



Core DB strategy: Revisiting assets that pay pensions

All defined benefit (DB) schemes still need to pay pensions as they fall due. What's the right balance between cashflow-driven and 'barbell' investment approaches? And how should schemes' strategies differ given low-dependency or buyout objectives?

Executive summary

- While many DB schemes are at or near full funding on a buyout basis, it's crucial not to lose sight of the ongoing need to pay pensions as they fall due as the market backdrop evolves
- Broadly speaking there are two ways to pay pensions:
 1. Use cashflow-driven investment strategies that harness credit and credit-like contractual cashflows, with LDI to plug the gaps
 2. Invest in a diversified multi-asset growth portfolio and LDI, which we call a 'barbell' approach¹
- There are several interesting arguments in favour of each approach that we outline
- Circumstances and beliefs matter, however, and it doesn't have to be an all-or-nothing decision. Overall, we find that a bias towards cashflow-driven investment often makes sense in the endgame

Keeping the DB show on the road

As is well known, many DB pension schemes are now [well funded](#) and aim to buy out within the next few years. In our previous paper: [Constructing buyout-ready portfolios for the endgame](#), we outlined a potential quantitative framework for DB endgame, assuming buyout was on the cards relatively soon. However, approximately two thirds of FTSE 350 DB schemes are still not yet fully funded on a buyout basis.² Furthermore, buyout is not the target for all DB pension schemes and even schemes planning to buy out are likely to need to adopt a 'holding pattern' as they await their opportunity to transact with an insurer. Keeping sight of the core scheme objective – to pay pensions as they fall due – therefore remains of paramount importance.

Even with this backdrop in mind, 'Assets that pay pensions' may seem like a strange title for a paper! All assets held in a pension scheme are intended to pay pensions as this is the primary purpose of a scheme. So, what do we really mean? The phrase is sometimes used to refer to cashflow-driven investment (CDI) strategies which provide reliable contractual cashflows, such as buy and maintain credit, that can be used to pay pensions. They also contribute to liability hedging and can potentially offer a higher expected return than gilts. Other examples include secure income assets which, given their lower liquidity, may be more appropriate for schemes with less leverage.

1. A multi-asset growth and LDI strategy will not be barbell in the sense it includes mid-risk assets such as corporate bonds. However, we still use this name to reflect that these assets are only held for diversification purposes, and not for cashflow matching.

2. Barnett Waddingham [estimated](#) a third of FTSE 350 defined-benefit schemes were fully funded for buyouts as of 31 May 2023.

CDI isn't the only viable way to invest a scheme's assets, however, and trustees may wonder if it's necessarily the best approach for their scheme. At the core is a debate around CDI versus a barbell strategy of diversified growth assets and LDI,³ where corporate bonds are only held in relatively modest amounts for diversification⁴ as part of a multi-asset strategy. Although this is far from a new debate, it is worthy of a revisit given the new circumstances many schemes find themselves in, and to reflect our new thinking in this area.

1. Cashflow-driven Investment

Gilts

We start our story with gilts, which can be used to pay cashflows. It might not be obvious that gilts can potentially be a low-risk asset for anyone, especially when they suffer losses as large as those seen in 2022. One way to understand how matching gilts offer a low-risk strategy, at least for DB schemes, is to note that their market value moves in line with actuarial liabilities. Assets may be down, but liabilities are down too thanks to higher discount rates. For those sceptical of actuaries and their liability assignments, another perspective is that yields rise on a fall in market value. The resulting higher expected return – the yield 'that heals' – means you could make up any losses in due course.

But a simpler explanation is simply 'The gilt will pay the pension promise we've made, potentially with virtually no risk of default. We don't intend to sell them so don't worry about their mark-to-market value.' For example, to match a £100 promise made 10 years from now trustees can buy a 10-year zero-coupon gilt with face value⁵ £100. A focus on cashflows cuts through the complexity.

