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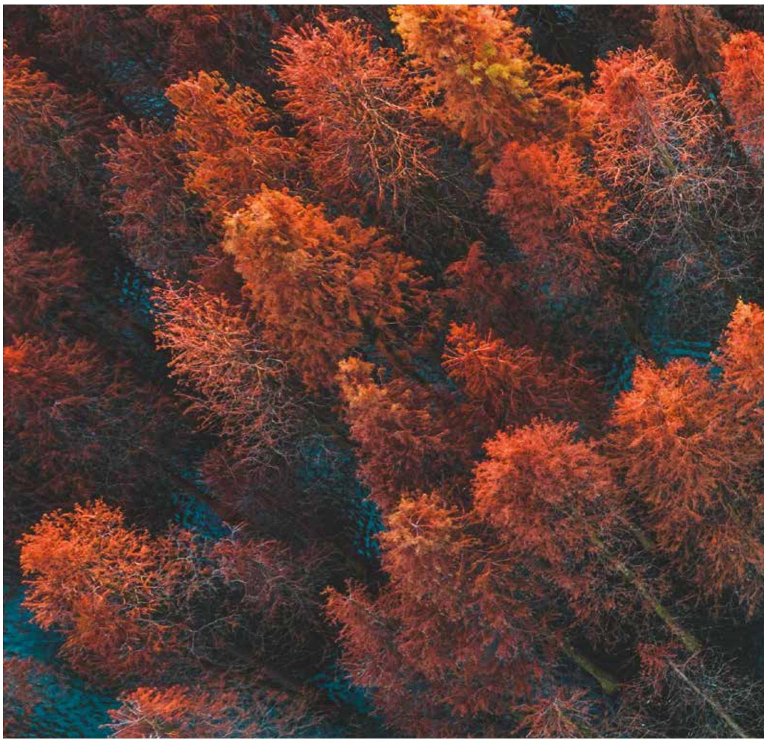
Solutions Outlook 2022

LGIM



Foreword

Welcome to our 2022 Solutions Outlook, where we address what we believe to be some of the key themes for the year ahead.

If we had to pick one chart which influences every topic in this report, it would be Figure 1, which shows the evolution of pension scheme funding levels over the last few years.

2021 was an incredible year for funding levels: LGIM's Funding Level Tracker showed a gain of 84% to 93% from the start of the year to 30 September 2021, consistent with industry data from the Pension Protection Fund ('PPF'). This has caused a step change in the demand for cashflow-driven investing ('CDI') strategies, as schemes look to de-risk further by ensuring they hold sufficient contractual cashflow generating assets to pay their liabilities. We delve deeper into all things **CDI** on page 6.

However, de-risking is not risk-free and covenant risk has been a significant issue since the COVID-19 outbreak. Our research suggests that many schemes could increase the expected proportion of benefits met by making small changes to asset allocation. We believe

Figure 1: Estimated gilt funding level for a typical DB scheme

Source: The LGIM Funding Level Tracker, as at 30 September 2021. **Past performance is not a guide to the future. Assumptions, opinions and estimates are provided for illustrative purposes only.**

maintaining some equity exposure is likely to be attractive for many pension funds as they de-risk, in order to reduce the time to buy-out and improve diversification of return-seeking risk factors. We look at **protected equity strategies** on page 10.

Whilst pension fund solvency is our top theme, it would be fair to say that inflation comes a very close second. The average LGIM LDI client was around 80% hedged (at 30 September 2021), which is a 3% increase since the end of 2020. The recent surge in inflation has highlighted the need to have a strategy which protects against inflation increases. As inflation hits 30-year highs, we assess whether these elevated levels of long-dated inflation can persist in light of the funding level gains made in 2021. See more on **pension fund hedging demand** on page 12.

The combination of these themes is our next topic as we consider what impact inflation could have on credit market fundamentals in 2022. **Credit markets and inflation** are discussed on page 16.

As funding levels improve, risks which might previously have been considered 'second order' have been increasing in importance. For example, many of our clients are being much more dynamic around inflation hedging when they look at pension increases linked to Limited Price Indexation ('LPI'), aiming to lock in gains by selling hedges when inflation rises and buying them back when inflation reduces. LGIM research suggests that LPI[0,5] inflation sensitivity could be around 5% lower than early 2021 and we look in more detail at **Hedging LPI inflation** on page 20.

The final word goes to ESG, where many of our clients are moving quickly to align their portfolios, especially credit, with **net zero objectives** – see page 8 for more. At LGIM, we have invested over several years in research and modelling capabilities that enable us to target this alignment without compromising on the aim to deliver the returns needed to close any deficit. The next 5-10 years will be critical – both in terms of the journey to the endgame and to addressing climate change. We also look at **green gilts** on page 22.

First up, however, is a look at **rates and inflation markets**, on page 4 where we set the scene for what 2022 may hold.

Guy Whitby-Smith
Head of Solutions Portfolio Management

Robert Pace
Senior Solutions Strategy Manager

Inflation never dies?

An overview of what we expect in inflation and rates markets in 2022, with a particular focus on the UK.

The UK economy enters 2022 having approximately recovered all the lost output caused by the pandemic-induced recession, although the weaker profile for the total number of workers in employment, and for total hours worked, suggest there may be a small amount of labour market slack in the economy.

As we look forward, we believe growth is likely to moderate from the strong rates of growth we saw last year, from 7% in 2021 to 4.5% in 2022. As the labour market continues to tighten, we would expect wage growth to remain robust and give the Bank of England ('BoE') confidence to tighten monetary policy.

The economy does face some headwinds, however, as wages are unlikely to rise enough to offset the high levels of inflation and the fiscal tightening that is due next year. RPI is expected by inflation markets to peak in April next year at 7.8% and whilst inflation is forecast to decline, it is expected to remain above levels consistent with the Bank of England's inflation target for several years.[1] The strength of energy prices and the impact of supply-side bottlenecks caused by the pandemic are the main factors behind the strength of inflation in the near term, although the tightness of labour markets (exacerbated by Brexit's impact on immigration) may cause some persistence in inflation that could require some modest monetary policy tightening.

No time to tighten?

The Bank of England ended 2021 with a rate increase from the emergency level of 0.1% (to which it was cut at the start of the pandemic) to 0.25%. In the August Monetary Policy Report, the BoE announced its intention to stop reinvestments of its asset purchases once the bank rate has reached 0.5%. This will be significant when we reach March as the BoE currently holds 70% of the UKT 4% March 2022 gilt which will equate to c.£28bn of cash proceeds when it matures, and the bank rate at the time will determine whether or not this is reinvested. The first Monetary Policy Committee ('MPC') meeting of the new year will be in February and current market pricing suggests that there could be a further hike to 0.5% then. Overall, we anticipate that the BoE will begin to unwind their balance sheet through a cessation of reinvestments in 2022 as part of a wider monetary policy tightening cycle; they have announced that they may consider actively selling gilts if the bank rate reaches 1%.

Never say QE again?

A big change for the market in 2022 will be the end of QE. We expect this mostly to impact asset swap valuations over the year, as the major buyer of gilts falls away; the resulting higher net supply should lead to some 'cheapening' of gilts versus swaps. The first quarter of 2022 could see relatively low net gilt supply due to the large remit reduction in Q4 2021, and the possible reinvestments of the Bank of England's £28bn holding of the March 22 gilts. Starting from Q2, we expect issuance to pick up strongly, which should lower the price of long-end gilts.

In terms of outright yields, the market is pricing in hikes to around 1.25% by the end of 2022,[2] which is above our expectations of a more modest tightening in monetary policy; we expect the bank rate to reach 75bps by the end of 2022. Despite the relatively large number of hikes priced into the near term, rates pricing further along the curve suggest that the market is expecting low terminal rates. In fact, the yield curve peaks in around two years' time and

1. Source: LGIM, January 2022
2. Source: LGIM, 2022

we could see some cuts being priced into the curve after this. On the face of it, we believe the low terminal rate priced in would suggest that inflation expectations over the longer term are subdued and inflation does not warrant higher rates, but this is not what the inflation market is telling us. UK inflation has been a hot topic over 2021, as realised inflation has risen and expectations for near-term inflation have increased. As noted above, the market expects RPI to peak in April at around 7.8% - we haven't seen RPI of this magnitude since the early 1990s. While much of the strength in inflation is due to energy and supply bottlenecks which are likely to be transitory, the inflation market is pricing in inflation above the Bank of England's 2% CPI target across the curve, with 10y10y RPI (RPI will be equal to CPIH by this point) around 3.5%.[3]

We don't think the high inflation pricing is necessarily a sole reflection of where market participants expect inflation to be; it also includes a risk premium due to the high hedging demand for inflation by pension funds and relatively limited inflation-linked supply. We expect this demand-supply imbalance to persist over 2022, as hedging demand will probably remain strong and it is unlikely that the Debt Management Office ('DMO') will materially increase the percentage of index linked gilt supply within the gilt remit.

The US and Europe: the spectre of inflation

Turning to the US, our economists continue to believe that the economy will grow strongly and is at risk of overheating. Unemployment is likely to fall further, leading to strong wage gains. CPI inflation is expected to peak in the first half of the year at close to 7%, before moving lower again, although it is also expected to remain at levels above those consistent with the Federal Reserve's target for several years. Against this backdrop, the Fed recently increased the tapering of its asset purchases which will conclude in March 2022, and is likely to be followed swiftly by rate hikes. The risks to this are that as the economy more visibly overheats, the Federal Reserve delivers a quicker tapering and a more aggressive monetary policy tightening in order to bring inflation back to target. As we believe the US economy is less sensitive to changes in overnight interest rates, the Federal Reserve may have to deliver a greater magnitude of interest rate hikes to have the same impact as monetary policy tightening in other countries.

In Europe, whilst supply side bottlenecks are also leading to relatively high inflation, we do not see the same level of domestically generated inflationary pressures as in the US and UK. The European Central Bank will probably continue asset purchases through to the end of 2022 at a moderated pace and rate hikes are unlikely to be considered until 2023 at the earliest.

