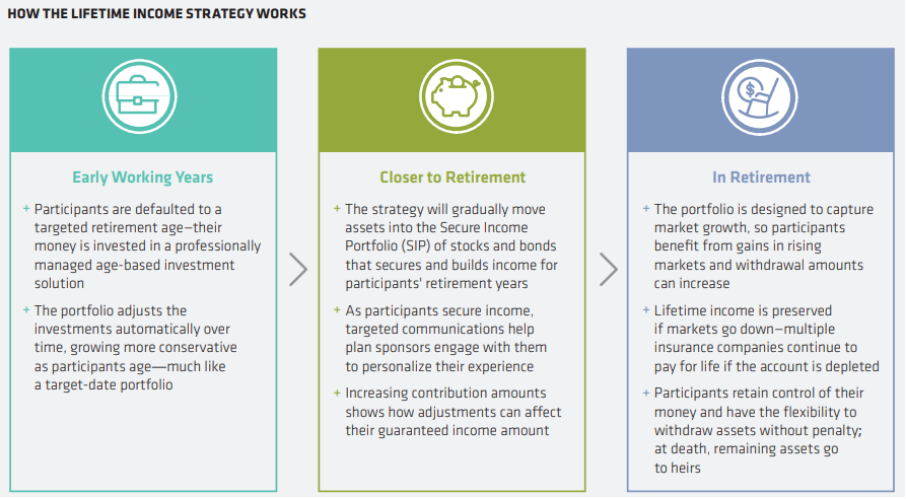
Case study 5 | AllianceBernstein Lifetime Income Strategy and Retirement Bridge

Pension products can also be delivered through collaborations between asset managers, pension plans and insurers. These partnerships enable pension plans to leverage the professional guidance and expertise offered by asset managers.

The Lifetime Income Strategy offered by AllianceBernstein in the US, partnering with large DC pension plans, provides participants with the benefits of target-date-funds (lifecycle funds) and guaranteed income for life.

The Retirement Bridge[SM] product offered in the UK since 2015 provides standard DC members with a default options

Figure 8: AllianceBernstein Lifetime Income Strategy[5]



[5] AllianceBernstein Unlocking retirement income

path through for their entire saving journey from accumulation into decumulation. This product provides a foundation for further solutions supporting savers with a default journey for income in retirement.

Retirement Bridge (UK)

- Age-based: 55-75 regardless of individual pot size
- Fund is chosen corresponding to their year of birth, for example the “Retirement Bridge Fund 1959”
- It pays monthly income appropriate for their year of birth, reviewed annually
- Asset allocation is guided by the age-related risk profile of investors in each fund
- Strategy aimed at purchase of an annuity at 75 with 20% higher income than DC with an annuity purchased at 65.

Case study 6 | Netherlands' new pension system

Public policy plays a fundamental role in shaping pension provision. Directives from policymakers drive rapid transformations in a given region's pension system. In the case of the ongoing pension reform in the Netherlands, the public and private sectors are set to move away from DB plans to contribution-based hybrid pension plans, with three types of pension arrangements being made available.

The new pension system in the Netherlands is designed to be more sustainable and affordable than the previous system. It is also more flexible, giving participants more choice over how their pension savings are invested and how they receive their pension income. The law took effect on July 1, 2023, with a transition period to January 1, 2028. There will be no defined-benefit accrual after that.

Figure 9: Netherlands' new pension system structure

Solidarity contribution scheme	Flexible contribution scheme	Contribution payment contract
▪ Characterised by a single collective investment policy covering active, former and future scheme members ▪ Financial gain and loss distribution governed by a predefined allocation rule by the fund. The rule aims at an age-related allocation of returns, leading to lower volatility and risk as members age ▪ Provides for extensive collective risk sharing, resulting in more stable, and/or on average, higher pension outcomes ▪ The amount of pension benefit is variable ▪ The solidarity reserve cannot exceed 15% of the total assets of a pension fund	▪ The strategy includes specific investment mixes for each age cohort (individual life cycle) ▪ Some funds may allow member investment choice ▪ Has separate accrual and benefit phases ▪ Individual's pension capital is converted into a fixed or variable pension benefit on retirement (individual can choose)	▪ Plan participant can buy life-long guaranteed benefit starting from up to 15 years before the eligible retirement age ▪ Own investment results ▪ This will transfer micro and macro and investment risk from the plan participant to the insurer ▪ Only for insurers

Case studies comparison

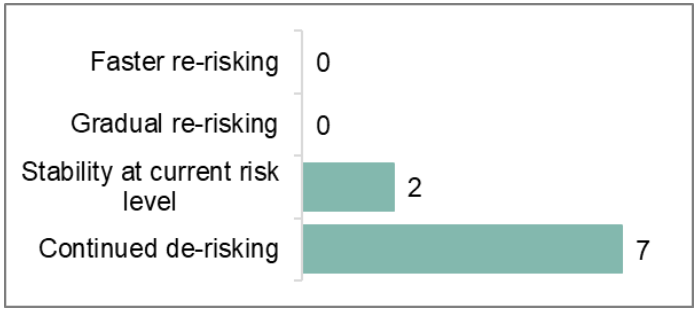
	Traditional DB (UK style)	Traditional DC (with drawdown)	CAAT Pension plan	USS DB+DC	Royal Mail CDC	QSuper Lifetime pension	AB US case study	AB UK case study	Netherlands' new pension system (Solidarity Scheme)
Longevity protection	✓	✗	✓	✓(DB) ? (DC)	✓	✓	From 50	From 75	✓
Explicit Inflation link	Partial	Investment linked	In line with Average Industrial Wage pre-retirement and 75% of CPI post-retirement, subject to affordability	Partial (DB) I-L (DC)	Investment linked	Investment linked	Investment linked	Investment linked	Partial
Predictability of outcomes	✓	✗	✓	✓(DB) ? (DC)	✓	✓	From 50	From 55	✓
Portability (flexibility)	Limited	✓	✓	✓(DC) ✗(Limited DB)	✗	✗	✓	Until 75	Limited
Access to capital (flexibility)	✗	✓	✗	✓(DC) ✗(DB)	✗	✗	✓	Until 75	✗
Transparency (in comparison with traditional DB)	-	✓	✓	✓	✓	✓	✓	✓	✗
Intergenerational risk sharing	✓	✗	✓	✓(DB) ✗(DC)	✓	?	✗	✗	✓
Bequest	Restricted	✓	✓	✓(DC) ✗(DB)	Restricted	Restricted	✓	Until 75	Restricted
Investment choice	✗	✓	✗	✓(DC)	✗	✗	✗	✗	✗