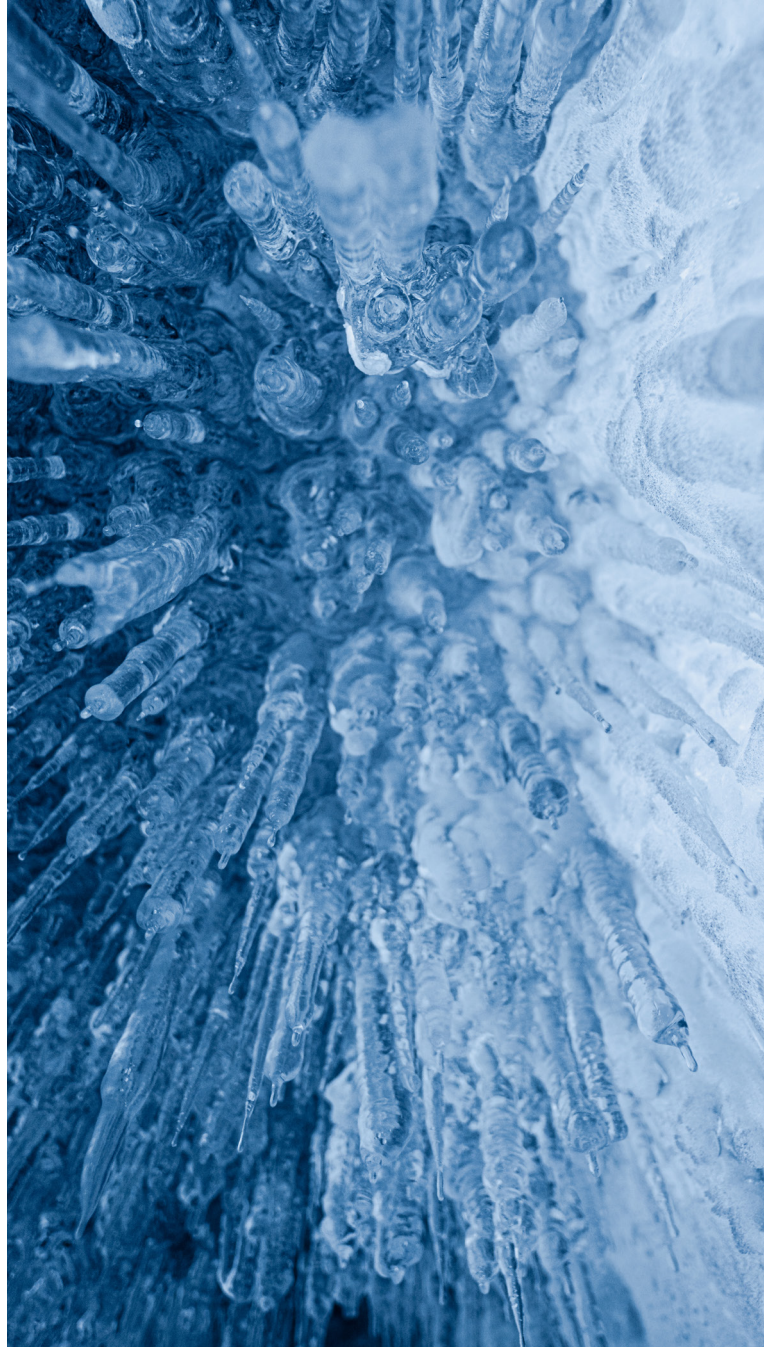
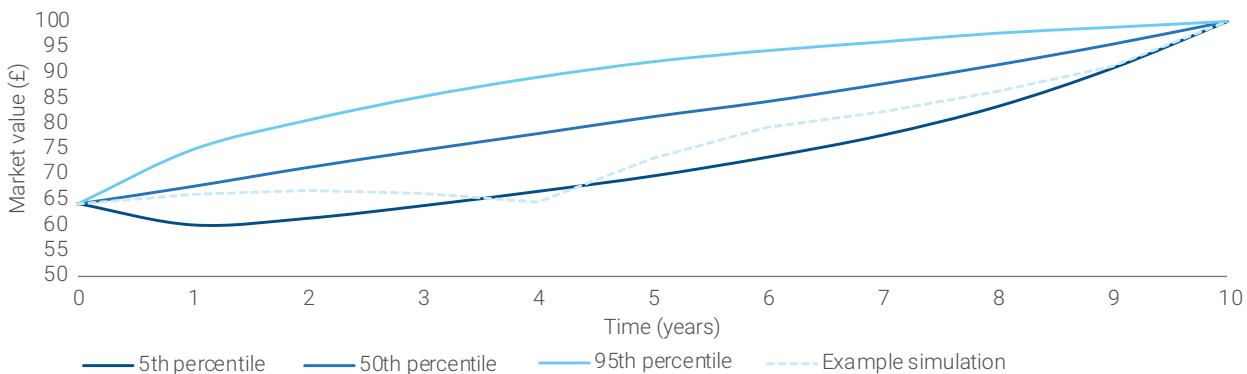