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3. Source: LGIM, January 2022

Credit, CDI and sustainability in 2022

Why we think 2022 will be a year of holistic credit portfolio management for pension schemes.

The step change in aggregate pension funding levels has the potential to result in accelerated de-risking over 2022. In very broad terms, we estimate that the progress seen in 2021 could justify a one-off 4% increase in credit allocations for UK defined benefit pension schemes. With total pension fund liabilities amounting to approximately £2 trillion,[4] it is noteworthy that 4% would amount to £80bn, which is a very large sum in the context of the sterling corporate bond market.

So, what is next on the credit journey for pension schemes, and what does this mean for CDI?

Setting the scene

A funding level of 93% on a gilts flat basis (estimated using end-September 2021 market conditions) can also be translated as 100% funded on a gilts + 35bps basis (assuming an average 20 year duration). When considered in this light, a pension fund could (in theory) run on a 'self-sufficient' basis with an asset allocation which leans heavily on investment grade corporate bonds.[5]

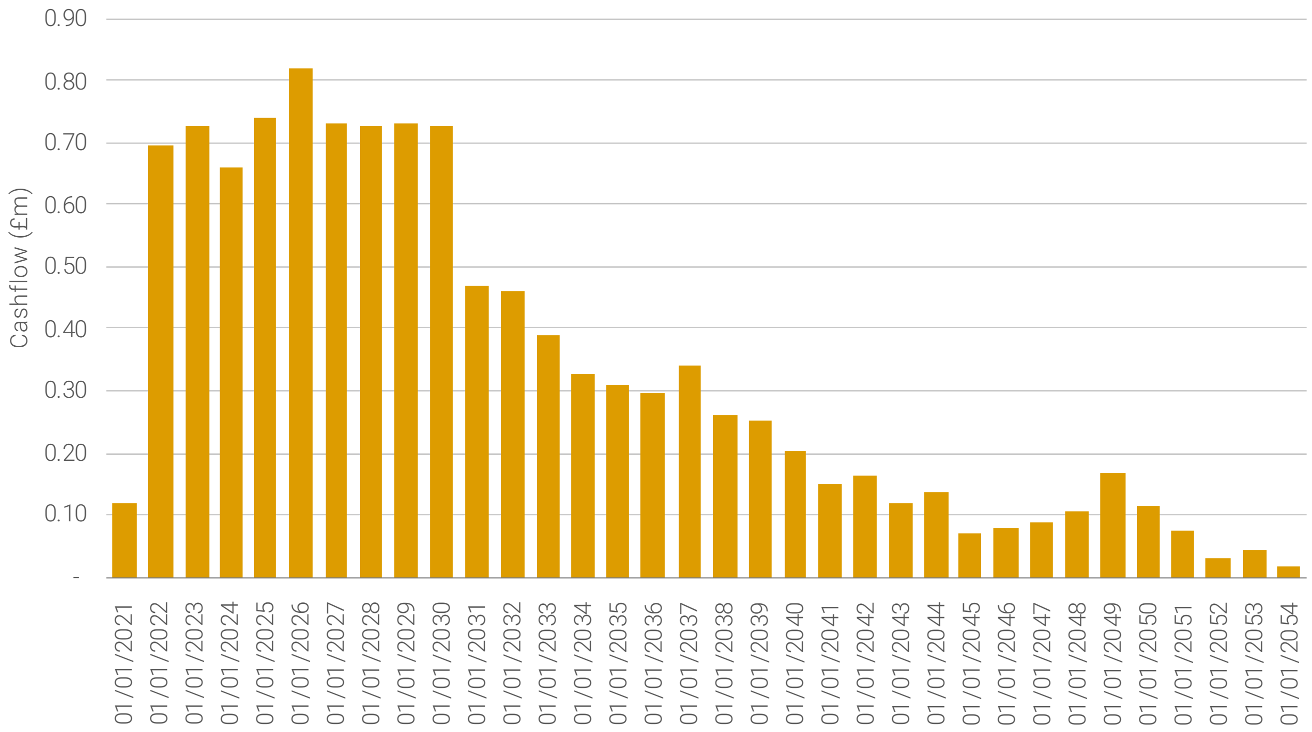
But is self-sufficiency the objective? And how focussed are schemes on cashflows? How important is the matching portfolio to pension funds?

In reverse order, our sense is that the matching portfolio is key for pension funds, as shown by the latest figures from the PPF, suggesting that fixed income amounted to 72% of assets.[6] This implies that funds are likely to devote material governance to this area of their portfolios.

4. Source: ONS as at 31 March 2021 https://www.ons.gov.uk/economy/investmentspensionsandtrusts/bulletins/fundedoccupationalpensionschemesintheuk/january2021tomarch2021
5. In fact, a subset of representative LGIM data shows that the average credit allocation is approximately 40% of matching assets, suggesting this is a common approach already.
6. Source: PPF the Purple Book 2021, which shows data as at 31 March 2021. https://www.ppf.co.uk/sites/default/files/2021-12/PPF_PurpleBook_2021.pdf

Assumptions, opinions and estimates are provided for illustrative purposes only.

Figure 2: A typical maturing buy and maintain cashflow profile



Source: LGIM 30 September 2021. For indicative use only. The projected cash-flow profile is representative of a £10m investment.

In terms of objectives, a recent Aon survey shows how buy-out had overtaken self-sufficiency for the first time as an end objective. According to the Mercer Asset Allocation Survey 2021, 76% of schemes are classified as cashflow negative, with 53% of those that are currently cashflow positive are expected to become negative within the next five years.

Where could £80bn of credit be invested?

Investment grade credit will not be the only solution

We believe that credit alone is not likely to be enough for all schemes as the goalposts are moving. Buy-out is the target for many and closing the gap on a buy-out basis is not the same as a gilts flat basis (especially where non-pensioners are involved).

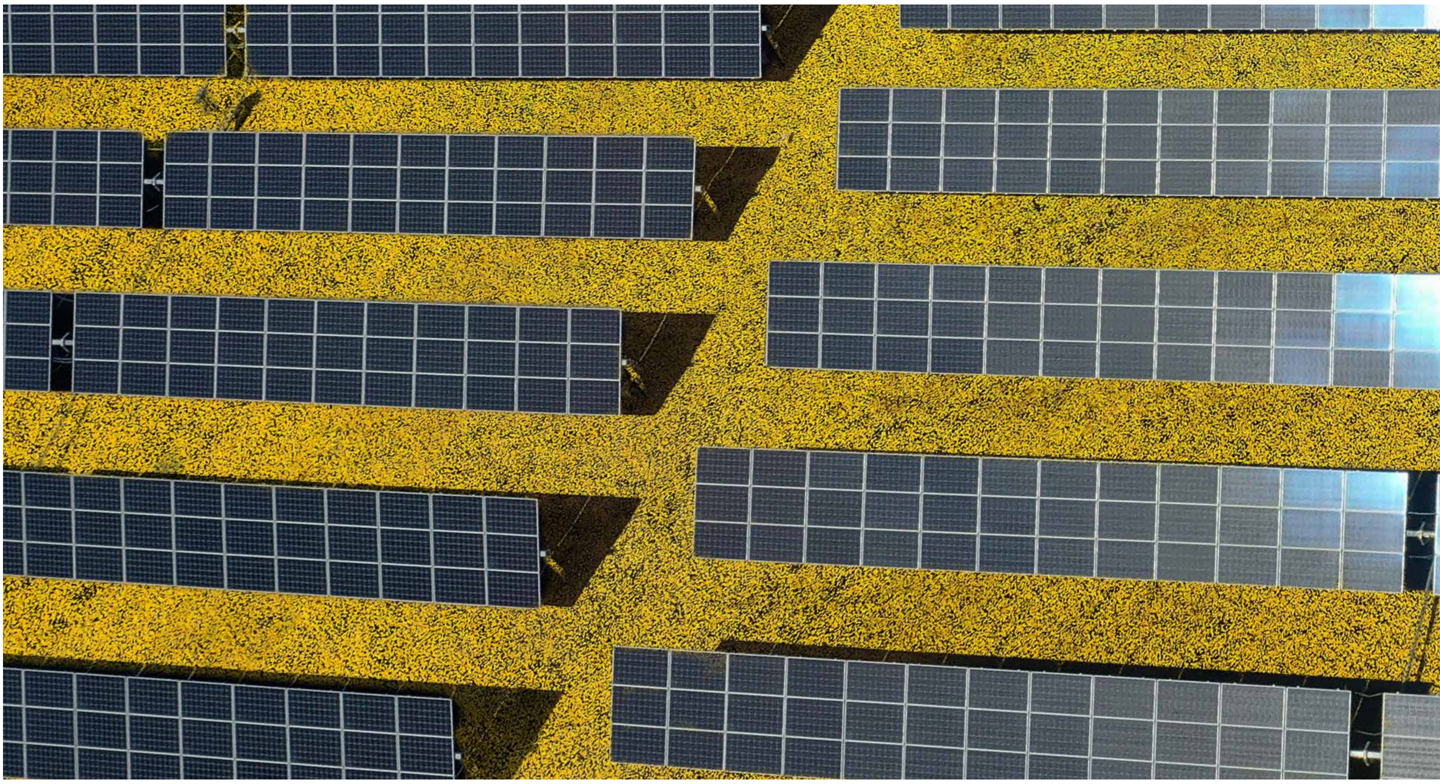
The use of CDI

In light of the challenging cashflow situation for the majority of schemes, higher funding levels, and a desire to be prepared for buy-out, we anticipate greater demand for cashflows which align with expected liability payments. We've seen this through investments in maturing buy and maintain funds that are designed to pay out all coupon and principal payments, which naturally roll down over time and eventually mature. Figure 2 shows an aggregated version of investments in our Maturing Buy and Maintain Funds as an example of how many pension funds have chosen to generate income whilst using LDI (LDI positions not shown on chart). As the shape of the profile shows, the most common strategy is to ensure regular cashflows in the first 10 years.

