

DB Schemes with Liability Driven Investments (“LDI”)

This information was compiled and submitted to the Work & Pensions Select Committee inquiry into Defined Benefit (DB) pensions with liability driven investments.

About Barnett Waddingham LLP

Barnett Waddingham is an independent UK-based professional services consultancy specialising in actuarial, risk, pensions, investment and insurance matters. We have around 1,500 people, of whom around 130 are in our investment advisory team.

Our investment advisory clients are predominantly trustees of Defined Benefit (DB) and Defined Contribution (DC) pension schemes. The majority of our DB pension clients have in place some form of liability hedging strategy, many of which include the use of (leveraged) LDI. They have put these in place with the aim of providing greater stability of funding level and certainty that member benefits from the scheme will be paid in full.

We welcome this inquiry by the Work & Pensions Committee (“the Committee”). We hope that it helps all stakeholders in the UK pensions system to learn from the recent experiences in gilt markets and results in a further improvement in the resilience of the UK’s pensions system.

Executive Summary

The main points of our response to the Committee’s Call for Evidence include:

- The value of a DB scheme’s liabilities typically depends on (or is closely related to) the prices of, and therefore yields available on, gilts and index-linked gilts. Movements in gilt yields represent a very real financial risk to both sponsors and members of DB schemes. Many DC pension schemes invest in gilts in the years preceding retirement (and into retirement) as a way of lessening the expected swings in value of members’ savings relative to the cost of securing benefits (with an insurance company / annuity provider).
- DB pension schemes are forced, by their very construction, to mismatch assets and liabilities. There is therefore a tension between managing asset/liability mismatch (i.e. buying gilts to match liabilities) and generating the returns required in the funding plan to meet benefits in full. This is the reason why leveraged LDI was invented. LDI has had very real benefits to both members and sponsors of DB schemes by protecting them against increasing funding deficits over the last decade or so. LDI has been a stabilising force for the UK economy.
- The funding position of a typical scheme is likely to have improved as a result of the rise in gilt yields. Where funding levels have deteriorated as a result of the gilt yield volatility the impact is fairly limited in the majority of cases we have seen, although there are a very small number of schemes that have been significantly impacted.
- There were numerous operational challenges for DB schemes due to the gilt yield volatility, but, in our experience, most DB schemes navigated these operational challenges well.
- Some LDI pooled funds did reduce exposure and consequently underperformed due to internal whipsaw risk on 27 and 28 September, but the majority of LDI pooled funds did not have to sell gilts at any point.

- A relatively small number of pension schemes became forced sellers of less illiquid assets in order to meet collateral calls.
- In the vast majority of cases there will be no impact on DB pension scheme members' (i.e. savers') promised benefits. There are specific scenarios where pension scheme members could end up being worse off as a result of the volatility (for example where a deterioration in funding forces the insolvency of the scheme sponsor), however we are not aware of any such schemes.
- TPR does not explicitly have the power to regulate the investment strategies used by schemes or the types of funds/vehicles that can be invested in. There is limited scope for any UK-based authority to influence the management of the LDI funds themselves.
- TPR has undoubtedly encouraged schemes to adopt LDI strategies. This is a good thing in our view. The PPF has also indirectly encouraged schemes to adopt LDI strategies.
- In our view, the vast majority of schemes that we work with had adequate governance arrangements in place.
- We think that there will need to be some changes going forwards in terms of the operation of LDI strategies. These are likely to include the following changes, many of which are already underway:
 - lower target leverage of the funds.
 - greater flexibility in eligible collateral rules.
 - increased focus on collateral structures/waterfalls.
 - greater focus on the overall liquidity of a scheme's investment arrangements.
 - greater flexibility in LDI benchmarking.
 - reviewing dealing cycles.
- We do not think the DB funding rules need to change as a result of the rise in gilt yields. We do, however, have some technical concerns on the proposed new DB funding rules. We have already communicated these to DWP as part of its ongoing consultation.

Background

How DB pension liabilities are valued and why

DB pension liabilities are typically valued with reference to gilt yields¹.

In essence, these liabilities are simply a very long-term stream of cashflows due to be paid to members over the next few decades. As most schemes are now closed to new members, and to new accrual of benefits, these cashflows can be estimated with a reasonable degree of confidence, subject to assumptions about inflation and key demographic parameters such as life expectancy and timings of early/late retirements.

In principle, if a scheme had enough money, it could buy a portfolio of gilts and index-linked gilts that would generate a government-guaranteed cashflow stream that largely matches this liability (apart from how that liability may change if demographic parameters change). The value of the liabilities should therefore, according to financial economic theory, be the same as the value of this gilt portfolio. This is the fundamental reason why the actuarial valuation process is primarily based on gilt yields. It is not, contrary to what many media commentators have posited, a result of the Pensions Regulator's ("TPR's") stance on funding schemes, or corporate accounting standards. Instead, accounting standards and TPR's funding regulations merely recognise the reality that a bond-based valuation is well-founded in financial economic theory.

This means that **the value of a DB scheme's liabilities depends on the prices of, and therefore yields available on, gilts and index-linked gilts.**

An LDI strategy is one which invests the pensions scheme's assets in order to recognise this relationship.

How DB schemes invest and how they are funded

As noted above, a DB scheme could, in principle, simply use its assets to buy a portfolio of gilts and index-linked gilts. It would then be confident that almost whatever happened in financial markets it would be likely to be able to generate sufficient cash to meet all its liabilities in full and on time, save for how they may change if demographic parameters change. This would be the least-risk approach (in the absence of assets to match / hedge demographic risks). However, given that gilts provide relatively low levels of return compared to most other assets, this would make the pension benefit extremely expensive to provide.