Figure 1: Funnel of doubt for a zero-coupon gilt

Cashflow matching with a ZC 10-year gilt leads to a certain cashflow at time 10



Source: LGIM calculations as at 30 June 2023

Past performance is not a guide to the future. The value of any investment and any income taken from it is not guaranteed and can go down as well as up, and investors may get back less than the amount originally invested

3. With all strategies (both CDI and barbell) the LDI portfolio can be used as the 'cashflow completion manager' to target a cashflow schedule and make ad-hoc payments, given that there will always be imperfections in the alignment of the asset and liability cashflows.
 4. It should be noted that diversification is no guarantee against a loss in a declining market.
 5. The face value of a bond is the price that the issuer pays at the time of maturity, also referred to as the 'par value'.



Matching credit

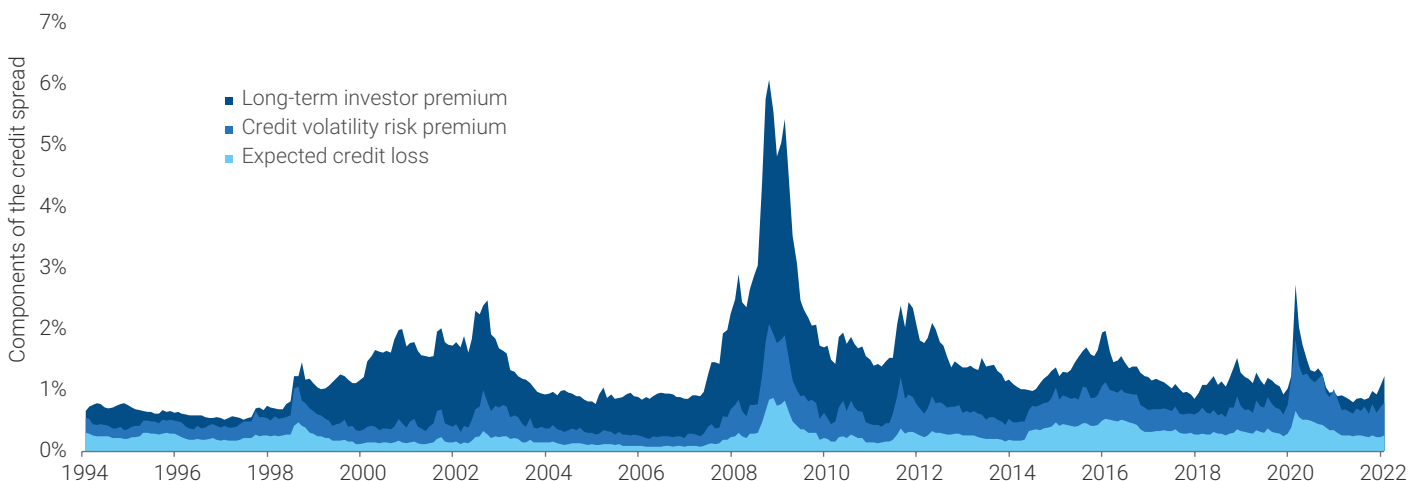
To a decent extent, cashflow-matching credit investors can also ‘look through’ moves in credit spreads, like the gilt investor who can look past moves in gilt yields. This powerful property forms the basis of CDI strategies.

The argument in favour of cashflow-matching credit partly stems from a long-term investor premium, shown in the graph below. When we analyse the spread on corporate bonds, we find they are often considerably wider than can be explained by expected credit losses (from downgrades and defaults) and their uncertainty.