Indeed, even in a CDI portfolio, there is evidence to suggest that combining short-dated and long-dated credit could maximise efficiency and improve outcomes. When considering short-dated credit, there is a balancing act between increased reinvestment risk and reduced downgrade losses. Despite the apparent reinvestment risk, there is the argument that credit spreads are mean reverting; this reduces the concerns over reinvestment risk, as reinvesting enough times can increase confidence in achieving an average spread. By combining LDI with both short and longer dated credit, the LDI portfolio could be used to compensate for any PV01 mismatch across the liability risk profile which isn't met solely by the credit aspect. In scenarios when spreads widen, downgrade losses increase for long-dated credit, but short-dated credit can be reinvested at higher spreads.

Global reach

£80bn is a sizeable sum when compared to the UK credit market; as such, we expect schemes to continue to complement sterling allocations with overseas allocations.



Sustainable credit portfolios

It's not only client allocations which are evolving, but also the nature of the asset classes, as schemes seek to incorporate ESG considerations into portfolios. For credit in particular, this historically may have meant a focus on exclusion lists, but over recent years this has further developed into integrating risks directly within the credit research process, and engaging directly with issuers to aim to improve their longer term sustainability credentials.

For schemes looking to incorporate ESG criteria into their portfolios to a higher degree of sophistication, ways to achieve this include:

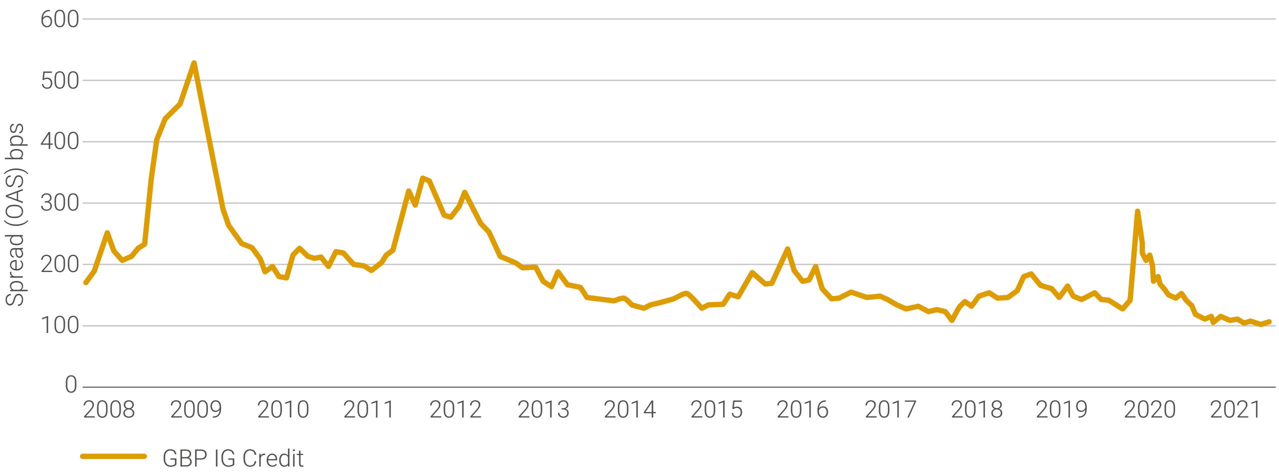
- **Adding climate metric targets to portfolio objectives -** This ranges from a simple carbon metric reduction objective to more holistic and forward-looking portfolio temperature alignment targets, such as reaching 1.5C by 2030 and net zero by 2050.
- **Impact investing and UN Sustainable Development Goals ('SDG') alignment -** For schemes that want to look beyond climate and environmental factors, aligning portfolios to the UN SDGs brings a broader scope of social concerns into the field of possibilities.

Implementation - what to consider when adding credit?

One important factor to consider is recent and historical credit spread levels. Figure 3 highlights that sterling investment grade credit spreads have been in the upper half of their range for only 8% of the time since the beginning of 2008, and in the lowest quartile for 75% of the time. So, what is the best time is to obtain exposure?

One potential solution is using CDS (credit default swap) indices as a way of speeding up implementation for increasing credit exposure to aim to capture favourable market movements. Going in to 2022, there is the prospect of credit spreads widening slightly and showing more volatility than in 2021, against a backdrop of steady economic improvement and tightening of central bank policy, leading to some modest and isolated increases in credit risk.

Figure 3: UK investment grade credit spreads



Source: BoAML, Bloomberg as at 30 November 2021. **Past performance is not a guide to the future.**

We therefore believe that going into 2022, clients will be considering a greater range of options regarding not only combinations of short and longer dated credit alongside their LDI portfolios, but also in terms of incorporating ESG factors into their allocations. As client requirements close to buy-out become more complex and pressure to incorporate factors such as net zero targets increases, we believe this could offer the possibility for more holistic and efficient portfolio management.

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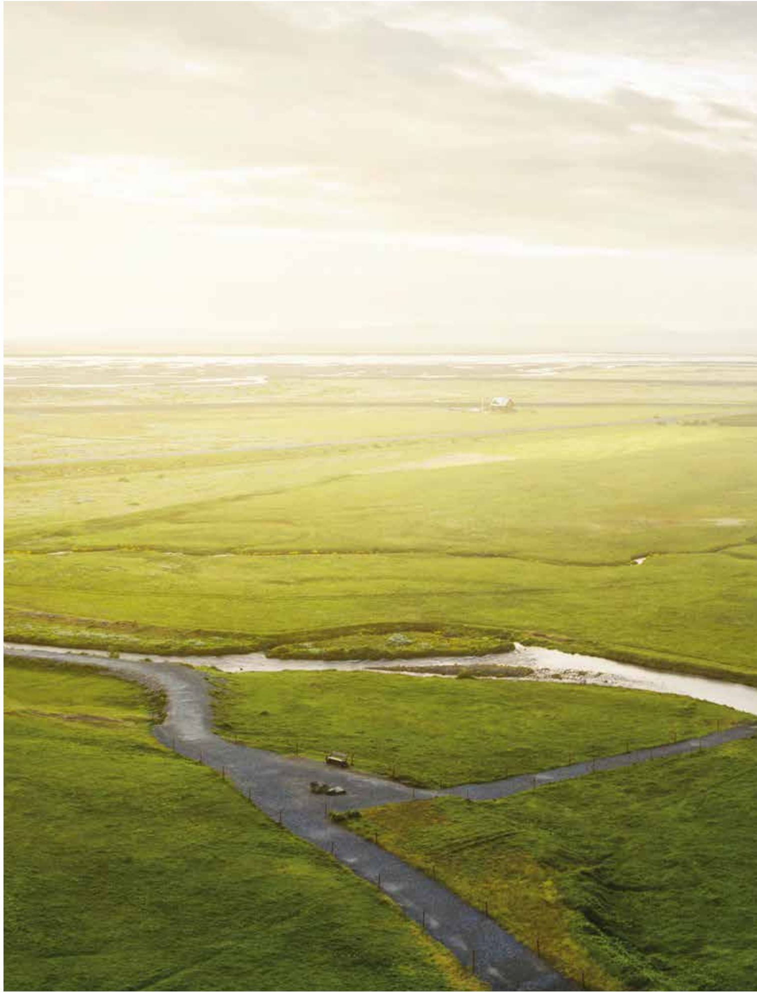


Alpha to Omicron: equity protection strategies in 2022

An overview of the role we expect equity protection strategies to play in portfolio construction over the year ahead.

Strong returns from growth assets were a key driver of the large improvements in scheme funding levels over 2021, with global equity markets reaching new highs following a strong economic recovery across the globe. The last quarter of the year brought a less sanguine environment for risky assets: we saw market corrections in September, markets shaken by the rapid spread of Omicron at the start of December, and renewed lockdowns across Europe. The lingering impact of COVID-19 will continue to feed heavily into growth asset outlooks over 2022, with markets sensitive to developments in vaccine rollout across emerging markets, booster plans in developed economies and the spread of new variants.

The evidence about the increased transmissibility of Omicron has certainly added to the tail risk of COVID-19 and markets will watch closely for news around ease of transmission, rates of hospitalisation and resistance to vaccines. The possibility of new variants leading to renewed restrictions and travel bans will continue to present a significant risk to holders of growth assets over the coming year.