The near-term future of pensions

One of the interesting questions about the near-term future of pensions is whether DB's future is brighter than its past. To explain, the yields on government bonds – after falling for around four decades – have recently risen. This yield can be used to value the future liabilities of DB schemes (in some countries it is mandatory to use this method). When the yield falls the value of the liabilities goes up, meaning the assets have to work hard to keep up. When the yield rises the value of the liabilities falls. Now, providing the asset value falls more slowly than the liability value, the financial position of the DB scheme improves.

The recently improved funding position of DB theoretically offers the opportunity to reverse the established trends of de-risking and transferring the liabilities to insurance companies. In practice, the working group did not see this as remotely possible. A minority could see risk appetites stabilising at current levels for the next 5-10 years, while the large majority saw continued de-risking in DB schemes.

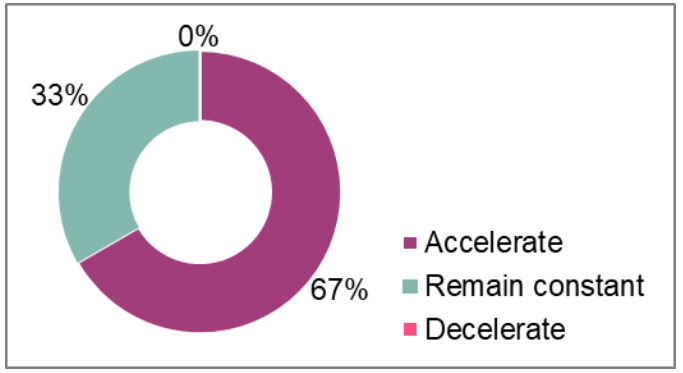
Figure 10: Private DB pension schemes have progressively de-risked over the recent past. What will be the trend over the next 5-10 years?



When we asked if there was any factor that might stop, or even reverse, the de-risking, 20% responded that there was no good reason to re-risk. For those that could imagine the possibility, the standout reason would be a change in regulation, with a shift in risk appetite and objective being the next most likely factor.

If re-risking is off the table, will DB schemes at least retain the assets and manage them through time – or will they look to offload them to insurance companies and exit pension provision entirely? Recent data for the UK indicates that DB liabilities have been falling by about £100bn each year, split approximately equally between natural erosion (nobody lives forever) and transfers to insurance companies. The working group thought this rate of transfer would accelerate.

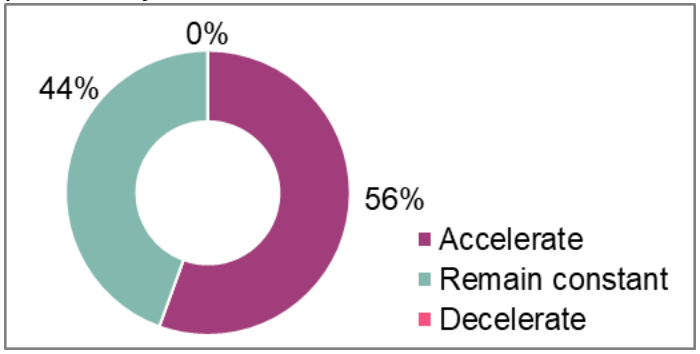
Figure 11: Closed DB funds will choose between run-off (self-managed) and insurance (buy-out or buy-in). For the UK, do you believe the pace of buyout will:



We don't have equivalent data for North America but, again, the working group thought the current rate of

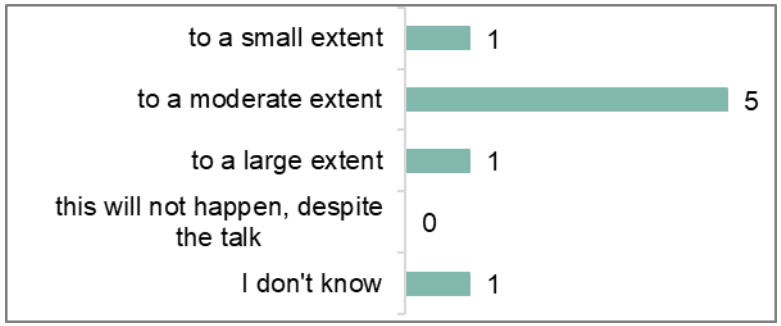
transfer was slightly more likely to accelerate than stay the same.

Figure 12: For Canada and the USA, do you believe their pace of buyout will:



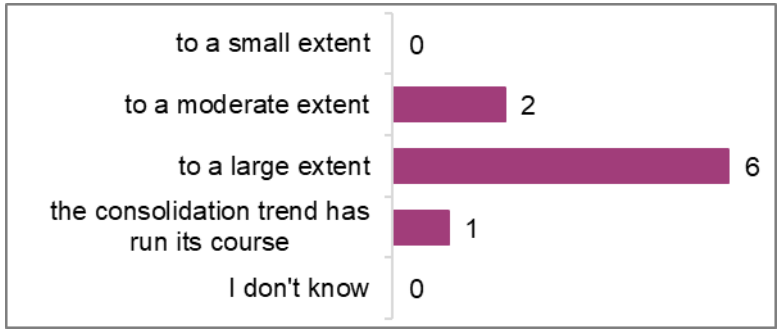
There is a further way to pull back from the management of DB assets, and that is to pool the assets with those of other DB schemes (consolidation). The UK government has announced that it will consult on whether to 'encourage' this[6]. Will we actually see a consolidation of DB assets over the next 5-10 years? The working group could see it happening to a moderate extent, but this is not a high-conviction position.