In practice, DB schemes are almost always funded assuming that a return above gilt yields will be achieved in the long-term, in order to improve the level of funding over time, typically with the idea that they would then "de-risk" into a portfolio of bonds when this becomes affordable to do so. The additional investment return targeted over and above gilts would contribute towards paying the members' promised benefits, lowering the ultimate cost of the scheme. Without making an allowance for this additional return it is quite likely that DB schemes would never have existed, as they would have been prohibitively expensive from day one. **DB pension schemes are forced, by their very construction, to mismatch assets and liabilities.**

Mismatching a scheme's assets to its liabilities means that the scheme will be exposed to various risks which can lead to the scheme not being able to fund all the pension benefits. For example, a scheme investing in equities (i.e. company shares) is exposed to the risk that the rate of return from its equities portfolio fails to keep track with the scheme's liability value. Should this occur then the scheme will be in deficit and it will need to put in place a "Recovery Plan". Typically, this would mean that the scheme's sponsor (usually the employer) would need

¹ Note that whenever we refer to gilt yields, we are generally referring to both the yields on conventional gilts and the yields on index-linked gilts. Swap and corporate bond yields are also used – especially by insurance companies – to value liabilities, though these yields are often closely related to gilts.

to increase contributions. Under UK pension law this valuation process must take place at least once every three years, with frequent monitoring / updates in the interim period for all but the smallest schemes.

In addition to the risk that the assets don't generate the levels of return required, there is also therefore the risk that gilt yields fall and/or inflation expectations rise which pushes up the value of the liabilities. Even in an environment where asset returns are good, if gilt yields fall then the scheme may find itself in a deficit position and need to put in place a recovery plan. **Movements in gilt yields represent a very real financial risk to sponsors of DB schemes** and falls in gilt yields have been the most significant cause of deficit contributions being required over the last decade.

What happens when the sponsor of a DB scheme becomes insolvent?

When the sponsor of a defined benefit pension scheme becomes insolvent then the scheme's trustees are required to seek to recover from the insolvency process the additional amount that is required such that member benefits can be secured in full from an insurance company. In most insolvency situations, this cannot be achieved, and the scheme is then forced to either:

- Secure reduced benefits up to the level that can be afforded from an insurance company using the assets available (assuming that this level is above that which would be provided by the Pension Protection Fund ("PPF") ;) or
- If the scheme cannot afford benefits above the level which can be provided by the PPF, then the schemes assets will be transferred to the PPF and the members will receive this compensation from the PPF. These benefits are normally at a materially reduced level relative to the benefits originally promised.

The price of securing benefits with an insurance company is closely related to the level of gilt yields, as is the measurement of liabilities within the PPF.

Movements in gilt yields therefore also represent a very real financial risk to members of DB schemes where sponsor insolvency occurs since they will directly influence the level of benefits. In addition, fluctuations in gilt yields will also impact the solvency of schemes entering the PPF (the deficit of which has to be funded by sponsors of other DB schemes). Several high-profile insolvency events (which the Committee have reviewed before and will be aware of) have left behind a very underfunded scheme which will have been significantly impacted by falls in gilt yields over recent years where this was not fully liability hedged.

There is a tension between managing asset/liability mismatch (i.e. buying gilts) and generating the returns required in the funding plan. This is the reason why leveraged LDI was invented.

LDI strategies and why DB schemes might use one

LDI is a way to protect the scheme, its members and its sponsor, against adverse gilt yield and/or inflation movements whilst still targeting the return required to finance member benefits. An LDI strategy is designed to generate a positive return when gilt yields fall (and the value of the liabilities rises) and a negative return when gilt yields rise (and the value of the liabilities falls). It is therefore a hedging strategy, designed to mitigate a risk that changes in gilt yields has on the pension scheme's funding position.

However, given that historically most schemes' funding plans only permitted a small amount, perhaps 20-40% typically, to actually be held in gilts it was necessary to "amplify" this exposure in order to achieve a material level of risk reduction. This was done by using leverage, achieved using financial instruments including gilt repurchase agreements and swaps. For example, a £1 investment in a "3 times leveraged" LDI fund would allow a scheme to match £3 worth of liability exposure to movements in gilt yields and/or inflation. If a scheme were to put, say,

30% of its assets in such a strategy it might be able to hedge c. 90% of the exposure to changing gilt market conditions in its liability value, assuming it were fully funded initially. In this example, 70% of assets would therefore be available to generate returns above gilts, making the scheme more affordable to sponsors and members.

As the values of the underlying gilts change so does the leverage. If gilt prices rise (i.e. yields fall) then the strategy will become less leveraged and the strategy will have excess assets that may be distributed out of the strategy. On the other hand, if gilt prices fall (i.e. yields rise, as they did in an extreme manner in later September 2022) then the strategy will become more leveraged and may call for additional capital from its investors. Here is a simplified example, with an illustrative starting leverage of 3x and assuming gilt prices go up/down by 10%.

	Starting point	Gilt prices up 10%	Gilt priced down 10%
Cash holding	£100	£100	£100
Gilt exposure (via repo)	£300	£330	£270
Liabilities (via repo)	-£300	£-300	£-300
Fund Net Asset Value	£100	£130	£70
Leverage	3x (£300 / £100)	2.5x (£330 / £130)	3.9x (£270 / £70)

LDI collateral processes

For illustrative purposes this simplified analysis ignored the collateral / margin process. In practice, as gilt prices move then the profit or loss on the repo arrangement will be collateralised. In the example above where gilt prices rise then the repo counterparty (typically a bank) will provide £30 of collateral, typically cash, to the LDI strategy, whereas in the example where gilt prices fall the LDI strategy will be required to pledge £30 of collateral to the counterparty. An LDI fund therefore needs to always maintain sufficient assets in the form of assets eligible as collateral. The exact forms of what is eligible as collateral depend on the specific agreements the LDI fund has entered into with its counterparties.

Each pooled LDI fund will also have a recapitalisation process. All the LDI managers have slightly different processes, but they are all variations on a theme. Under these processes if the leverage level exceeds an upper threshold then the fund calls on investors to provide additional capital. The amount of additional capital called will be calculated in order to bring the LDI fund back to its target leverage level. In the event that an investor fails to provide the capital then that the manager will sell down gilts in respect of that investor's share of the fund, which is then the only option available to the LDI manager to bring the leverage back to target. Capital calls are usually made long before the leverage gets to unmanageable levels (where the exposure could no longer be maintained) because the nature of DB pension scheme investment and governance structures means it would take most DB schemes a few days for the necessary transfer of assets to take place.