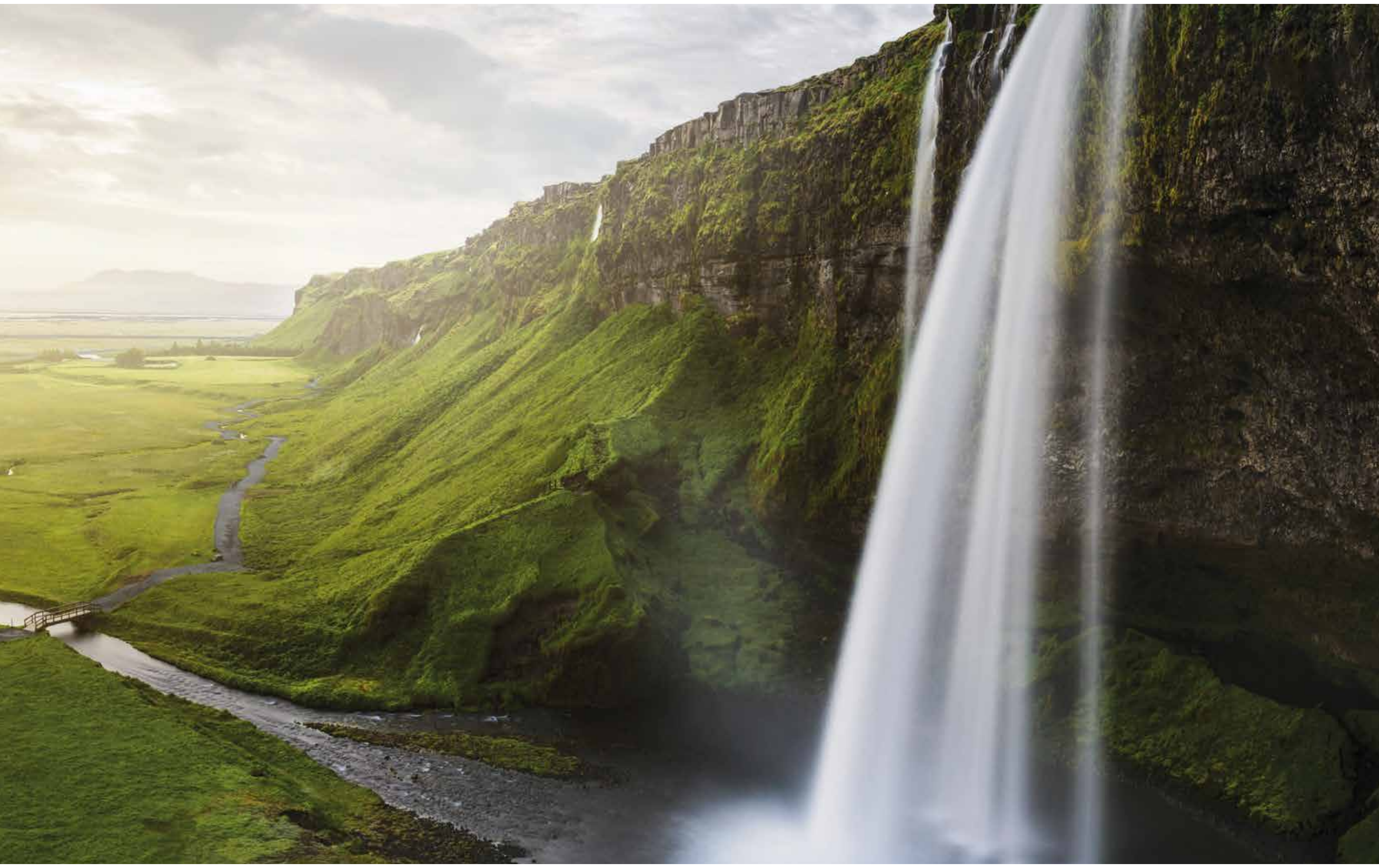
A second headwind facing holders of risky assets over 2022 will be the path of inflation and resultant actions of central banks. As we've discussed elsewhere in this outlook, 2022 will see central banks aiming to tighten monetary policy and remove stimulus which has been supportive of risky assets over the past decade. A key concern is that, should inflation prove stronger and more persistent than expected, this may force central banks to tighten policies more aggressively.

Too cautious, too early?

Nonetheless, as our Asset Allocation colleagues write in LGIM's 2022 CIO Outlook, 'it's expensive to be too cautious, too early'. Equities tend to perform well both in mid and late-cycle periods, so the team remain positive despite the headwinds described above. Other factors supporting a favourable stance on the asset class include investor positioning and sentiment, which do not appear overly ebullient; and valuations, which are not seen as excessive.

The economic recovery through 2021 has seen many schemes refocus on de-risking to lock in gains, a trend we

Forward-looking statements are, by their nature, subject to significant risks and uncertainties and are based on internal forecasts and assumptions and should not be relied upon.' and 'It should be noted that diversification is no guarantee against a loss in a declining market.



expect to continue over 2022. However, this approach could see schemes missing out on positive market returns; despite the heightened tail-risks, we have a positive outlook on equities over 2022.

Striking a balance

Given the balance of positive equity outlook but with increased tail-risks, more schemes may seek to hedge these risks via equity options rather than exclusively de-risking into credit, thereby allowing for upside participation to be retained. This may look particularly attractive if credit spreads continue to tighten over 2022, limiting the upside from credit returns. For schemes looking to reduce their time to buy-out, close any funding gaps and provide a buffer against longevity, the potential higher returns from equity exposure will continue to be important, as well as for providing diversification in portfolios.

The benign market conditions over most of 2021 meant that implied volatility, a key input into the pricing of equity protection strategies, decreased; this made the purchase of protection more cost-effective at the same time as markets were hitting all-time highs. However, we saw a rise in the cost of protection towards the end of the year as market volatility increased and if market sentiment continues to be cautious over 2022, structures designed to sell implied volatility (such as put spread collars) may continue to be popular among schemes looking for equity protection.

Another trend that may continue over 2022 is the increasing popularity among pension schemes of systematic equity hedging strategies. These strategies maintain protection via option overlays over time by continuously rolling the positions to reduce equity volatility and drawdowns, whilst retaining meaningful upside participation.

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Head of Derivative Overlays

Inflation assets – supply versus demand

As the debate rages over inflation and market pricing, we ask how pension fund valuations might impact demand for inflation-linked sterling markets.

In light of the macro picture detailed elsewhere in this outlook, defined benefit pension schemes face a key question next year: will the demand for inflation assets, in light of buoyant pension fund valuations, more than offset their appearance as expensive?

With nominal yields slightly up in 2021 and real yields slightly down – and a lot of this risk hedged anyway – it is growth assets that have driven some of the large improvements in funding levels (as discussed in the introduction and shown in Figure 1).

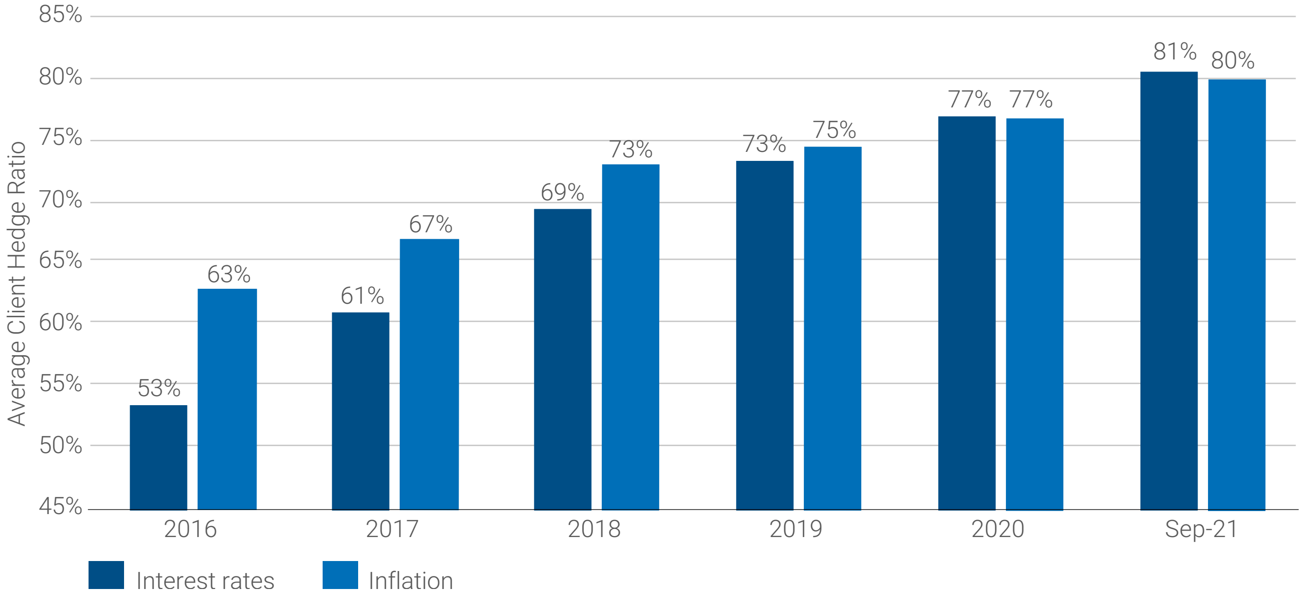
Our research indicates that average funding levels have improved this year from 84% to 93%; the Pension Protection Fund Funding Level Index tells a similar story. Anecdotally, this is supported by our sense is that buy-out or buy-in conversations are becoming more common.

Pension funds typically link target hedging goals to their funding levels. Based on improvements in the latter, we estimate that structural demand for inflation hedging could exceed £80 billion.

Hedging in 2021

Some funding level gains can filter through to hedging demand relatively quickly, when included within liability driven investment (LDI) mandates. If this is not the case, or governance models slow down such activity, some demand will lag. Figure 4 shows our own average hedge ratios, representing an average of LGIM's bespoke clients.

Figure 4: Average hedge ratios



Source: LGIM, as at 30 September 2021. **Past performance is not a guide to the future.**

We estimate that realised demand for inflation assets over 2021 could have amounted to around 3%, or about £40 billion. This indicative figure would also be influenced by potential changes in liability benchmarks.

Other factors can also influence demand. Some funds have not yet reached a steady-state target, where the hedge ratio is comparable to funding level. This 'catch up' is likely to result in extra demand. Estimating the average impact is difficult, but a 1% increase in hedge ratios would likely amount to about £13 billion.

Hedging liabilities is a moving target, not least due to changing assumptions about longevity and inflation, and as transfers out take place. These dynamics, whose overall impact may be relatively small, can also shift demand both in size and location on the curve.