Figure 13: The next 5-10 years will see greater consolidation of DB assets.



This contrasts markedly with the working group's conviction that there will be a large-scale consolidation of DC assets. Australia has set a notable precedent in this regard. The pace of consolidation there has accelerated over the last few years, and the two largest superannuation funds now oversee more than A$250bn each.

Figure 14: The next 5-10 years will see greater consolidation of DC assets:



[6] See https://www.gov.uk/government/collections/mansion-house-2023

In summary

The near-term future of pensions can therefore be described as a continuing, and possibly accelerating, contraction of DB assets which are highly unlikely to increase their investment risk level. There may be some consolidation of assets to achieve greater scale. Concurrently, DC assets will continue to grow and it is likely that they will consolidate to be managed by fewer organisations of considerably larger scale.

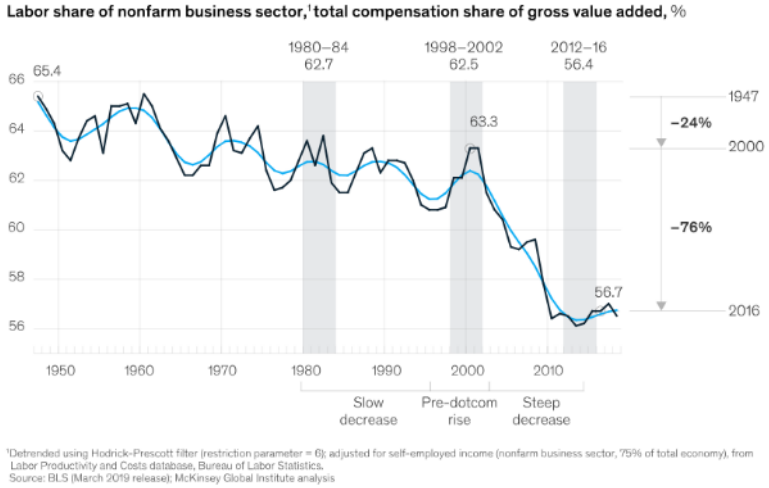
While this is what we think will happen, it isn't necessarily what we would like to happen. DB really is the gold standard when it comes to fit-for-purpose financial products for individuals. Is it possible that there might be a middle, 'hybrid', way forward? We consider this in our next section.

Can we count on future returns?

We now return to the idea that providing pensions necessarily involves long time horizons. If we look backwards in time, then multi-decade investment returns have been strongly positive. As we turn to look forward over the next several decades we need to ask the question as to whether those strong returns will be repeated. Importantly, this is not an exercise in market timing – financial markets crash from time to time, but multi-decade returns have still been strong. Instead, this is about asking whether the system that produces the returns could be structurally different in the future.

One possible structural shift is a change in the proportion of national income going to labour rather than capital. For decades, labour's share of national income fluctuated in a very narrow range. Then, sometime after 1960, its share started a downward trend with a steep drop after 2000 (see chart). Needless to say, the accompanying rise in the share of national income going to capital will have been highly beneficial to investment returns. The opinion of the working group is that the pendulum will move, or is already moving, from capital towards labour, which we interpret as a negative shift for future returns over a time frame that could stretch to several decades (we do acknowledge, though, that the relationship between capital, labour and financial market returns is complex[7]).

Figure 15: Three-fourth of the decrease in labour share in the United States since 1947 has come since 2000



Source: McKinsey & Company[8]

If true, this swing towards labour will coincide with at least two capital-intensive transitions that have already started:

- Climate | we will either transition the economy sufficiently fast to limit warming and avoid the worst physical risks, or we will transition the climate to a significantly warmer state with associated physical risks and capital spending on adaptation
- Demographics | with a few notable exceptions, most countries now have ageing populations. On its own, this transition will be enough to raise wages

[7] Greater income in the hands of labour can mean increased revenue and profits for corporations. But if the greater income is saved rather than spent (increased DC contributions!) there is no positive effect on profits. The actual relationship is more complex than this cartoon version

[8] From https://www.mckinsey.com/featured-insights/employment-and-growth/a-new-look-at-the-declining-labor-share-of-income-in-the-united-states accessed 1 Dec 2023

and labour's share of income. The pension implications are significant.

Climate change as a risk

There has been a flurry of papers published in 2023 which all suggest the financial system is unprepared for the consequences of climate change. The papers suggest that financial modelling does not yet adequately incorporate climate change and that published climate scenarios are unrealistic[9]. In terms of quantifying the potential financial impact, TAI's research paper *Pay now or pay later?* suggested there would be a potential 15% portfolio loss for a rapid transition scenario, and a 50-60% loss for the business-as-usual scenario (corresponding to a warming of 2.7C)[10]. The current rate of change is not sufficiently fast to limit global warming to 1.8C, and therefore there is concern that investors have not fully considered the potential portfolio losses stemming from the consequences of climate change.

When asked to assume that the world does warm by at least 2.7C, the working group suggested that net-zero investing should be the default across the portfolio, and not subject to member choice. In addition, at a superficial level, it would reinforce the case for better intergenerational risk sharing, hence support for a hybrid approach in pension design. However, given the size of the projected losses it is hard to see why those who might avoid the losses would wish to risk share with those likely to suffer them.

Demographics as a risk

Well-designed pension systems should work irrespective of the shifts in demographics within a country. The uncomfortable truth is that pension systems are easier to manage with a demographic tailwind. If the cohort of people in retirement is small relative to the cohort of working age, then adjustments can be made slowly, or even delayed, with no significant near term impact. When the situation is reversed, management can quickly become problematic. Maintaining a promise to a large number of retirees can quickly become a large tax burden for a small number of workers.

As an illustration of the above ideas, it has been estimated that in the absence of reforms to age-related policies, in 2060 the typical government annual deficit will be 9.1% of GDP (2.4% in 2025), and the annual pension costs would rise to 9.5% of GDP (from 5% now). The consequence of this would be that the sovereign debt of around half of all countries would be junk rated[11].