Most pooled LDI funds also have a "knock-out" trigger, whereby if the leverage ratio exceeds an even higher level then the manager automatically sells gilts to reduce the leverage. In practice, the manager will often enter into an offsetting repo trade and simultaneously sell the gilt.

The benefits of LDI

Over the last decade as gilt yields generally fell to historically low levels and therefore the value of DB pension liabilities increased very significantly, LDI has helped many schemes to maintain sufficient funding to meet their benefits and to stay solvent on their chosen funding basis, without putting additional pressure on the scheme sponsor to make additional contributions. **LDI has had very real benefits to both members and sponsors of DB schemes by helping to protect them against funding deficits over the last decade or so.** This has given members of DB schemes greater financial security than would otherwise have been the case and has saved sponsors of schemes hundreds of billions of pounds in contributions that would likely have otherwise been made. Without LDI it is likely that many more UK companies would have become insolvent over the last decade, inevitably leading to job losses, widespread economic disruption and knock-on costs for the whole economy. **LDI has been a stabilising force for the UK economy.**

The risks of LDI

No investment strategy is without risk. Even investing 100% in gilts has risks, such as the risk that the “wrong gilts” are bought and that they do not therefore generate the right cashflows to meet the pension payments.

The main risks of leveraged LDI include:

- Mismatch/basis risk, i.e. the risk that the assets underlying the hedging strategy do not match the liabilities sufficiently accurately. This risk is mitigated through careful analysis and monitoring.
- Counterparty risk, i.e. the risk that the counterparty to the repo/swap agreements does not fulfil its obligations. This risk is mitigated through careful counterparty selection and robust collateral processes.
- Whipsaw risk, i.e. the risk that a sudden movement in gilt yields means that hedges have to be sold, and this is followed by a downward movement in gilt yields, meaning that hedges can only be replaced at a higher cost. This risk is mitigated by adopting only modest levels of leverage and maintaining sufficient liquidity to provide capital to reduce leverage when necessary.
- Liquidity risk, i.e. the risk that the LDI strategy has insufficient liquid assets to meet necessary collateral calls or the scheme is unable to fund re-capitalisation calls and is therefore forced to either sell less-liquid assets, potentially at a discount, or be forced to unwind hedges. This risk is mitigated by holding a prudent buffer of eligible collateral assets within the LDI strategy and by limiting the allocation to less-liquid assets outside the LDI strategy.

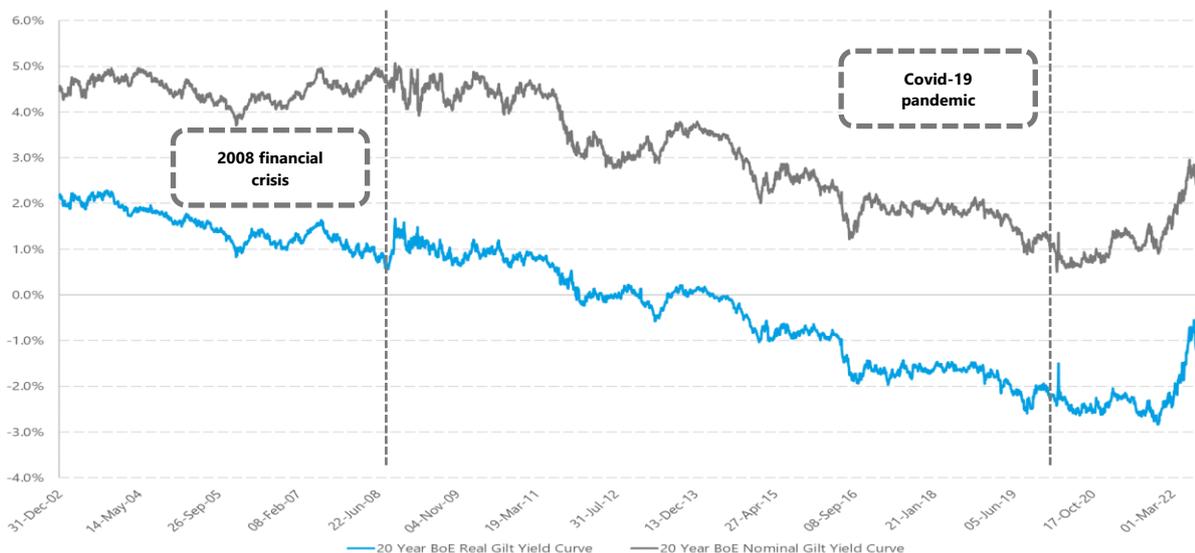
The rest of this document sets out our thoughts below on the specific questions asked in the inquiry.

The impact on DB schemes of the rise in gilt yields in late September and early October

Background to the rise in gilt yields

The volatility of gilt yields during this period was extreme. According to our data sources, gilt yields were more volatile during this period than at any other point on record, including when the UK government was bailed out by the IMF. In fact, over Q3 2022 long-dated gilt prices were more volatile than Bitcoin prices. This was outside of established financial risk models and was a more extreme event than any reasonable person, however foresighted or prudent, could reasonably have been anticipating.

The chart below shows the history of the 20-year spot gilt yield (in grey) and the 20-year spot index-linked gilt yield (in blue) over the last twenty years. Data is sourced from the Bank of England.



Given that most UK pension schemes provide inflation-indexation on the majority of the benefits promised, the real gilt yield (the blue line) is of more financial significance than the nominal one (the grey line).

The chart shows how gilt yields fell progressively over most of the last two decades. It also shows that real gilt yields (i.e. index-linked gilt yields) have been negative for most of the last decade. Importantly, whilst it can be argued there is a 0% floor on nominal gilt yields², there is no floor on real gilt yields. In effect, the gap between these two lines represents expected future inflation (measured on an RPI basis).