Supply and market pricing

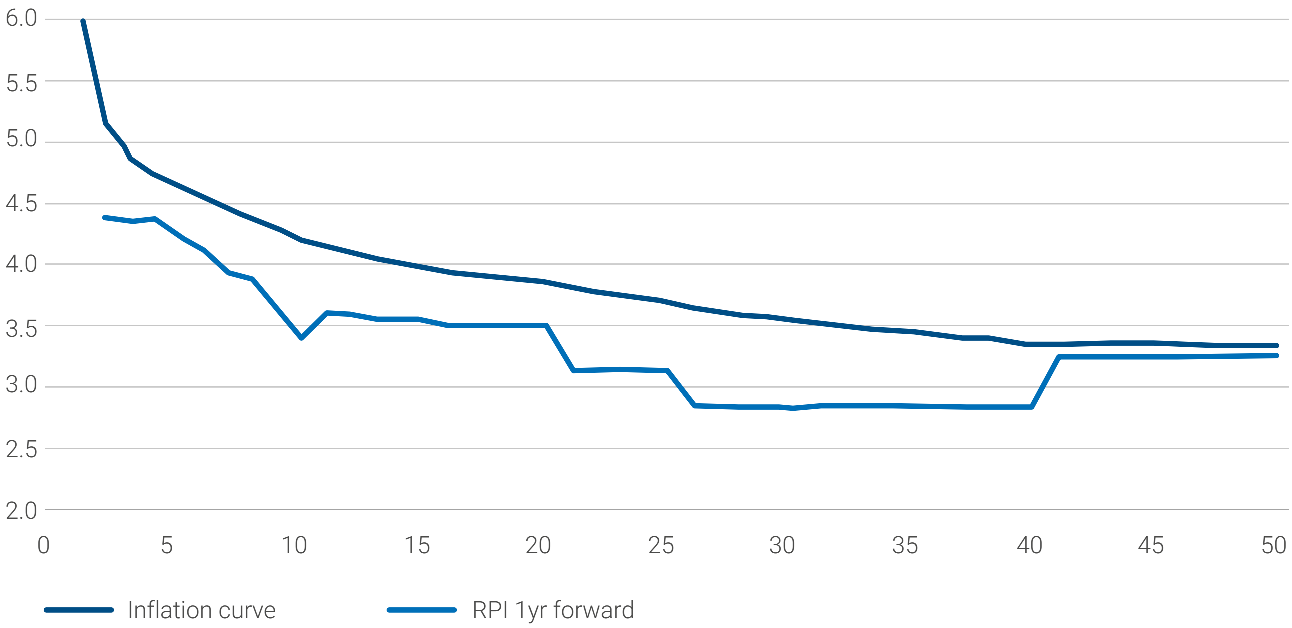
If we aggregate demand, and consider what might have taken place already, we can compare this against estimates for the supply of index-linked gilts for fiscal year 2022/23, which the Office for Budget Responsibility anticipates at £27 billion, shown in Figure 5.

Figure 5: Key factors and net position

Area	Inflation demand in 2022 £	Explanation
Funding Level improvement over 2021	82bn	Improved funding levels lead to higher hedge ratios...
Actual hedging over 2021	-39bn	...but some demand due to funding level improvement has already fed through
New hedging demand @ 1%	13bn	Some pension funds looking to 'catch up' and move hedge ratio closer to funding level
Liability consideration	-	Longevity, CPI assumptions, transfer values, future accrual, LPI deltas expected to be small and broadly offset
Total demand for 2022	**56bn**	
Index-linked gilt supply 2022	**27bn**	
Net demand = Total demand - supply	**29bn**	

Source: LGIM, as at 30 September 2021. **There is no guarantee that any forecasts made will come to pass.**

Figure 6: Inflation pricing



Source: LGIM, as at 30 September 2021. **Past performance is not a guide to the future.**

In light of this picture, it is instructive to consider current market pricing. Inflation forward rates beyond the 10-year point typically range from just under 3% to 3.5%. Inflation levels may trade above the Bank of England's (BoE) target of 2% for a number of reasons, including the evolution of RPI to CPIH and greater comfort at the central bank with higher inflation than deflation.

On fundamental valuation grounds, there is a premium built into the forwards. Nonetheless, given funding level improvements and limited index-linked gilt supply, the catalyst for a pullback is unclear, although it would most likely be a reversal in the positive environment for risk assets, which would impact both short-dated inflation and funding levels.

Strategy considerations

Higher inflation rates are not in themselves bad news for pension funds. Liability-hedging programmes have protected most schemes from rising inflation expectations, while growth assets have spurred significant funding-level gains. This opens up the possibility of funds taking advantage of market conditions, where they are ahead of their journey plan, to consider de-risking opportunities.

Augmenting LDI hedges with collateral waterfalls (for example, allocating to absolute return bonds) could help keep expected returns at appropriate levels, while better automating governance around leverage management.

Against this backdrop, many funds are likely to look at how to manage more specific end-game risks. This could mean thinking about buy-ins or allocating more to income generating credit; it could also mean revisiting the approach to hedging and considering whether CPI risk is more meaningful or whether LPI needs to be hedged more actively.

Robert Pace
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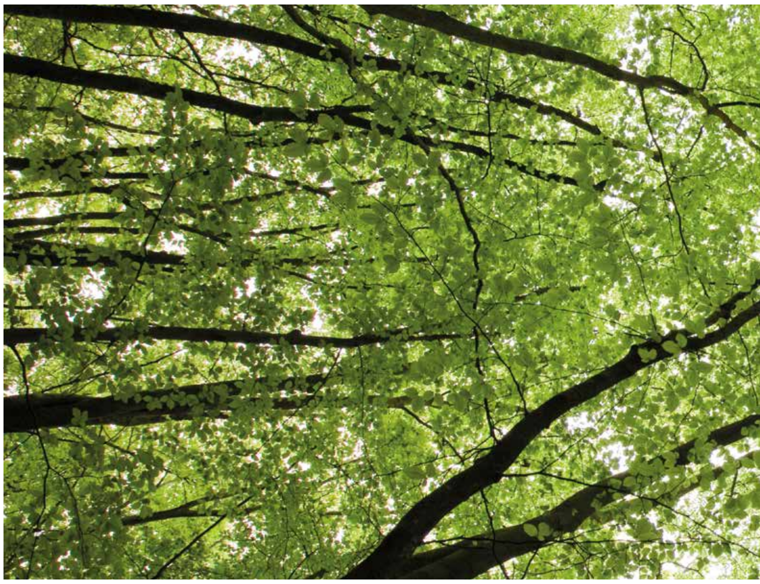


The effects of inflation on credit

If inflation proves more persistent than transitory, how could this affect credit fundamentals?

Many investors, policymakers and individuals would struggle to remember the last time we had a sustained period of inflation. In recent years, we've become used to benign inflation amid broadening globalisation, shifting demographics, and technological advances. These forces are still with us, but concerns are focusing on whether near-term inflationary pressures will be sustained.

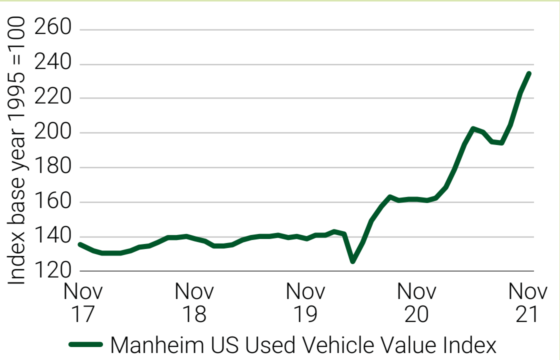
Whether transitory or persistent, inflation can be clearly seen today. A strong economic recovery, a tightening labour market and supply chain bottlenecks have been fanning the flames, with UK and US recent CPI inflation reaching 5.1% and 6.8% respectively in November 2021.

Figure 7: The great inflation debate – transitory or persistent?

Transitory

- Prices of **raw materials** such as lumber have subsided since the spike earlier in the year
- **Semi-conductor** shortages that caused rises in used car prices are expected to be resolved
- Long-term **disinflationary trends** remain (such as demographics, globalisation and technology); **base effects**

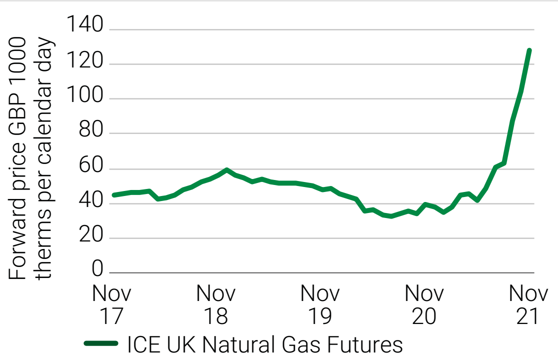
Manheim US Used Vehicle Value Index



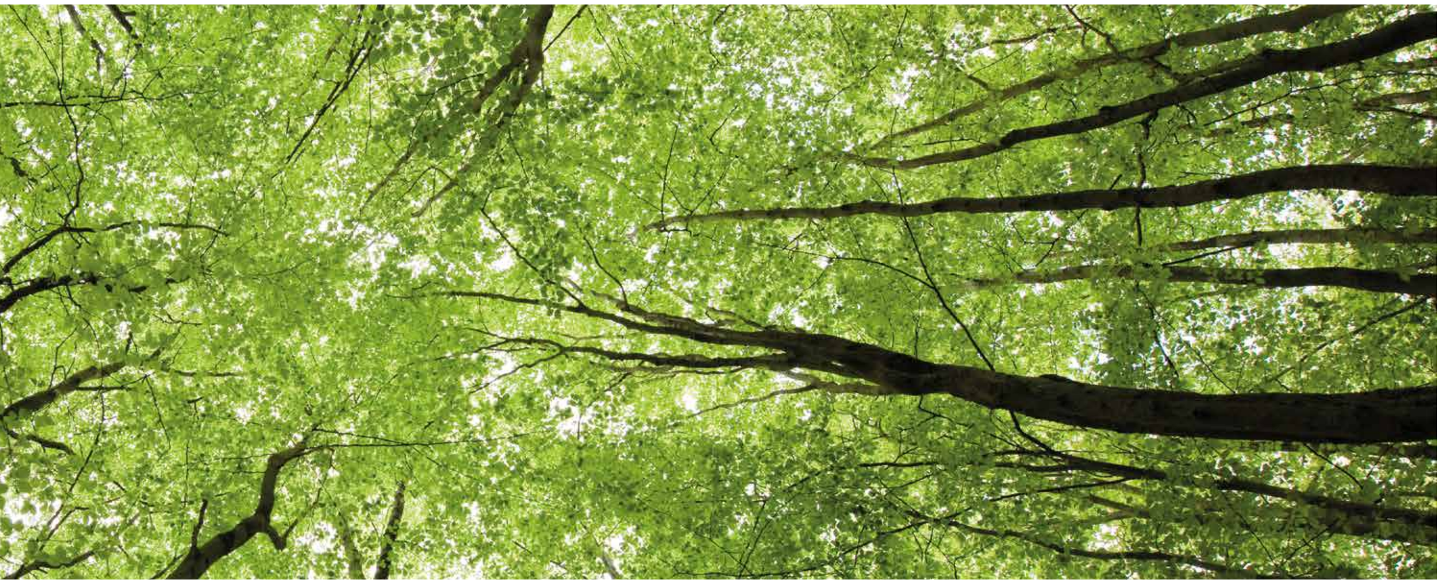
Persistent

- Signs of **wage increases** emerge as many sectors experience labour shortages (exacerbated by Brexit)
- **Rent increases** are expected following a recent boom in house prices
- Prices of **commodities**, such as oil, gas and copper, have been moving up

ICE UK Natural Gas Futures



Source, Bloomberg, LGIM December 2021. **Past performance is not a guide to the future. Reference to a particular issue or issuers is on a historical basis and does not mean that the stock is currently held or will be held within any LGIM funds. The above information does not constitute a recommendation to buy or sell any security.' and 'Assumptions, opinions and estimates are provided for illustrative purposes only.**



Central banks had been dismissing the increase in inflation as 'transitory', given the supply chain bottlenecks caused by the pandemic. They argued that raising rates to combat these types of 'global' supply shock pressures would have little effect upon domestic inflationary forces.