The threat of demographics for public sector finances and the likely consequence of an eroding value for the state (pillar 1) pension was identified by the previous TAI defined contribution working group back in 2018[12]. Our current working group agreed that the real monetary value of pillar

[9] For example: The Emperor's New Climate Scenarios, This is the way…or is it?, Robust management of climate risk damages, The impact of climate conditions on economic production, Warming the MATRIX: a Climate assessment under Uncertainty and Heterogeneity, Loading the DICE Against Pensions, and No time to lose

[10] A recently published academic paper, *Long-term macroeconomic effects of shifting temperature anomaly distributions*, suggests that warming between 2 and 2.6C will reduce GDP by between 30 and 50% (and by 100% above 4C)

[11] Source: Financial Times article, *Ageing populations 'already hitting' governments' credit ratings*, dated 17 May 2023

[12] See *DC: the movie*, Thinking Ahead Institute 2018

1 pensions in developed economies was likely to decrease (see chart), but that the utility value of this reduced amount could rise (see chart). If the world, and investment values, become more volatile then income from the state might be considered more valuable.

Figure 16: In developed economies over the next 10-20 years, the real monetary value of pillar 1 pensions will**:**

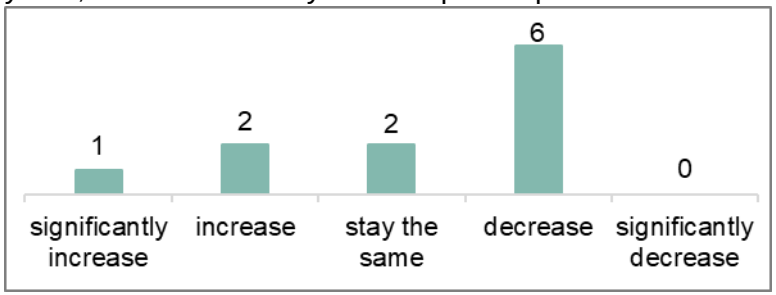
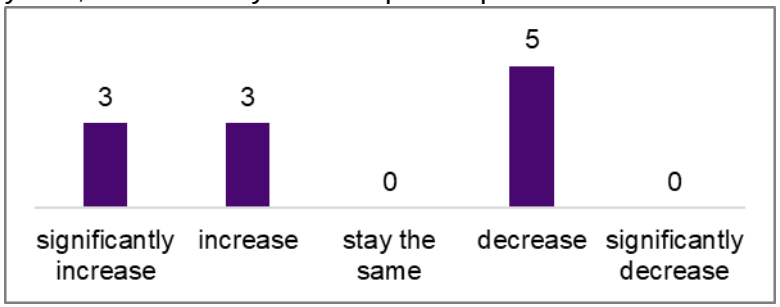


Figure 17: In developed economies over the next 10-20 years, the real utility value of pillar 1 pensions will



Keynes' paradox of thrift

In his 1936 book, *The General Theory of Employment, Interest, and Money*, John Maynard Keynes advanced the idea that while thrift (saving) was rational for an individual, if everyone saved it would reduce demand in the economy, making everyone worse off. There is a danger that pensions savings could exhibit a similar paradox. It is rational for an individual to save for retirement, but can everybody do it?

It is possible to construct a simple model of a pensions saving system which would suggest that an equilibrium level of pension savings would be around 235% of GDP[13]. We can then ask how close the world is to this level – and the answer is not close at all. The current level of global pension savings is equivalent to 62% of global GDP[14] , although this is heavily influenced by China's large GDP and low pension savings. Excluding China, the global picture would be closer to 80% of GDP, which is still well below the model's target.

The next question becomes can we close this gap by saving more? For an answer we will avoid the Keynes route (the likely impact of increased savings on aggregate demand), and just look at the impact on investment. Here we need to worry about the supply of assets that will yield a positive return over their lifetime (we *do* need a lot more renewable electricity generation), relative to the demand coming from those extra pension savings. If the supply is not high enough, the pension savings will be competing for assets, driving up their price, and reducing their future

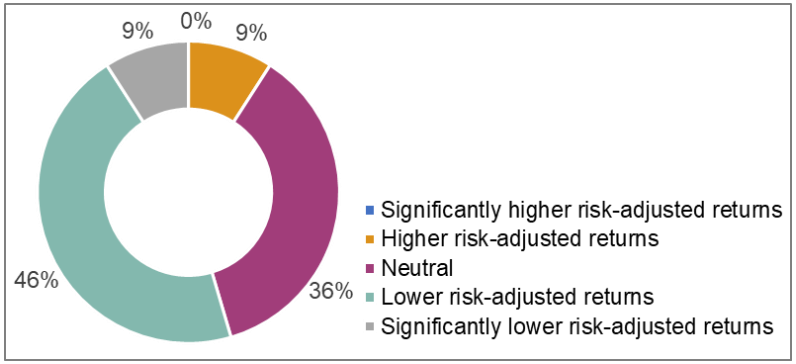
[13] See *The impossibility of pensions | Can society support a retired population in the style to which it aspires?* Thinking Ahead Institute

[14] The Thinking Ahead Institute's *Global Pension Assets Study 2023*

returns. If this turned out to be the case, we would have a 'paradox of pension savings'.

Pulling back slightly from this somewhat theoretical position, the working group did see a threat to returns over the next 10-20 years arising from the various transitions we will have to navigate.

Figure 18: The net effect of the future transitions (climate, demographics, robotics) over 10-20 years will be:



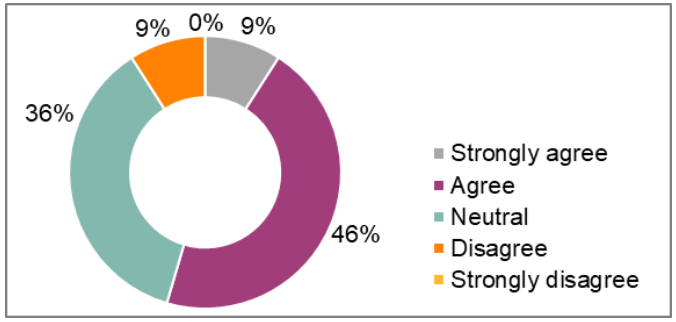
Systemic risk as a threat

Our final thought on whether we can count on future returns is the slightly more abstract idea of systemic risk. In a TAI paper on the subject titled *Systemic risk | deepening our understanding* we suggested that, in human systems, complexity and systemic risk tend to grow. There are two ways to reduce systemic risk: to manage it down through actively intervening in the system (constraining its ability to grow in complexity), or to wait and allow the system to resolve the risk itself (for the avoidance of doubt, this is not a good option).