Generally, in a rising inflationary environment one should expect gilt yields to rise, as investors will require more compensation for the loss of purchasing power they suffer. However, should inflation expectations rise very significantly it would be perfectly plausible that the real yield would not rise anywhere near as sharply as the nominal yield would. This is because an investor in index-linked gilts already has, by definition, protection against rising inflation.

² The argument for a 0% floor is it would be economically irrational for an investor to buy a non-inflation-linked bond at a yield below zero when the investor could simply hold cash, i.e. bank notes, instead. However, in practical terms government bond yields can trade below zero. Indeed, shorter-term nominal gilt have traded at slightly negative yields in the past, e.g. in May 2020.

The chart also shows how both nominal and real gilt yields began to rise sharply at the beginning of this year and then spiked very, very quickly upwards in September immediately following the former Chancellor's 'Growth Plan' announcement. The movements in September dwarf the volatility seen around the time of the 2008 financial crisis and those seen in March 2020 at the beginning of the Covid-related economic disruption and government stimulus package.

Impact on funding positions

The rise in gilt yields has generally been welcome news for DB pension schemes as it has meant that the value of the liabilities has been falling.

However, how any individual scheme will have been impacted by the rise in gilt yields will depend on its own investment strategy. In particular, each scheme will have its own "hedge ratio" – the proportion of liabilities hedged by the investment strategy, whether that be bonds or LDI. In our experience, hedge ratios vary from zero to c. 100%, with the average scheme (based on anecdotal evidence of the limited number of schemes we see data for) having a hedge ratio of perhaps 70-80% of liabilities. The key determinant of how a scheme's funding level³ will have evolved over late September and early October will be how its hedge ratio compares to its funding level:

- Schemes with hedge ratios below their funding level will generally have seen an increase in funding level from the rise in gilt yields.
- Schemes with hedge ratios equal to their funding level will generally have been unaffected by the rise in gilt yields.
- Schemes with hedge ratios set above their funding level will generally have seen a deterioration in funding level.

Based on our experience, more schemes have hedge ratio targets set below their funding level than set above their funding level. Therefore, it is our view that **the funding level of a typical scheme, particularly relative to their long term funding target, is likely to have improved as a result of the rise in gilt yields**. Indeed, where our clients have received funding updates from their actuaries in the last few weeks this is generally what we are seeing.

It is also worth noting that this analysis ignores other market effects. For example, during this period Sterling was also volatile, as were equity markets. These effects will also have impacted scheme funding. Because DB schemes can, and do, have quite different investment strategies from one another these effects will have impacted scheme funding in ways quite specific to them.

Even then, in many cases where the funding level has deteriorated, deficits⁴ are now lower than, say, a year ago (especially on long-term target bases such as an insurer basis).

Operational challenges for (almost) all LDI users

LDI strategies require sufficient liquid assets to be made available to them to support the collateralisation process. As gilt yields were rising sharply, LDI collateral pools were being used up quickly and so pension schemes faced regular calls for additional capital from their LDI managers.

Typically, pension schemes will hold sufficient assets in highly-liquid low-volatility assets to meet the next one or two potential capital calls from their LDI managers. Once a capital call is made, they would then typically look to

³ The funding level is the value of the scheme's assets divided by the value of its liabilities, expressed as a percentage.

⁴ The deficit is the value of the scheme's assets minus the value of its liabilities, expressed in pound terms

rebalance their highly-liquid assets in the next few weeks in order to replenish the pool of assets. Many pension schemes rely on operational support from consultants like us to arrange this transfer of assets. In normal market conditions this process works well.

When gilt yields rose very quickly in late September, and then again in early October, pension schemes were faced with an extraordinary level of capital calls as LDI funds reduced leverage down to, and then in most cases beyond, their target leverage levels. This means that some of these capital calls were made in rapid succession, were larger than normal and were required at shorter notice than normal. Further, some of the managers adjusted amounts called with very limited or no notice, reflecting the extreme volatility.

This led to schemes having to sell down assets beyond their designated highly liquid assets in a short space of time. In some cases, the accelerated timescales meant that even a scheme's other liquid assets were unavailable to meet collateral calls as the dealing cycles were not feasible to get cash across in time.

There were numerous operational challenges for DB schemes:

- The LDI managers were overloaded and in some cases were unable to respond in a timely manner to queries from their clients (or their advisors);
- The investment advisory market was stretched by the volume of advice required and the volume of asset transfers to arrange; and
- Trustees were required to make quick decisions on imperfect and incomplete information.

These issues were compounded by the short window afforded by the Bank of England's intervention. This is because the stated end of the Bank of England's intervention caused some LDI managers to accelerate their capital calls even more than we believe they otherwise would have, to ensure that they would be completed before the end of the intervention period.

In our experience, most DB schemes navigated these operational challenges well. For the majority of schemes that we advise, they had automated collateral arrangements in place which meant that payments could initially be made into LDI portfolios at short notice in order to reduce leverage at short notice. However, even where schemes had automatic processes in place, these often needed some intervention in order to top up the pool of assets then available to the manager (unless they had relatively large liquid assets which the manager had access to already in place).

Liquidity challenges for some LDI investors

Many DB schemes (particularly larger schemes) invest a portion of their assets in less liquid strategies. These range from private equity vehicles with no real liquidity, to pooled fund structures with, say, monthly-dealing cycles.

As yields rose the most liquid assets were typically used to support the LDI strategy first. This subsequently meant that subsequently **a small number of pension schemes became forced sellers of less liquid assets** in order to meet further LDI capital calls. This may have meant selling assets below their true fair value and/or at heightened transaction costs.

Whipsaw risk

As noted above, one of the risks of using leverage for hedging is that it exposes the investor to "whipsaw" risk. This is the risk that a sharp movement in markets, followed by a quick reversal, causes hedges to be unwound at low prices and schemes are then left exposed to price rises in gilts.