However, central bank rhetoric has been shifting. In November 2021 at a Congressional testimony, Federal Reserve Chairman Jerome Powell suggested that an acceleration in the tapering (or removal) of quantitative easing was still on the cards, despite uncertainties about the impact of the Omicron Covid variant, and he talked about retiring the word 'transitory' when describing inflation pressure. Policymakers and investors will be looking carefully at the 'second order' effects in the form of higher wage demands. The question is, do workers have sufficient leverage to demand higher wages to help offset (and sustain) the price rises that we've seen?

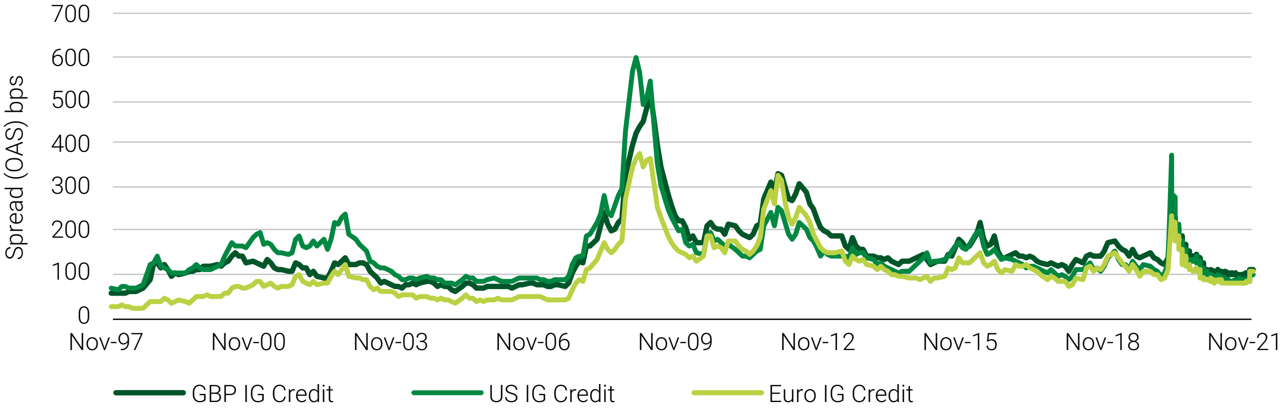
An additional comment by Powell that 'wages are running at a brisk pace' has been taken by some as an admission that wage demands are, at least in part, being met.

So, if inflation does prove to be more persistent rather than transitory, how could this impact the credit fundamentals of corporate issuers?

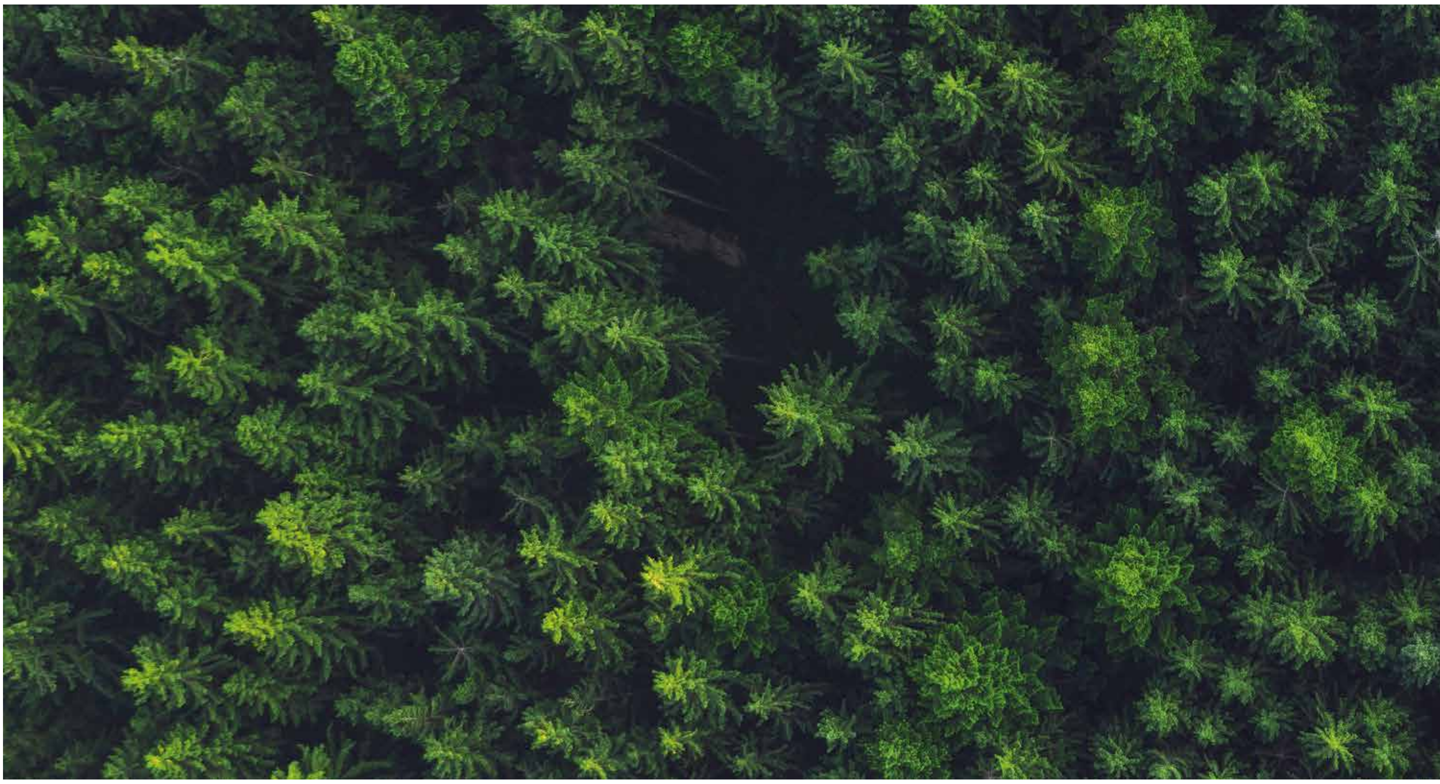
Higher financing costs are likely to be manageable

Corporate bond issuers can be impacted in a number of ways, the first of which is through financing costs. If central banks raise rates and/or if markets price in further rate rises, then corporate bond yields will rise and debt refinancing costs will go up. However, in general we expect this impact to be muted. Corporates have benefited from central banks providing huge amounts of support and liquidity, helping credit spreads hit cyclical lows (as shown in Figure 8). This has allowed companies to term out their debt on favourable terms and has provided breathing space to build up balance sheet liquidity.

Figure 8: Investment grade spreads in a historical context



Source: BoAML, Bloomberg, December 2021. **Past performance is not a guide to the future.**



Can corporates pass on higher costs?

For investment grade issuers, we don't envisage a material change in default risk due to the current bout of inflation, as it's expected that for most sectors, higher costs including those from wages, can be passed on to end consumers who, on average, have accumulated excess savings during the course of the pandemic. However, different sectors face different dynamics and certain issuers will no doubt see price pressure beginning to impact margins, while others are more capable of passing through input cost rises to customers.

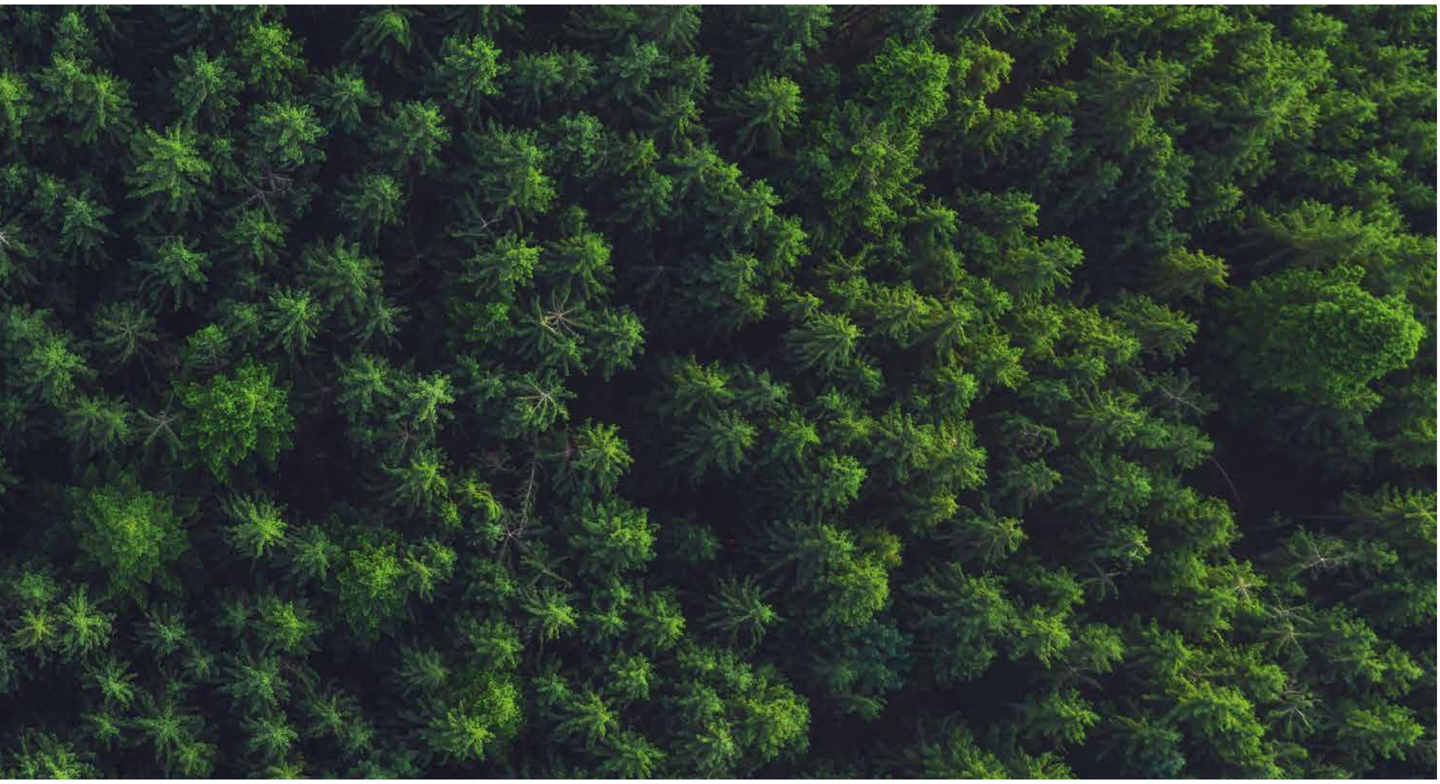
Figure 9: Some sectors can pass through inflation easier than others