So, we find ourselves at a point in time where the talk is increasing of 'polycrisis', which is the confluence of climate change, biodiversity loss, inequality and other significant risks. Or, in short, we are facing significant systemic risk.

It remains rational to defer present consumption to have greater consumption power later in life (see chart below). However, there are reasonable grounds to be less confident that pensions will be as secure and affordable as they were in the past. This leads to the final section of the paper – what might be the long-term future of pensions?

Figure 19: Assuming business as usual delivers 2.7°C of warming, and that reduces portfolio values by 50-60% (~2%pa for 30 years)[15], pension saving is still worthwhile.



[15] Pay now or pay later?, Thinking Ahead Institute

The long-term future of pensions

The DB 'exchange'

We started this paper by noting there are two basic functions underpinning pension provision; accumulating assets, and converting those assets into income. Within DB pensions, the worker agrees to work for reduced pay in exchange for accruing a right to future income when no longer working. The employer sets the terms of the exchange, manages the assets, and pays out the income when due. While there will be workforce-management reasons for this arrangement we can also ask whether this exchange makes financial sense. As a thought experiment, imagine that long-dated government bond yields are 10%. The future income the employer is promising, when discounted back to the present, doesn't have a very large value. The cash set aside this year to meet those future liabilities can likely be invested in a wide range of ways, all having a good chance of generating an investment 'profit'. In fact, it is likely that one of those ways is sufficiently low risk that we can genuinely think of this process as 'writing pension accruals at a 'profit'.

If we now change the thought experiment and reduce long-dated government bond yields to 0%, then the present value of the future promise becomes extremely large. Further, it is now possible that even the riskiest investment strategy will struggle to generate an 'investment profit'. We are in a period of 'writing pension accruals at a loss'.

In the real world, we would expect yields to lie somewhere between the extremes of our thought experiment and, possibly, to wobble around a bit. If this meant that some years involved writing accruals at a small loss, while others produced small profits, then on balance we would probably have a sustainable DB system. So, what did happen in the real world?

We saw that DB has been in relative decline for at least the last two decades (see figure 1 above). This was the second half of a four-decade period of falling government bond yields. At some point during the period the writing of the current year's accrual would have dropped into loss, and then the situation became progressively worse, year after unrelenting year.

The story we are developing here would be bad enough in isolation, but we now add in the fact that over this same 20-year period we also witnessed a trend of improving longevity[16]. Longer lives increase the cost of meeting the future promise. In addition, we note that the two trends interact – low yields increase the impact of improving longevity. Like a plane crash, the failure of one system might have been OK. Two failures at once caused systemic failure.

This narrative provides a useful framing to what we have observed in DB pensions globally. The private sector, with a few exceptions, has largely withdrawn from providing DB. The public sector has typically taken action to control costs in some way in order to retain DB (risk sharing in

[16] This is true for our purposes, ie in the developed countries providing DB pensions over the whole period. It is generally true, ie improvements were seen in most countries. But it is not universally true, eg very recent data suggests a decline in male longevity in some historic DB, developed countries.

Canada[17], reducing value in the UK[18]). The Netherlands, in removing DB entirely, is an exception. The power of this global study has been to step back from our local contexts, where we may be tempted to blame the action, or inaction, of regulators, and to see that the decline of DB was an inevitable systemic failure.

The DC 'exchange'

If we now turn to DC, we can apply the same framing. And by the way, the expected cost of a unit of pension is the same whether provided through DB or DC. Here the worker agrees to work for (slightly) reduced pay in exchange for the reduction being paid into a pensions saving vehicle. The employer pays over the money and is done. The management and the conversion into income is now the worker's problem. While it can be argued that there is an extensive 'pensions machinery' to perform these functions on behalf of the worker (or provide guidance, at least), the difference between the two systems can be starkly illustrated by the following question: how much does it cost to provide future income?

In DB, the worker is fully protected from this question. It is up to the employer and their actuarial advisers to find the answer. In DC, the problem belongs to the worker, and there isn't much help available. As with most questions, there is an element of 'it depends'. It depends on both the size of the desired income and its quality. We might define historic DB as the gold standard, where the exchange converted one year of reduced pay into 1/60th of final salary, payable for life, with a surviving spouse receiving 50% for the remainder of their life, fully-indexed and fully-guaranteed. The cost of this income would be around 40% of the worker's pay. Yes, it would provide a very comfortable retirement, but it was too expensive to be sustainable. In contrast, a worker in Australia has 11% of pay set aside for future income[19]. In the UK, where auto enrolment has successfully increased pensions coverage, the minimum required contribution rate is 3%. While many UK workers will have contribution rates nearer 10%, the median rate is reported to be 3.4%[20].

There is therefore the possibility that Australian workers could be under-saving for retirement, and that at least 50% of UK workers are chronically under-saving. From here it is easy to imagine that DC could see a large-scale failure at some point in the future. Some form of macro shock, causing investment returns to disappoint on contribution rates that are too low, would force people to fall back on pillar 1 – which will be under its own pressure. Should this happen, we can further imagine a groundswell of opinion that pension provision should revert to DB. Is it possible that the pendulum could swing back?

Can DB stage a comeback?