With leveraged LDI, whipsaw risk can occur in two ways. Firstly, where an individual LDI pooled funds is leveraged it can occur within the LDI pooled fund – we call this “internal whipsaw risk”. Secondly, where a pension scheme is asked to provide additional capital to an LDI fund it can occur if the pension scheme fails to provide the additional capital – we call this “external whipsaw risk”.

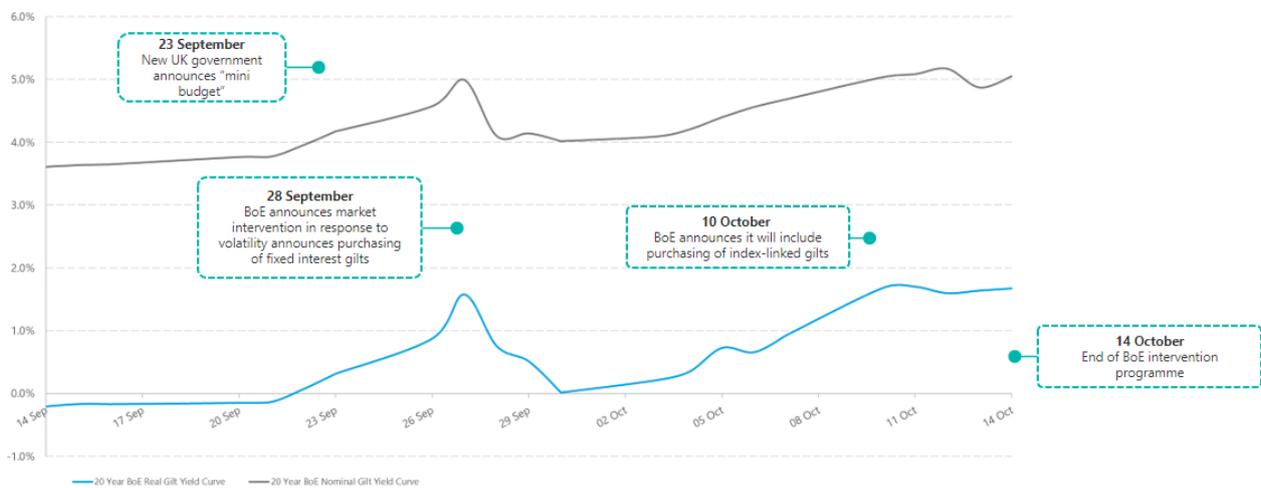
Internal whipsaw risk

Some LDI pooled funds suffered from internal whipsaw risk on 27 and 28 September. As gilt yields rose sharply on these days the leverage ratios within the funds rose to such an extent that the LDI managers decided that it was necessary to reduce leverage immediately. There are only two ways to reduce leverage in an investment strategy: add cash or sell the asset that is being leveraged. In some cases, the LDI managers decided to sell the underlying asset (i.e. gilts). By definition, gilts will have been sold at relatively low prices (as otherwise the leverage would not have been high).

When the Bank of England intervened in the gilt market on 28 September it caused an immediate and sharp reduction in gilt yields (i.e. a sharp rise in gilt prices). LDI funds that had been forced to reduce leverage by selling gilts were no longer able to replace hedges without locking in a substantial loss.

However, over the following few days gilt yields rose again quite quickly and reached similar levels to those seen on 28 September. Some LDI funds that had experienced whipsaw risk were therefore able to call for additional capital from their investors in order to repurchase hedges and limit losses.

20 Year BoE Gilt Yields since mid-September 2022



Source: Bank of England, Barnett Waddingham

The majority of LDI pooled funds did not have to sell gilts at any point as a result of leverage reaching unsustainable levels.

External whipsaw risk

As noted above, leverage can be reduced either by providing additional cash, or by the manager reducing exposure to the asset which has been leveraged over. When an LDI strategy’s leverage is materially above target the manager will therefore call for additional capital from its investors, in order to avoid having to sell gilts within the fund.

In our experience, the majority of DB pension schemes met all capital calls over the relevant period. However, there were some that did not. Each time an LDI user fails to meet a capital call in full, the LDI fund effectively becomes a forced seller of gilts. This is because if it did not sell gilts then a) its leverage may still be too high; and b) unitholders who did provide capital would be increasing their exposure to gilts (which may result in them becoming “over hedged”).

There were several reasons why some schemes failed to make these capital calls in full:

- Because yields had been rising strongly in the weeks preceding the mini-budget, and schemes with LDI had already responded to several capital calls, some schemes had run low on assets that could be easily sold in time to meet the capital calls;
- Because of the time-limited nature of the Bank of England’s intervention some LDI managers accelerated their normal capital call process, leaving some schemes with insufficient time to arrange asset transfers;
- Some LDI managers increased the amounts of the capital calls at the very last minute, meaning where a scheme had already arranged payment this was insufficient in some cases;
- We believe there may have been several reasons why some schemes failed to provide additional capital; for example, because they believed gilt yields would keep rising and so decided that reducing exposure to gilts would be better in the long run.

Generally, where schemes did not meet the capital call in full, for whatever reason, they would have become exposed to external whipsaw risk. Their exposure to gilts will have been reduced, as a result of the manager selling down gilts. This will have reduced their liability hedge ratios, leaving them less protected against the subsequent fall back in gilt yields. In other words, **some schemes were exposed to external whipsaw risk.**

Again, depending on when exactly hedges were removed, and when, if at all, they were replaced the impact on any particular DB scheme could be significantly detrimental, marginally detrimental, or even marginally positive. **In the majority of cases we have seen the impact is fairly limited, although there are a small number of schemes that have been significantly impacted.**

The impact on pension savers, whether in DB or DC pension arrangements

As noted, most DB pension schemes will have seen improving solvency positions as a result of the rise in gilt yields and therefore members’ (i.e. pension savers) pensions are as secure as they were prior to the volatility, if not more so.