Ability to pass through inflation

Pass on prices ↑ / Cost pressures ↓

Regulated utilities (UK)	Regulators permit the pass-through or higher prices to end customers
Banks	Steepening unterest rate curves are profitable for banks
Energy, basic resources (mining, chemicals)	Commodities are high in the value chain, but issuers exposed to freight rates and tightening labour
Property (logistics, data centres, residential)	High demand, debt financing costs fixed, rents may have inflation linkage
Healthcare	Demand relatively inelastic, i.e. non-cyclical
Industrials	In the middle of the economic supply chain, exposed to supply-chain bottlenecks, upstream prices
Consumer durables, capital goods	Demand potentially falls with inflation for non-essential goods, such as a new TV or car
Consumer cyclicals (i.e. retailers)	Substitution effect-some elect to absorb costs to protect market share

Source: LGIM December 2021. **There is no guarantee any forecasts made will come to pass. Reference to a particular issue or issuers is on a historical basis and does not mean that the stock is currently held or will be held within any LGIM funds. Assumptions, opinions and estimates are provided for illustrative purposes only.**



At one end of the spectrum in the UK we have regulated utilities, which are permitted by regulators to increase prices in increments based on official inflation statistics. The logic follows that higher inflation may result in improving credit quality as the revenue base is effectively inflation-linked, whereas a significant portion of their outstanding debt is fixed, resulting in falling leverage over time (all other things remaining unchanged). At the other end of the spectrum, we have retail related issuers who are located at the end of the economic value chain. While the sector is mixed, issuers with high pricing power and brand loyalty have more ability to pass on cost inflation to consumers than those with low pricing power, where consumers can easily switch to alternative products. Retailers face headwinds from both raw material price increases and supply chain bottlenecks putting pressure on margins.

The economic cycle

An environment of sustained inflation against a backdrop of solid economic growth where many corporates are finding their costs rising but also their revenues rising is, in our opinion as investors, not a bad place to be. As long as real interest rates remain, low credit metrics could be enhanced and the real value of fixed rate debt gradually eroded. Central banks currently seem determined to keep real interests at their low (negative) levels, even if nominal interest rates rise. The risk is that central banks fall significantly behind the curve and then have to raise rates sharply, slamming the brakes on the economy and consequently causing harm to corporate fundamentals through a recessionary feedback loop of falling demand and rising unemployment. This is the key risk that would put credit quality under pressure.

Conclusion

For investment grade issuers, we don't expect the current bout of inflation to cause a material change in default risk, where it's anticipated that rising input costs can be passed on to end consumers. Financing costs are low by historical standards and many issuers have taken advantage of favourable liquidity conditions to term-out their debt. Corporate balance sheets are generally speaking healthy, which suggests a period of inflation should have minimal impact upon rating quality. As a general rule, we believe that businesses further up the supply chain should find it easier to pass through cost inflation to customers, while those towards the end of the economic value chain are more suspectable to price rises. Companies in highly competitive industries may see some margin pressure as they elect to partially absorb some of these increased costs. If, on the other hand, there we were to experience a rapid rise inflation leading to an overly aggressive move in rates, this could hasten an end to the economic cycle, resulting potentially in higher sub-investment grade defaults.

John Daly
Senior Solutions Strategy Manager

LPI: risks and opportunities in 2022

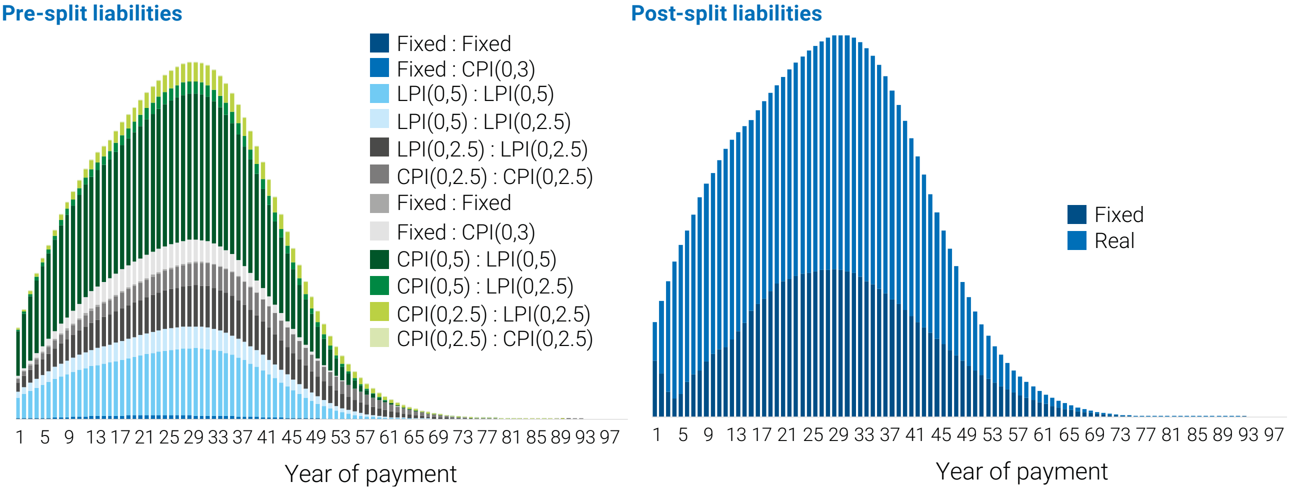
Amid higher funding levels, how should schemes manage their LPI hedging?

Most UK DB pension schemes have benefits linked to Limited Price Indexation (LPI), which involves various caps and floors being applied to RPI and CPI increases. The natural instrument of choice to hedge LPI-linked liabilities is the LPI swap; however, the market for these instruments has been exceptionally illiquid in recent years, which presents a hedging conundrum to pension schemes.

A common solution to this challenge is to 'split' the LPI-linked cashflows into purely fixed and purely inflation-linked components (i.e. with no caps or floors in them) that have the same sensitivities to small movements in interest rates (PV01) and inflation (IE01) as the original LPI-linked liabilities. The resultant fixed and real cashflows become the benchmark for the LDI portfolio and can be hedged using liquid nominal and inflation-linked instruments. Figure 10 is an illustration of liability cashflows before and after cashflows are split.

Figure 10: Pre- and post-split liabilities

Pre-split liabilities **Post-split liabilities**



Source: LGIM, December 2021. For illustrative purposes only.

The approach described above is known as 'delta hedging' as it aims to capture and hedge the inflation sensitivity (or 'delta') of LPI-linked cashflows at a point in time. However, there is a variety of factors that cause LPI deltas to change over time, the primary one being changes in inflation expectations (or 'gamma' risk). Figure 11 shows how LPI(0,5) deltas changed relative to RPI over the past three years. Other factors include moves in interest rate expectations, changes in inflation volatility and updates to scheme membership.

There is no industry-wide convention on how best to model the behaviour of inflation over time. As such, there are multiple possible approaches, for example a 'market-consistent' approach (which uses the SABR[7] model to capture the inflation volatility priced in the LPI swap market) or a 'real-world' approach (a common approach is to use the Black model with a constant inflation volatility assumption).

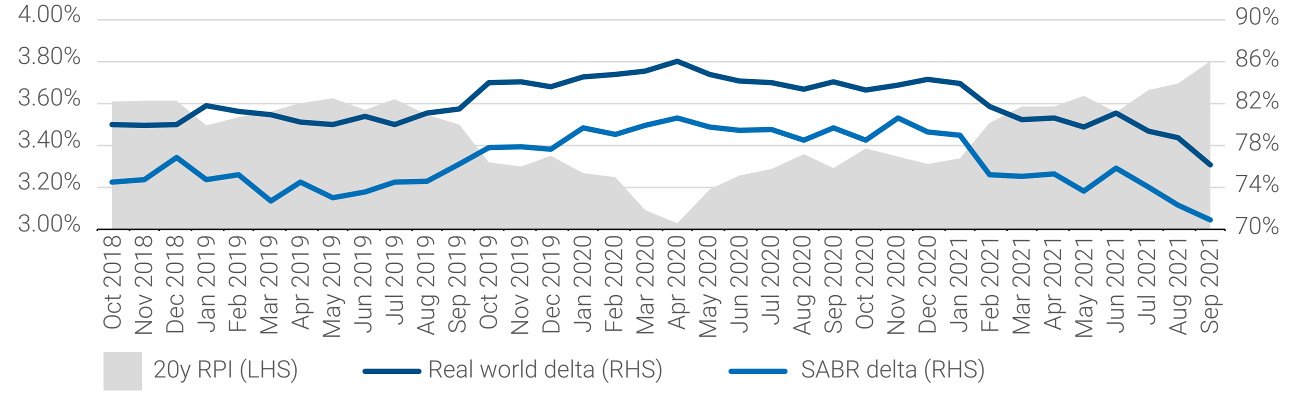
Is there a way to reduce these and other 'hidden' risks associated with hedging LPI-linked liabilities?