Above, we outlined the logic that when long-dated yields are high, DB plans can write accruals at a profit. Given that global bond yields have recently risen significantly, does

[17] In Canada, the current size of the pension promise is supported by a risk-sharing arrangement that would see the contribution rates of both sponsoring employers and members increase, if necessary
[18] In the UK, 2015 reforms to public sector DB saw a switch from liabilities based on a member's final salary to career-average earnings, and an increase to the retirement age
[19] 11% is the minimum allowable contribution rate under the superannuation guarantee until 30 June 2024. It is then scheduled to rise in two steps to 12%
[20] *Britain must look abroad to reform its pensions*, Financial Times, November 28, 2023

this mean that DB plans could now operate profitably? And should we expect them to reopen?

The answer to the first question is likely to be positive, particularly if the 'terms of the exchange' can be freshly negotiated. However, with recent history still fresh, we do not think many sponsors would wish to hold themselves to long-term promises which could easily become unprofitable again should yields fall. At the intersection of these two questions is an interesting recent development. In November 2023 IBM, in the USA, announced that was switching its matching contributions from the DC plan to a new cash balance offering within its reopened DB plan[21]. The headline grabbing element in our context is the reopening of the DB plan (closed since 2005, frozen since 2008). However, the details show that this is not a restarting of accruing future promises, but rather the guaranteeing of a rate of return on contributions that generate a lump sum at the point of retirement. We can therefore describe this arrangement as 'hybrid' in that it combines elements of both DC and DB. And this leads us to the main conclusion of the working group.

The answer is, or should be, hybrid

Our main thesis is that the generous form of historic DB has died and will not return, anywhere. This is due to systemic reasons and not because we hit an unlucky patch of history. We support the retention of DB in less generous form where this is possible. We understand the attractiveness of DC from the perspective of employers or pension providers, but we do not think it is a good, nor robust, solution for individuals. We are concerned that the conditions which would generate DC-pensioner poverty are too plausible. We therefore think hybrid is the more robust option, and we strongly advocate for its widespread support and adoption before problems with DC manifest. Ideally, our hope is that this work will inspire people to engage with policymakers so that hybrid can become the default pensions option.

So, what is hybrid, beyond being a mix of DC and DB? Ah, that is where we are less sure of ourselves. We would suggest that all six of the case studies shown above are a form of hybrid. They range from a lifetime income product within an otherwise pure DC arrangement, through switching arrangements, to hybrid-by-design at both the fund and country level. And this is the important point. In the climate and demographic transitions that lie ahead, are any of us capable of predicting what will be the best pension design? We believe a diversity of hybrid designs is desirable, and would therefore encourage policy makers to provide as much freedom as possible for innovation.

We think it is worth noting that we are talking about pillar 2 pensions here. In other words, these are additional to, not a replacement for, pillar 1 (state) pensions. While we have noted above that public sector finances are likely to stretched in future, pillar 1 pensions are likely to be as secure and inflation-linked as it is possible to get. Consequently, these features can helpfully inform the design of the pillar 2 hybrids.

[21] See *IBM unveils details of retirement benefit account*, Pensions&Investments, November 27, 2023. Employees may continue to make personal contributions to the DC plan

An aside on inequality

While we are on the subject of design, how about the following as a thought? It is possible that, as the true expense of providing the generous, old DB was recognised, the DC replacement was designed to be as cheap as possible (whether implicitly or explicitly)? At the aggregate level this gives a pension system that operates at an appropriate average cost. But it also gives a pension system that is very unequal. The past service of the few is deemed untouchable, while the many are exposed to the risk of future pension poverty. This makes the Netherlands' case study above truly fascinating. While we don't know the details, we do know that past service was not held to be sacrosanct and will be forcibly converted.

Now we could categorise this case study under a stereotypical label describing the social deal in northern European countries. Or, we could consider whether this is actually a necessary condition for a fairer pension system. By more fairly re-allocating the expense of providing pensions around the population, maybe we could generate a truly robust and attractive hybrid pension for all?

What is the long-term future of pensions?

In conclusion, we believe it is fairly straightforward to predict that DB will see a continuing, and possibly accelerating, contraction of assets, and there may be some consolidation of asset pools to achieve greater scale. Conversely, the likely future will see DC assets continue to grow, and providers consolidate. However, as far as the decumulation phase of DC is concerned, we repeat the conclusion of TAI's DC working group in 2018: DC that does not provide income for life is not fit for purpose. Therefore, our desired future is for a significant growth in hybrid designs.

Appendix 1: Cross-country comparison

	Australia	Canada	China	India	Japan	Netherlands	UK	US
Total assets in funded and private pension plans as % age of GDP, 2021*	123.9	130.9	2.1	4.9	72.1	165.6	80.3	121.6
Workplace pension participation rate, %	78% [1]	39.7% [2]	2% [3]	12% [4]	24% [5]	87% [6]	88% [7]	56% [8]
Enrolment policy	Mandatory	Voluntary (largely)	Not applicable	Not applicable	Voluntary	Quasi - Mandatory	Auto enrolment	Auto enrolment (encouraged)
Is there a future for private sector DB?	No	No	No	No	No	No	No	No
Is there a future for public sector DB?	No	Yes	No	No	No	No	Yes	Maybe
Is the alternative DC, or a hybrid design?	DC only	DC and hybrid	N/A	DC	DC/CDC	Hybrid	DC and hybrid	DC and hybrid

* Global Pension Assets Study 2023, Thinking Ahead Institute https://www.thinkingaheadinstitute.org/research-papers/global-pension-assets-study-2023/ https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/workplacepensions/bulletins/annualsurveyofhoursandearningspensiontables/2021provisionaland2020finalresults

[1] https://www.apra.gov.au/superannuation-australia-a-timeline
[2] https://www150.statcan.gc.ca/n1/daily-quotidien/220718/dq220718a-eng.htm
[3] https://www.iopsweb.org/resources/38766497.pdf
[4] https://www.oecd.org/els/public-pensions/PAG2021-country-profile-India.pdf
[5] https://www.asianinvestor.net/article/to-dc-and-not-db-japans-pension-challenge/458174
[6] https://www.dnb.nl/en/general-news/dnbulletin-2022/workers-with-no-occupational-pension-also-save-little-privately/
[7] https://www.gov.uk/government/statistics/workplace-pension-participation-and-savings-trends-2009-to-2021/workplace-pension-participation-and-savings-trends-of-eligible-employees-2009-to-2021 and https://cris.maastrichtuniversity.nl/ws/portalfiles/portal/76426905/EV0721065ENN.en.pdf
[8] https://sgp.fas.org/crs/misc/R43439.pdf