This premium can be explained as compensation for price volatility arising from spread movements, and lower liquidity given corporate bonds are more expensive to trade than gilts. Both factors will be legitimate concerns for a short-term investor, but neither should matter much for investors with a longer time horizon. The above graph refers to investment-grade credit, but a similar story applies to other credit asset classes such as secure income assets.⁶

Figure 2: Decomposition of investment-grade credit spreads

Analysis of corporation bond spreads indicates a substantial long-term investor premium



Source: LGIM calculations, Bloomberg as at 31 March 2022. The chart shows the decomposition of investment-grade US credit implied from equity markets using a structural Merton model.

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6. Secure income assets (SIA) identify cashflow outcomes from illiquid private asset classes, where the income stream often benefits from a range of contractual protections that enhance asset owners rights to maintain expected cashflows (for example, covenant protections, specific security or ring-fenced collateral). The contractual protections of a particular asset will depend on these terms and the financial strength of the counterparty. SIAs are held with the aim of producing a predictable income stream – this income stream is not guaranteed and there is no underwriting of income provided.

Equities

Are equities a candidate for inclusion within CDI? Apart from the fact that dividends are non-contractual, portfolio theory tells us the attribution between dividends and capital gains makes no real difference;⁷ it's the total return that matters. You can always make your own dividends by selling shares if you want more immediate cashflow, or reinvest some of the dividends if you want less. This suggests that whilst cashflows matter for bonds, they matter less for equities.

Is this unfair to equities? Possibly. We should certainly be wary of potential false dichotomies. Stocks don't offer 'contractual' cashflows, but they may still pay a steadier stream of dividends than their volatile prices suggest.⁸

However, there's a bigger issue, at least for closed DB schemes. Equities are a 'perpetual' asset class, with dividends stretching out indefinitely, beyond even the longest-dated benefit promise. As a result, there will inevitably be large price risk at the point of sale, no matter how reliable the dividends are. The full power of CDI derives from the combination of a long-term investor premium and the ability to align cashflows including from principal repayments, at least approximately, with a portion of the liability cashflows.

De-risking and re-risking glidepaths

In theory, one way to create similar-shaped outcomes to holding corporate bonds to maturity is to dynamically de-risk a growth strategy following strong growth performance and

re-risk following weak performance. Could this mean you can have your cake and eat it too, i.e. harness multi-asset diversification and target returns to align with pensions? The idea is illustrated is shown in the figure below under a simplified setup targeting a cashflow at 10 years. In Figure 3, we've plotted the 5th, 50th and 95th simulated values of excess returns under different trading frequencies.

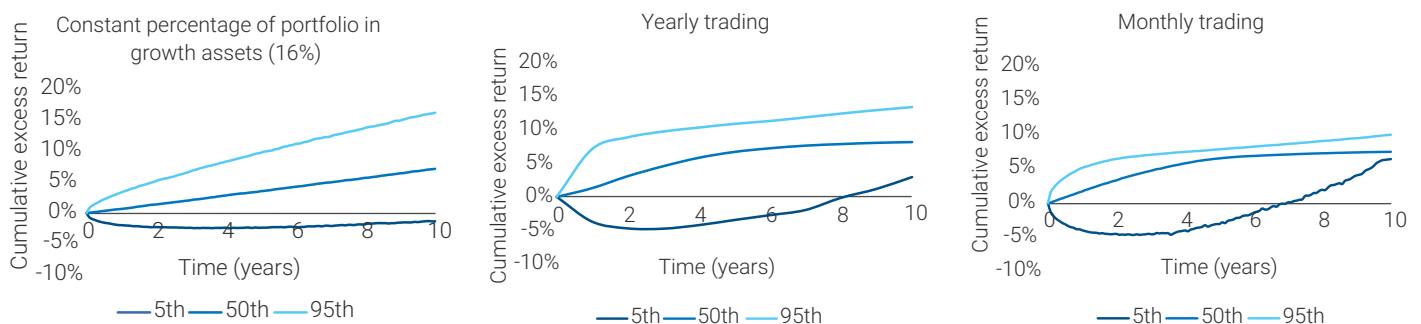
As the frequency of trading increases, the shape of the outcomes more closely resembles what you might expect from a portfolio of 10-year zero-coupon corporate bonds held to maturity. Note the narrowing of the funnel as you approach time 10 years that looks like 'pull to par'. In practice, however, this is unlikely to be a viable solution. De-risking and re-risking have their place but attempting to generate a similar return distribution to CDI requires an extremely variable growth exposure. This would result in a much-increased governance burden and incur significant trading costs (not shown). At least part of the long-term investor premium for corporate bonds is likely to stem from an illiquidity premium that can only be harvested by not trading.