7.Stochastic alpha, beta, rho

Managing the risks – a traditional approach

Since a delta hedge reflects the inflation sensitivity of LPI cashflows at a point in time, the hedge tends to degrade over time due to changing market conditions and other factors. A typical strategy used by pension schemes to 'refresh' the hedge uses a combination of (i) periodic re-splitting (e.g. annually) and (ii) re-splitting should long-dated inflation move by a certain amount, in an attempt to capture the changes in LPI deltas. Following the re-split, the LDI portfolio is then rebalanced accordingly to match the revised benchmark. While appropriate for some schemes, it might be sub-optimal for others (especially given the recent rises in inflation expectations) as this approach is considered somewhat 'static' since rebalances are relatively infrequent.

Figure 11: 20y LPI (0,5) deltas and RPI



Changes in LPI(0,5) Real world and SABR deltas versus changes in 20Y RPI. LGIM data as at 30 September 2021. **Past performance is not a guide to the future.**

Managing the risks – Dynamic LPI hedging

'Dynamic' LPI hedging presents an alternative solution to capturing changes in deltas more frequently, and involves re-splitting LPI cashflows daily. The resultant changes in benchmark sensitivities could then be compared against pre-defined tolerances and the LDI portfolio could be rebalanced periodically (e.g. monthly) if certain thresholds are met.

The key benefit of dynamic LPI hedging from a risk management perspective is that it captures changes in inflation sensitivity of LPI cashflows more accurately, allowing for assets to better match the liabilities. In addition, the strategy could have economic benefits: as shown in Figure 11, deltas for LPI(0, 5) pensions (i.e. inflation increases in line with RPI but capped at 5% and floored at 0%) are inversely related to inflation expectations in the range of 2.5%-5.0%. Hence, the strategy involves buying inflation-linked instruments when inflation expectations are low (because LPI deltas are high) and selling inflation-linked instruments when inflation expectations are high (because LPI deltas are low). 'Static' rebalancing may fail to capture this opportunity[3].

A risk-reward consideration

In the absence of any costs, one could argue that all schemes ought to be rebalancing their LPI delta hedges more frequently. However, there are some costs involved with a potential strain on governance budgets as well as (slightly) higher transaction costs.

There is also the issue of model uncertainty as there is no consensus on what the 'correct' inflation model is, hence insisting on closely tracking a subjective benchmark [may have limited benefits](#).

However, as we have highlighted throughout this Outlook, at higher funding levels schemes tend to become more risk averse, de-risking their investment strategies. As such, it makes sense to commensurately scale back the risks incurred from infrequent LPI delta rebalancing. There also may be less model uncertainty for those schemes close to buy-out given that a market-consistent approach (which is much less subjective) is more appropriate for such schemes. In 2022, we expect a greater shift to these kinds of strategies, with what was once a 'second order' risk becoming more important.

John Southall
Head of Solutions Research

Mykolas Padolskis
Solutions Strategy Associate

3. However, we note that overly fast rebalancing might be problematic if there is any momentum in moves inflation expectations: this is a research point we are looking into.

The secret diary of the DMO: the green gilt years

It's hard not to recall with a smile the moment when Pandora Braithwaite, beloved by hapless teenager Adrian Mole, discovers that the 'real gold chain' he bought her from Tesco for Christmas leaves a green stain round her neck. With Christmas having been a time of green and gold in abundance, we take this opportunity to look back on the year which has provided the market with its first green gilts, and to provide our thoughts on what 2022 holds for this exciting new asset class.

November 2020

The UK Government announced for the first time its intention to issue green gilts in 2021.

Spring 2021

The UK Government confirmed key features of their green gilts plan:

- Two green gilts were to be issued in 2021, with a minimum total size of £15bn for the 2021/2022 financial year
- They stated their intention to build out a 'green curve' over the coming years, to help 'set a baseline for green sterling debt, making it easier for companies to price their own green bonds'
- The UK Government Green Financing Framework was established, demonstrating how an amount equal to the proceeds raised from the green gilts would be used

September 2021

After almost a year of preparation and consultation with the market, in which LGIM actively participated to share our views on how the bonds' design could best suit our clients' objectives and portfolios, the DMO issued the first green gilt on 21 September 2021: a £10bn issue with a 2033 maturity, which was the largest sovereign green bond issuance in the world at the time, and attracted the largest UK order book in history, largely comprising domestic buyers.

October 2021

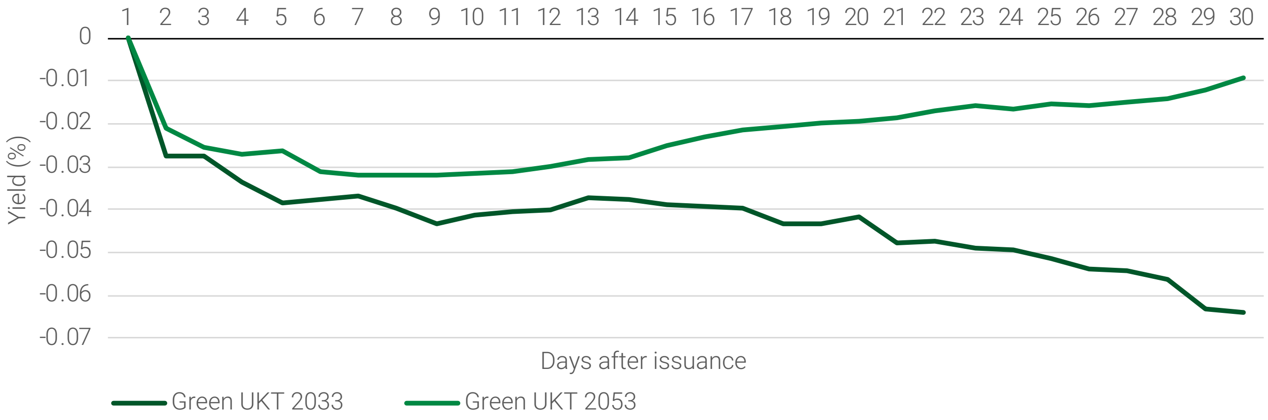
A month later, this inaugural green gilt was followed by the issuance of £6bn of a 2053 green gilt, which was at the time the longest dated sovereign green bond outstanding.

The performance of the gilts following their syndications was interesting. In Figure 1 we show the decrease in yield (increase in value) of each of the gilts versus their 'reference' (i.e. non-green) gilt over the first 30 days following issuance.

- Both gilts appreciated in value by a few basis points following their debut, which is a reasonably common pattern when the DMO issue a new gilt in large size
- However, over the subsequent weeks, the 2033 continued to appreciate. This was probably due to the fact that a broader base of investors would be likely to purchase 10y government bonds than 30y bonds, the latter being more generally the preserve of LDI investors hedging long-dated liabilities

Assumptions, opinions and estimates are provided for illustrative purposes only.' and 'Reference to a particular security is on a historic basis and does not mean that the security is currently held or will be held within an LGIM portfolio. The above information does not constitute a recommendation to buy or sell any security.

Figure 12: Performance of green gilts over 30 days post-issuance



Source: LGIM, as at 31 December 2021. **Past performance is not a guide to the future.**

LGIM participated in both green gilt syndications for our active LDI clients. For our discretionary LDI portfolios, where we aim to be invested in the most efficient hedging instrument on a hold to maturity basis, we elected not to purchase the 10y issue, as swaps were typically the most efficient liability matching asset at that maturity point. However, we were able to participate in the 2053 green gilt syndication for 60 of our largest clients as part of our 'discretionary trading framework', purchasing the gilt at attractive levels, increasing the yield of clients' portfolios (by selling neighbouring gilts with slightly lower yields) and maintaining the overall interest rate match.

It is worth noting that green gilts are eligible for inclusion in both the FTSE and iBoxx indices, which will provide investors in relevant index funds with exposure.

We have observed that trading in the secondary market in these green gilts has been good, with both bonds exhibiting similar liquidity to comparable traditional gilts. This similarity has also been echoed in the repo markets, with funding rates on the green gilts being similar to their non-green counterparts.

2022: the next chapter

With the DMO's planned issuance for the reminder of the 2021-22 financial year largely accounted for, we'll probably have to wait for the Spring Budget and the 2022-23 Remit announcement for details on future green gilt supply. However, there are some broad market expectations which may provide some ideas of what we might see in 2022:

- It's currently expected that the issuance of green gilts in the next financial year is likely to account for a similar proportion of total issuance to that of the current financial year, which would be roughly £15-£20bn
- Similar to 2021, this issuance could also be delivered via two syndications
- The DMO may choose to 'tap' the existing green gilts again, to bring them towards benchmark size (i.e. increase their liquidity)
- There is also some speculation that the DMO may issue a new green gilt, possibly at the 20y point, to help turn the current green line (between 10y and 30y) into a green curve (between 10y, 20y and 30y)

Our current view is that the DMO's total issuance of green gilts is likely to be constrained by the availability of suitable projects for which cash equal to the proceeds raised from these bonds can be used. Later in 2022 we will also be looking out for the Treasury's 'Allocation Report', containing details of how the proceeds from this year's offerings have been used.

We will continue to research, engage and monitor activity in the green gilt market and to provide our clients with updates, information and insights, through 2022 and beyond. As the market continues to evolve, we will aim to adapt portfolios to take advantage of these new opportunities, and to use our established status as a large asset manager to contribute to consultations on the future of the green economy.

Adam Rheinberg
Solutions Strategy Manager

Chi-Kit Pang
Head of Bespoke Solutions Portfolio Management

Contact us

For further information about LGIM, please visit lgim.com or contact your usual LGIM representative

LGIM talks

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Key risks

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

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