Appendix 2: Pension provision by country

Australia	**Is there a future for private sector DB?** No Generally, Australia has a DC system. All DB schemes appear to be closed
	Why?[22] In 1986 superannuation legislation promoted defined contribution schemes, whilst making the provision of defined benefits more complicated, hastening the movement away from defined benefits
	Is there a future for public sector DB? No
	Why? As above
	Is the alternative DC, or a hybrid design? DC only There are some documents discussing how a collective pooling model might be incorporated in Australia in the future, but this is not an official position
	Selective comments on recent legislation Your Future, Your Super (YFYS) reforms – ostensibly about performance benchmarking to ensure quality – have rapidly led to extensive consolidation. The largest superfunds now have annual contribution inflows of around A$20bn, and absorb 10-15 small funds per year

[22] General reasons (apply to most countries):
- Employer costs are generally higher for DB plans than for DC plans
- From an employer's perspective, contributions to DC plans tend to be a more predictable cost than contributions to DB plans are
- For some employees, DC plans may be preferable to DB plans because DC plan account balances are portable.

Canada	**Is there a future for private sector DB?** No The percentage of private-sector employees who have DB pension plans has dropped from 21.9% in 1997 to 9.2% in 2017, as many employers move toward defined-contribution plans
	Why? No unique country factor identified yet
	Is there a future for public sector DB? Yes
	Why? ▪ Most public funds are well-managed and well-resourced ▪ Conditional indexation ▪ Risk sharing ▪ Contribution rate adjustments
	Is the alternative DC, or a hybrid design? DC and hybrid 14.4% of Canada's pension plan members (952,000 workers in 2020), belonged to plans not classified as conventional DB or DC models. Examples of hybrid pension plans include Air Canada CUPE, Pulp and Paper Industry Pension Plan (PPIP) and York University Canada pension plan

China	**Is there a future for private sector DB?** No
	Why? The enterprise annuities and occupational annuities (pillar 2 in China) are voluntary DC plans. The new private pension schemes are individual DC accounts managed through the "Personal Pension Information Management Service Platform"
	Is there a future for public sector DB? No
	Why? Current public sector pensions are part of pillar I, operates as a PAYG system
	Is the alternative DC, or a hybrid design? Unlikely
	Selective comments on recent legislation Private pensions and related regulatory policy remain underdeveloped

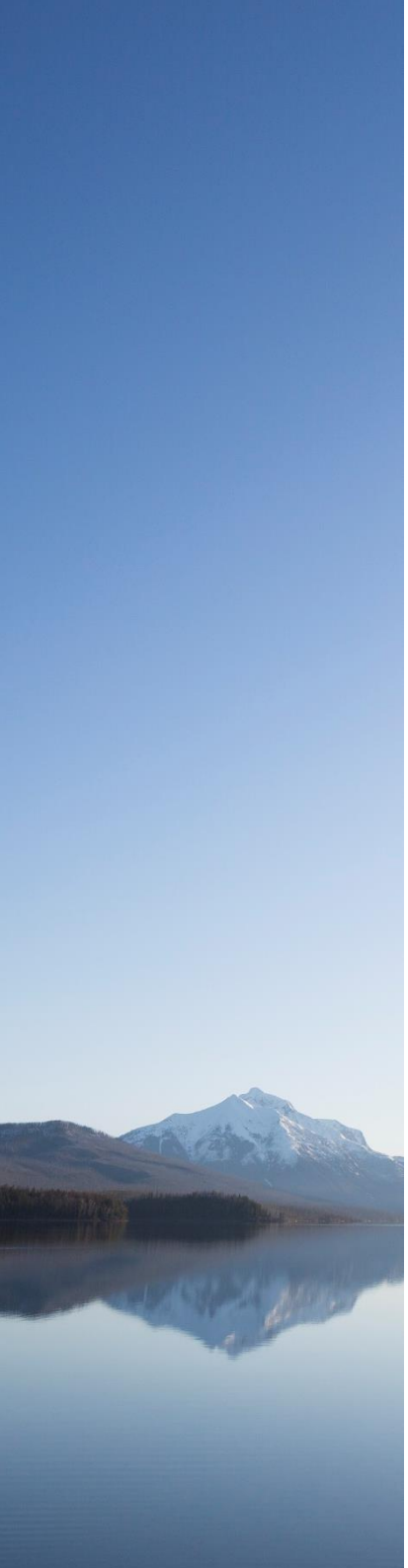
India	**Is there a future for private sector DB?** No
	Why? 88% of the workforce are mainly occupied in the unorganised sector and are not mandatorily covered by the EPFO. For this share of the workforce the Public Provident Fund (PPF) and Postal Saving Schemes have traditionally been the main long-term savings instruments but these have only catered to a relatively small section of this population There is no population wide social safety net
	Is there a future for public sector DB? No
	Why? India had a PAYG scheme prior to 2004. Civil Employees of Central Government who have joined services on or after 1 January 2004 are covered under the Defined Contribution based New Pension System (NPS)
	Is the alternative DC, or a hybrid design? DC
	Selective comments on recent legislation Switch from PAYG to NPS in 2004