The level of DB benefits is set in advance with reference to a member’s salary and therefore the amount due as a pension is not impacted by market movements. **Therefore, in the vast majority of cases there will be no impact on DB pension members’ promised benefits.**

As noted previously, there are a small minority of DB schemes where the LDI strategy materially underperformed expectations as yields fell back. In some cases, this will mean that the deficit may have increased, or the funding level reduced. In these instances, there is a possibility, depending on the other circumstances of the scheme, that members of these schemes will experience an impact on their benefits. The main cases we have considered to be a possibility (albeit impacting a very small numbers of schemes and not in the case of the schemes we advise) are:

DB schemes with increased deficits and very weak sponsors

It is possible that there may be a very small number of corporate insolvencies triggered by increasing pension deficits i.e. where the deficit has increased (e.g. due to whipsaw risk) and the sponsor is weak and therefore is no longer able to support the scheme. In these instances, it is likely that DB members would suffer some cutback in their benefits.

However, we would note that for schemes in such a situation that have used LDI strategies for the last few years, the LDI strategies will have substantially protected the sponsor against the increased deficits that they would otherwise have experienced as yields fell to remarkably low levels. It is therefore our view that companies that could become insolvent as a result of LDI underperformance would likely have become insolvent in the last few years anyway were it not for the presence of their LDI strategies.

DB schemes in PPF assessment, which were expecting to be able to secure benefits more valuable than PPF compensation

Where a scheme is in PPF assessment and it is expected to be able to secure benefits more valuable than PPF compensation then the members are, in effect, exposed to the performance of the schemes' assets. The more the assets are worth, the better the benefits that can ultimately be secured for members, and vice versa.

These schemes generally use LDI strategies in order to protect their funding position, maximising the likelihood that they will be able to secure benefits for their members above the PPF compensation level. In these cases, if the LDI strategy has underperformed (e.g. due to whipsaw risk) then members will ultimately bear these costs through lower benefits than would have been the case had the LDI strategy performed in line with expectations. It is therefore possible that members in a small number of schemes in PPF assessment could therefore ultimately experience a reduction in the level of benefits compared with what they would otherwise have received. However, members in this scenario would still be expected to receive benefits at least as valuable as PPF compensation.

For schemes expecting to enter the PPF there will be no impact on members – they will receive PPF compensation and any underperformance arising from the scheme's LDI strategy will ultimately impact the PPF's own funding position when the scheme ultimately transfers to the PPF.

Indirect impacts on DB members

DB scheme members have a statutory right to a transfer value (i.e. a cash lump sum to be transferred to another eligible pension arrangement in lieu of their defined benefits from the scheme). There are various rules around how this must be calculated, but generally it is calculated by reference to the yield on gilts in a similar way to how the scheme values its liabilities. Volatility in gilt yields therefore translates into volatility in transfer values – with rising gilt yields meaning lower transfer values, for all schemes whether they invest in LDI or not. **Members receiving transfer value quotes calculated using market conditions in late September or early October are therefore likely to see substantially lower transfer values than they would have a year ago, say (likely at least 20% lower, and possibility up to 50%-60% lower depending on members' ages and scheme specifics).** This may also have an indirect impact on how DB pension scheme members are affected by divorce proceedings, as the transfer values of any defined benefit pension rights are usually taken into consideration by the courts in such cases.

DB members also often have the right, depending on the rules of the scheme, to convert a portion of their DB pension entitlement into a tax-free cash lump sum. The terms for this, called "cash commutation factors" are typically set by the trustees having received actuarial advice. Again, generally, these terms will be determined by reference to gilt yields (amongst other things) whether a scheme invests in LDI or not. All else being equal, rising gilt yields will generally result in lower cash commutation factors meaning that the tax-free cash lump sums

available in exchange for each £1 of pension are likely to reduce over time. However, there are also other, more practical, considerations (such as the desire to have relatively stable factors over time) that are sometimes taken into account when setting cash commutation factor terms, which may mean that the factor terms do not vary with changes in gilt yields to the extent that would be expected from actuarial theory alone. In addition, most schemes only review their cash commutation factors periodically (i.e. there is generally a lag between changes in market conditions and changes in cash commutation factors). **Some members may therefore see lower amounts of tax-free cash available at retirement.**

Members will also have other options for how they take their benefits, such as being able to retire early or late. The types of options offered will vary from scheme to scheme; for example, some schemes offer members the option to exchange future pension increases linked to inflation for a higher starting pension that either is non-increasing or increases at a lower rate. As for cash commutation, the "factor" terms for calculating members benefits under these different options are also usually linked to gilt yields. In some instances, such as where a member is late retiring, rises in gilt yields will result in higher member benefits; in others, such as where a member is early retiring, rises in gilt yields will generally result in lower member benefits.

Impact on DC pension members

For DC members, their pension benefits are linked to the value of their savings at retirement. They do not invest in LDI due to the different nature of the pension obligations. Many do however invest in gilts, especially as they approach retirement, for example as a match for annuity pricing.

For DC members that do invest in gilts, the value of these will have fallen, potentially just as they are about to retire. However, under the Pension Freedoms introduced in 2015, members do not have to take all of their savings at one time and can choose to keep some or all invested. Those members who were planning to access their entire retirement savings by taking a cash lump sum would have been hit the hardest by crystallising the fall in the value of gilts in late September.

For those members who were intending to draw down their savings, it is possible that the fall in the value of gilts may have offered more income per pound invested through a drawdown vehicle in retirement.

If they were planning to purchase an annuity to receive a regular pension payment, the value of the annuity will also typically have reduced and therefore the impact should be fairly limited, as the regular income they can expect to receive should be similar.

The above scenarios show that in some cases, members will need to rethink their retirement plans (i.e. delay retirement and stay invested).

There were also some cases where members were invested in a default investment option targeting annuity purchase at retirement when in fact they intend to draw down their savings. The investment strategy underpinning this option involves investing in gilts and corporate bonds as a way of mirroring changes in annuity pricing. Such strategies would therefore have underperformed in late September as bond values fell. It therefore served as an important consideration for DC members to engage with their retirement schemes in the years preceding retirement itself and for DC providers to communicate effectively with members.