Another potential issue is that selecting the appropriate growth exposure at any point in time relies on a model whose assumptions may turn out to be incorrect.

Buyout awareness

There is, perhaps unsurprisingly, considerable overlap between low-dependency and buyout-aware 'invest-like-an-insurer' strategies, which could make the decision to opt for CDI easier to make and seek to provide a smooth journey from low dependency towards eventual buyout.

Figure 3: Changing the return profile by de-risking and re-risking



Source: LGIM calculations as at 30 September 2023. Excess returns on growth assets are lognormal with median 4% pa and volatility 10% pa. At trading points, the proportion in growth assets held is rebalanced to be in line with the delta of a written put option calculated using the Black-Scholes model. The strike is initially set as 10% out of the money. Trading costs are ignored.

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7. Other than perhaps some minimal transaction costs. Also reflects no difference in tax treatment.

8. This – mean reversion of equity returns – is an academically controversial topic. A summary of the debate can be found [here](#).

2. Barbell strategies

Overall, a strong case for CDI – exploiting the cashflow-matching benefits of credit and credit-like assets – can be made. However, it is not a ‘clear win’ for CDI. There are several concerns that could mean it makes sense not to fully embrace CDI, even if a scheme is very well funded. An alternative to CDI is the barbell approach of combining diversified growth exposure across multiple asset classes with LDI.

Shorter-dated credit

The benefits of simply cashflow matching using corporate bonds are more complicated than for gilts due to credit risk – cashflows are contractual but not as certain as those backed by the UK government due to downgrade and default risk. It turns out that embracing [reinvestment risk](#) by holding shorter-dated credit, can potentially be a [powerful diversifier](#) for matching credit when it comes to ultimately meeting liability cashflows.⁹ The logic is that in scenarios where spreads are high over the horizon there are likely to be more downgrades and defaults, but this is exactly when reinvestment is most attractive.^{10 11}

Further diversification of return streams

A barbell approach seeks to maximise multi-asset diversification. Although there are ways to diversify a CDI strategy such as [by using secure-income strategies](#), ultimately multi-asset diversification is compromised under a CDI approach.

Uncertain liability cashflows

As mentioned earlier, the efficiency of CDI partly relies on being able to generate excess returns in a way that still aligns asset and liability cashflows. This should avoid reinvestment and early-sale risk compared with barbell strategies. To the extent that liability cashflows are uncertain, this could compromise the advantages of CDI.

One source of uncertainty is transfer values. These impact the liability cashflows given that they accelerate payments. If the transfer value basis used by the actuary is consistent with the CDI strategy, then this shouldn’t be an issue in theory. However, the basis will be simplified. There could also be some other issues, such as delays between making the transfer value, making the payment, and adjusting the portfolio. For individual

transfers these imperfections will likely offset each other over time i.e. sometimes acting in the scheme’s favour and sometimes not. However, the risk could be more substantial if there is a bulk transfer.

The other main potential concern is longevity risk i.e. that members live longer than expected. It’s unclear, however, whether this necessarily makes CDI less attractive relative to a Barbell approach.¹²

Optionality

Interestingly, for schemes that are not wedded to one of either buyout or low-dependency, there are also potential [benefits to deliberately mismatching insurer pricing when underfunded](#). The idea is that investing differently to an insurer increases optionality. Whereas the assets of a CDI strategy will tend to move in line with buyout liabilities, a barbell strategy will tend to under-hedge the credit sensitivity of buyout liabilities. If credit spreads widen, this can push an underfunded scheme running a barbell strategy to an overfunded position, allowing them to buyout (or at least lock-in a high funding level by switching to a more CDI-like or buyout-aware strategy). On the other hand, if they don’t widen, the scheme can remain in the barbell strategy as a viable low-dependency solution.