Japan	**Is there a future for private sector DB?** No
	Why? For the past two decades DB plans have been the default model of corporate pension funds in Japan. However, since the mid-1990s these pension schemes faced problems due to investment conditions and demographics. Companies have gradually shifted from them to self-reliant DC funds. This trend accelerated after a tax-exempted version of the plans was phased out in 2010. DC plans were introduced in the 2001 financial year and have since grown to cover 40.3% of the people enrolled in corporate pension schemes at the end of March 2017. Many of Japan's biggest companies (Hitachi, Sony, Panasonic) have transitioned their employees from DB to DC or collective DC schemes
	Is there a future for public sector DB? No
	Why? Public pension system has two tiers: a basic flat rate scheme (national pension system) and an **earnings-related plan** (employee pension insurance). Insured persons who are covered by employee's pension scheme, only pay an earnings-related contribution. In 2020, the contribution amount was 18.3% of the salary, and the employers bear the half of it. The **earnings-related pension** benefit is calculated based on the remuneration and insured period of the employees' pension scheme. The benefit in payment is indexed to net average earnings until the pensioner reaches age 67 and price-indexed thereafter. Both operate on a pay-as-you-go basis but have accumulated large reserves which are managed by the Government Pension Investment Fund
	Is the alternative DC, or a hybrid design? DC/CDC
	Selective comments on recent legislation Japan pension system underwent a reform in the early 2000s with the Defined-Benefit Corporate Pension Law coming into force in 2002 and Defined-Contributions Act coming into force in 2001

Netherlands	**Is there a future for private sector DB?** No See Q4 below. In addition, while DB is the most common pension scheme, it has been facing a lot of pressure. DB schemes usually feature conditional indexation. However, many pension funds, including the largest, have not been able to allocate indexation since the financial crisis in 2008/2009 due to their financial position not being sufficient to do so
	Why? Despite the stronger performance in comparison to other systems, in the last decade more problems have arisen due to demographics and increasing number of freelancers who do not accrue pensions and therefore will rely heavily on the basic state pension provision. Low interest rates and having to hold high levels of capital have put too much pressure on pension funds which struggled to achieve their ambition of indexing pensions for many years and have as a result reduced their pensions (in real terms). This has caused a decline in public confidence and support of the system and has led to the system being modernised and reformed
	Is there a future for public sector DB? No
	Why? The Future of Pensions Act expected to become effective as of 1st July 2023 will affect every employer with a pension scheme in place. DB accruals would no longer be permissible from 1 January 2027
	Is the alternative DC, or a hybrid design? Hybrid The new legislation will make Netherlands' pension system predominantly hybrid (defined ambition)
	Selective comments on recent legislation New pension system - 2027 changes – see case study

United Kingdom	**Is there a future for private sector DB?** No The vast majority (90%) of private sector DB is closed to new accrual, with one or two notable exemptions (Railpen and USS)
	Why? Various changes in legislation enhanced security for individual members, but diminished affordability for sponsors (typically the sole-bearer of risk/cost increases)
	Is there a future for public sector DB? Yes
	Why? A weakening, perhaps 'right-sizing', of the commitment has reduced the financial burden. Eg, past legislation in 2015 saw public sector DB change from final salary to career average
	Is the alternative DC, or a hybrid design? DC and hybrid Legislation is going through to allow Royal Mail to create the first CDC plan. Currently, legislation prevents it to be applied to the public sector pension schemes
	Selective comments on recent legislation Legislation enabling CDC/hybrid arrangements is being discussed

United States	**Is there a future for private sector DB?** No Number of participants in private-sector DB plans has declined sharply in recent years. Among all private-sector workers, 67% had access to some form of pension plan in 2020. These workers had access to: DB plans only – 3% DB and DC plans – 12% DC plans only - 52%
	Why? No unique country factor identified yet
	Is there a future for public sector DB? Maybe
	Why? The average funding ratio for U.S. public pension plans increased to 77.8 per cent in 2022. The range is from 31% (New Jersey) to 89% (Wisconsin). The target return is used as the discount rate. Since the financial crisis, six states have replaced their traditional defined benefit plan with a mandatory hybrid plan
	Is the alternative DC, or a hybrid design? DC and hybrid Most of the recent efforts (in public sector) have been a move to either hybrid plans, with a mandatory defined contribution and defined benefit component, or to cash balance plans, where participants are guaranteed a return of 4 or 5 percent
	Selective comments on recent legislation MEPs – multi-employer plans



Limitations of reliance

Limitations of reliance – Thinking Ahead Group 2.0

This document has been written by members of the Thinking Ahead Group 2.0. Their role is to identify and develop new investment thinking and opportunities not naturally covered under mainstream research. They seek to encourage new ways of seeing the investment environment in ways that add value to our clients. The contents of individual documents are therefore more likely to be the opinions of the respective authors rather than representing the formal view of the firm.

Limitations of reliance – WTW

WTW has prepared this material for general information purposes only and it should not be considered a substitute for specific professional advice. In particular, its contents are not intended by WTW to be construed as the provision of investment, legal, accounting, tax or other professional advice or recommendations of any kind, or to form the basis of any decision to do or to refrain from doing anything. As such, this material should not be relied upon for investment or other financial decisions and no such decisions should be taken on the basis of its contents without seeking specific advice.

This material is based on information available to WTW at the date of this material and takes no account of subsequent developments after that date. In preparing this material we have relied upon data supplied to us by third parties. Whilst reasonable care has been taken to gauge the reliability of this data, we provide no guarantee as to the accuracy or completeness of this data and WTW and its affiliates and their respective directors, officers and employees accept no responsibility and will not be liable for any errors or misrepresentations in the data made by any third party.

This material may not be reproduced or distributed to any other party, whether in whole or in part, without WTW's prior written permission, except as may be required by law. In the absence of our express written agreement to the contrary, WTW and its affiliates and their respective directors, officers and employees accept no responsibility and will not be liable for any consequences howsoever arising from any use of or reliance on this material or the opinions we have expressed.

About the Thinking Ahead Institute

The Thinking Ahead Institute (TAI) is a not-for-profit research and innovation network motivated to influence the investment industry for the good of savers worldwide and to mobilise capital for a sustainable future. Since its establishment in 2015, over 90 investment organisations have collaborated to bring this vision to light through designing fit-for-purpose investment strategies; working towards better organisational effectiveness; and strengthening stakeholder legitimacy.

Led by Marisa Hall, Tim Hodgson and Roger Urwin, the Thinking Ahead Institute connects our members from around the investment world to harness the power of collective thought leadership and develop innovative solutions for the investment industry.

Contact details

Tim Hodgson
tim.hodgson@wtwco.com

Jessica Gao
jessica.gao@wtwco.com