Given its responsibility for regulating workplace pensions, whether the Pensions Regulator has taken the right approach to regulating the use of LDI and had the right monitoring arrangements

The Pensions Regulator

The Pensions Regulator ("TPR") regulates DB and DC pension schemes in the UK. It is responsible for:

- making sure employers put their staff into a pension scheme and pay money into it
- protecting people's savings in workplace pensions
- improving the way that workplace pension schemes are run
- reducing the risk of pension schemes ending up in the Pension Protection Fund (PPF)
- making sure employers balance the needs of their defined benefit pension scheme with growing their business.

TPR does not explicitly have the power to regulate the investment strategies used by schemes or the types of funds/vehicles that can be invested in. It has simply never been given the powers to do so by Parliament.

It is worth noting that off-the-shelf pooled LDI funds and bespoke pooled LDI funds are generally domiciled overseas, typically in Ireland or Luxembourg. **There is limited scope for any UK-based authority to influence the management of the LDI funds themselves.**

In our view, the use of LDI by DB pension schemes complements many of the responsibilities above in terms of reducing risk of schemes not being able to pay their benefits. There are, however, some elements of managing LDI mandates which we would expect to fall under TPR's remit; for example we would expect Schemes to have effective collateral management of LDI strategies. It is not clear to us, however, whether TPR could have made this a requirement without appropriate legislation or associated regulation.

TPR collects and monitors information on workplace pension schemes each year through its annual Scheme Return process. This includes information on schemes' investment strategies and some optional information on the sensitivity of the scheme to interest rates and inflation and the extent to which this is matched by the scheme's assets (e.g. using LDI or gilts). We therefore expect that TPR has some understanding of the amount of LDI being used within schemes.

There are also other regulators who influence the management of UK pension schemes (for example the Financial Conduct Authority which regulates financial services firms and financial markets in the UK and the Institute & Faculty of Actuaries, which regulates the behaviour of individual pensions actuaries). However the use of LDI and other investment products by workplace pension schemes does not clearly fall under the responsibility of any particular regulator.

TPR has undoubtedly encouraged schemes to adopt LDI strategies. It has done this by encouraging schemes to focus on the risks inherent in their deficit. **This is a good thing in our view.** Without LDI strategies it is quite likely that a much greater number of schemes would have entered the PPF in recent years.

The PPF levy

Further, **the PPF has also indirectly encouraged schemes to adopt LDI strategies.** The PPF is funded by a levy paid by eligible DB schemes. This levy is partially risk-based – that is if a scheme is deemed to pose a lower risk of entering the PPF then its levy is lower and one of the ways that this risk is assessed is by considering the investment strategy and the level of matching of liabilities. For most schemes, adopting an LDI strategy will result

in a lower levy, precisely because it does reduce the chance that the scheme solvency position deteriorates and the scheme subsequently enters the PPF.

Whether DB schemes had adequate governance arrangements in place. For example, did trustees sufficiently understand the risks involved?

Trustee understanding

Most trustees acknowledge that LDI is a complex area and they have therefore been increasingly spending their governance budget on issues around LDI, particularly as the levels of liability hedging have increased over recent years.

Before investing in LDI, we provide trustees with training on the advantages and disadvantages of using LDI within their investment strategy, how it operates and the risks involved. Training and other guidance is repeated on a regular basis, for example through regular updates on the current issues impacting LDI.

Further, we do not believe that every trustee on every board needs to understand everything to the same level. A well-structured trustee board will comprise a diverse group with a diverse skill and knowledge base. It is reasonable for an individual trustee who doesn't understand something to trust fellow board members who say they do. This can, however, create a key man risk on trustee boards. We don't doubt that there are some trustee boards where key individuals have stepped down leaving a board that does not adequately understand. For these reasons, it is important that trustees have the confidence to speak up in these situations and it is important that refresher training is provided periodically. A large number of pension funds now have professional trustees on their boards and these individuals often have a higher level of knowledge on technical matters.

Scheme governance

In our view, the vast majority of schemes that we work with had adequate governance arrangements in place. However, we note that the system came under strain with a huge volume of work required in a very short period of time.

As noted above, the majority of schemes we work with successfully met all capital calls from their LDI managers. The majority of these had in place automated processes to meet capital calls and sufficiently liquid assets such that collateral could be supplied as required.

For schemes that we work with that had hedges scaled-back this was primarily a result of decisions taken by the LDI managers, as opposed to failures by the schemes to provide sufficient capital. A very small number of schemes did make a conscious decision to scale back hedging.

Collateral management is an area which we work with trustees closely on as it is vital that trustees do have a plan to provide collateral in the event of a de-leveraging event being triggered. This is to avoid losing LDI exposure at a time when yields have just risen (i.e. prices have just fallen) and then losing out if yields subsequently fall back down (i.e., prices rise). Trustees appreciate the importance of this and most have frameworks set up to formalise this as far as possible. This process was challenged during recent events where the speed of the increases in yields was much larger than had been foreseen by markets or the pension industry in general. Despite this, the majority of our clients were not forced to sell gilts (due to not being able to meet collateral calls) during this time.

Given that trustees are not required to be investment experts, the day-to-day management of LDI portfolios is delegated to a specialist LDI manager (the largest being BlackRock, Insight Investments and Legal & General Investment Management). They are responsible for running the funds and managing the exposures on behalf of

investors. This can either be through a pooled fund structure where many schemes will invest together or as a bespoke or segregated mandate (commonly used by larger schemes over around £500m) which can be tailored more for the preferences of that scheme. The investment manager will also often provide training for trustees (often free of charge) and other resources to help ensure trustees understand the issues involved.