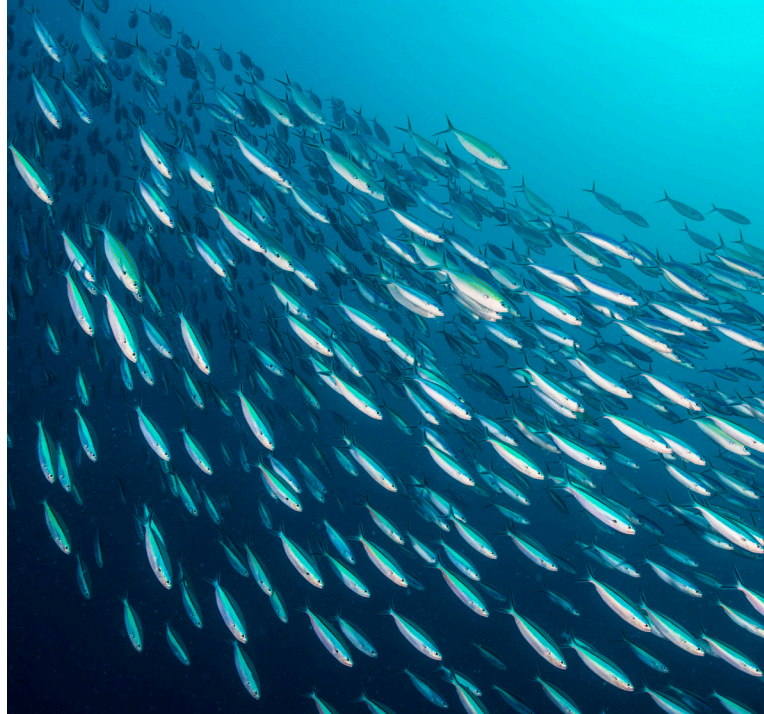


9. Note that if using shorter-dated credit you get less interest rate hedging from credit. As such any interest rate sensitivity gaps must be filled with LDI.

10. Disadvantages of short-dated credit include that it lowers [CS01 hedging](#) and may require higher leverage from the LDI portfolio.

11. High yield bonds could make sense: for low-duration instruments, the impact of downgrades is smaller, so credit quality may be less of a concern.

12. In [past endgame research](#) we sought to maximise the chance all pensions are ultimately paid for a scheme in low-dependency / self-sufficiency. We found it does not lead to a material drop in cashflow-matching credit when underfunded on a gilts basis and promotes more in credit when overfunded on a gilts basis. Some other measures of success, such as expected quadratic utility, suggest uncorrelated risks such as longevity uncertainty [should not impact strategy](#).



What could this look like?

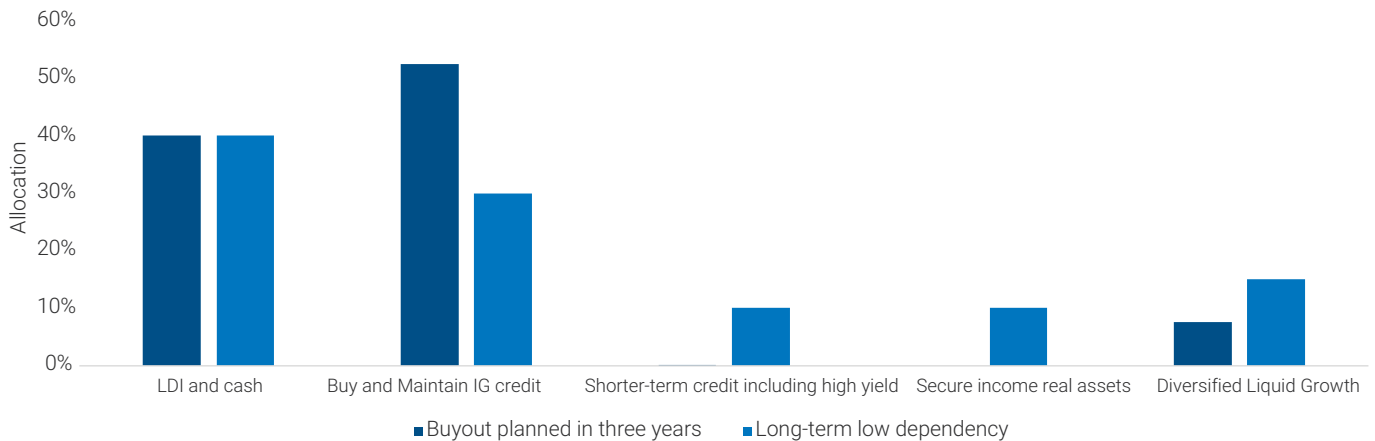
As an example of how trustees may use strategies from both sides, we saw earlier how there is some conceptual overlap of CDI and dynamically de-risking/re-risking barbell strategies.¹³ We believe CDI is a more convenient and practical way of targeting benefit cashflows that aims to harness a long-term investor premium. In contrast, an unexpected large improvement in funding position may be best dealt with by an opportunistic de-risk out of any growth assets.