LDI portfolios are monitored as part of schemes' regular (typically quarterly) reporting processes which typically consider:

- the performance of the mandates versus their benchmarks
- how much yields would need to move to trigger a capital call, and the likely size of that call
- the collateral assets available in the event of a capital call being triggered (due to a rise in yields)
- the fees being paid to the LDI managers
- any issues arising with the LDI managers

As consultants, we appreciate that LDI is one of the more complicated issues trustees deal with and so we also provide training to our consultants internally regularly, both to new joiners to the business and to experienced consultants as part of their Continuing Professional Development. We have a dedicated LDI research team that meets with the LDI managers used by our clients on a regular basis, to discuss any issues arising in the funds, the latest developments, and the outlook for the market going forwards. This information is then shared with consultants and clients to keep them aware of key developments. Over the period of volatility, the LDI research team collated information from managers and produced streamlined communications for consultants to use to help keep clients informed and provide timely advice on the actions that schemes needed to take.

Whether LDI is still essentially 'fit for purpose' for use by DB schemes. Are changes needed?

Overall, we believe that LDI remains a useful tool to manage some of the greatest risks faced by DB pension schemes. Without it, funding levels would be much more volatile which would be detrimental to members in terms of uncertainty around receiving their benefits. Should yields fall back then it would also put pressure on sponsors to make additional payments into the scheme, noting that it is not unusual for the size of the pension scheme to be large compared to the size of the sponsor's business – in some cases dwarfing it. **LDI allows a scheme to manage risk to a much greater degree than would be otherwise possible.**

We believe LDI has many positive benefits to pension schemes, their members and sponsors and the wider economy, including that it:

- Allows DB schemes to continue to invest in the real economy on a scale that simply would not be possible without it.
- Gives sponsors a much greater degree of cost certainty, allowing them to manage their businesses more efficiently.
- Keeps the funding level relatively stable, immunising members from potential cutbacks in benefits should the sponsor become insolvent.
- Helps protect the PPF, keeping the aggregate cost of PPF insurance on the UK economy to a minimum.

We do however think that there will need to be some changes going forwards in terms of the operation of LDI funds. These are likely to include:

- lower target leverage of the funds. This will reduce the likelihood of a similar sudden spike in yields causing the LDI asset values to be depleted so quickly and to reduce the risk of a selling spiral. We have already seen all of the LDI managers that we work with significantly reducing the amount of leverage used within their LDI portfolios. Most of this was implemented over the period up to 14 October whilst the Bank of England was providing support to the market by buying gilts.
- greater flexibility in eligible collateral rules. We understand that some LDI strategies that held gilts directly alongside gilts on repo were forced to sell gilts to raise cash to collateralise the repo positions. If gilts had been eligible as collateral then this would not have been necessary.
- increased focus on collateral waterfalls. Trustees have previously been primarily responsible for the adequacy of their own collateral arrangements. We expect that going forwards, the arrangements are likely to be scrutinised by a wider range of stakeholders including LDI managers and potentially counterparty banks.
- greater focus on the overall liquidity of a scheme's investment arrangements. Giving LDI managers access to more of the scheme's other assets to use for de-leveraging will provide an additional layer of certainty that exposures can be maintained.
- greater flexibility in LDI benchmarking. LDI funds are benchmarked against a notional calculation of how the fund should perform. This is useful for investors to see how whether the fund is doing "what it is supposed to". However, most LDI benchmarks use market close pricing, which creates an incentive for LDI managers to carry out most of their trading in the late afternoon. This concentrates selling wherever it is taking place. Encouraging LDI managers to adopt more flexible benchmarking approaches, based on market pricing whenever they do actually trade, would reduce this concentration.
- reviewing dealing cycles. Some LDI managers' funds trade only weekly. Whilst there are advantages to this in terms of maximising crossing opportunities between buyers/sellers in the funds, it does mean that fund recapitalisation events, and therefore any forced selling, are more likely to all occur on the same day than if the manager had a daily-dealing cycle. Moving to a daily-dealing cycle would mitigate the effects of an LDI fund becoming a forced seller in future, by spreading trading over a greater number of trading days.

Does the experience suggest other policy or governance changes needed, for example to DB funding rules?

We do not think the DB funding rules need to change as a result of the rise in gilt yields.

The majority of DB pension schemes ultimately aim to secure the scheme's liabilities with an insurer and as a result aiming towards full funding on a gilt-based target (likely to be a reasonable proxy for insurer pricing), using LDI to manage the risks around this, is a sensible approach for these schemes. In a complementary approach, existing DB funding rules encourage the use of gilt-based assumptions for discounting the scheme liabilities. This in turn has encouraged the use of LDI as a way to manage the interest rate and inflation risks that this method recognises.

However, this is simply because both DB funding rules and LDI strategies recognise the same truth: that pension liabilities are economically analogous to gilts.

Amending the funding rules to break this link would probably encourage investment in strategies designed to manage risk on whatever basis the new rules were designed. This would create a worse situation, where pension schemes are being artificially encouraged to mismatch the true nature of their assets and liabilities. It would go

one of two ways: either the UK pension sector would become structurally overfunded, or it would become structurally underfunded. Neither is good. If it were underfunded then members' benefits would be at greater risk from a corporate insolvency. If it were overfunded then it would represent a colossal misallocation of capital between the corporate sector and the beneficiaries of these schemes. That would adversely affect shareholder returns and push up the aggregate cost of capital in the UK economy. Ultimately, a cost would be borne in an unfair way by someone.

New funding regulations, supported by a new DB funding code, are currently under consideration which will set out the new requirements which trustees must follow in their funding and investment plans. These include considering a long-term objective (LTO) and a journey plan to achieve that LTO over time as the scheme matures. This could lead to some schemes taking less investment risk within their portfolios in order to meet the new requirements. As well as putting additional pressure on some sponsors to fill any shortfall, this approach is likely to increase the use of LDI by UK DB schemes, albeit likely in a much less leveraged way, in order to provide a stable long-term position as desired.

We see the continued use of LDI as a positive, with the expectation that it will provide schemes with lower levels of overall risk, assuming LDI is properly structured (with appropriate leverage levels), that the trustees sufficiently understand the risks and that the overall investment strategy is able to support the required LDI allocation.

We do, however, have some technical concerns on the proposed new DB funding rules. We have already communicated these to DWP as part of its ongoing consultation.