Purely for illustration, figure 4 below illustrates how a scheme could adopt a different strategy to reflect a low-dependency objective rather than near-term buyout:

For a scheme that’s fully buyout funded and has its eye on buyout in the near term, a simple strategy of LDI and buy and maintain credit can potentially make sense, possibly with some modest exposure to liquid diversified growth drivers. In contrast, a long-term run off strategy might include shorter-dated credit as a long-term diversifier and also accommodate an allocation to secure income assets. It may also, if underfunded on a buyout basis, underweight credit sensitivity relative to a buyout pricing to exploit a potential opportunity to pivot to buyout should credit spreads spike.

Finally, more granular portfolio construction decisions are important – stay tuned to for more on this. For example, trustees may wish to allow for climate-related disruption risk embedded within business models. Temperature alignment can be used as an additional input into investment grade portfolio construction. This may help trustees meet their wider objectives as well as manage risks to achieve their primary aim – paying benefits as they fall due.

Figure 4: How buyout and low-dependency strategies could differ



Source: LGIM, for illustration only.

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13. There is also a link to writing put options. In practice this doesn’t work as a substitute or CDI as the maximum maturity of put options is around 3 years. Elsewhere, however, we [have discussed](#) how writing put options could make sense as part of a diversified growth strategy.

Summary: Know your scheme

To summarise, there are compelling reasons to believe CDI strategies may boost efficiency but also some valid reasons to be cautious. We prefer to take a balanced view and believe there is usually a compromise to be made. The nature of DB schemes liabilities, combined with typically high funding levels, means some 'bias' towards a CDI-like strategy usually makes sense. However, other diversifying sources of excess return are likely to still deserve a role – it doesn't have to be all or nothing. The table below summarises various factors that could influence the balance trustees ultimately land on:



John Southall
Head of Solutions Research



In favour of CDI	In favour of barbell
A lower return target (which may coincide with a higher funding position)	A higher return target that cannot be met with CDI alone
A desire for a smooth journey to buyout	A desire to increase optionality and potentially accelerate the endgame: schemes underfunded on a buyout basis may wish to mismatch insurer pricing without compromising low-dependency objectives
A CDI strategy may provide considerable PV01 , providing a way to target excess returns without necessarily increasing leverage in the LDI portfolio. A less-levered LDI strategy can more easily cope with unexpected liquidity demands.	A strong belief in the benefits of maximising multi-asset diversification
A desire for a low-governance solution for targeting benefit cashflows and harvesting a long-term investor premium.	A belief that you can shape the return profile enough by dynamic de-risking.
A relatively short duration of scheme liabilities being run off. Equity dividends from barbell strategies are unlikely to be enough to meet cashflow demands and so the equity must be sold, potentially during adverse market conditions.	A relatively high duration of scheme liabilities being run off. Equities are a perpetual asset, with dividends stretching out indefinitely, and are less mismatched with longer-duration liabilities or open schemes. A longer horizon also gives time for shorter-dated credit to act as a powerful diversifier of any matching credit.
If/when market conditions indicate an elevated long-term investor premium, as per Figure 2.	Greater uncertainty in benefit cashflows (although this is not always clear-cut)

Key risk: The value of any investment and any income taken from it is not guaranteed and can go down as well as up, and investors may get back less than the amount originally invested

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