



# Pension funds and index-linked gilts

## A supply/demand mismatch made in hell

June 2016

- **UK private sector defined benefit schemes already own an estimated 80% of the long-dated index-linked gilt market and potential demand is almost five times the size of the market.**
- **Supply is expected to remain high, and is likely to increase the market by around a third over the next five years, but this will not come close to matching demand.**
- **Other sources of inflation protection exist, but can only bring partial relief.**
- **Pension funds waiting for index-linked gilt yields to rise to “attractive” levels are fighting a losing battle. The imbalance is structural and yields are likely to remain depressed relative to economic fundamentals for the foreseeable future.**
- **A combination of a liability driven investment programme and a structured and disciplined flight path focusing on reducing risk when funding levels permit, is likely to represent the best course of action for most pension funds.**

### Long-dated index-linked gilts: the value proposition

Given the long-dated inflation-linked nature of their liabilities, a key benefit that pension funds gain from investing in long-dated index-linked gilts is management of liability risk and funding level volatility. The index-linked gilt market was launched in the early 1980s to meet this specific need, with ownership initially restricted to pension funds or similar institutions writing pension business. From a pension scheme perspective, “value” comes from risk mitigation, not return generation. This has important implications for the dynamics of this market.

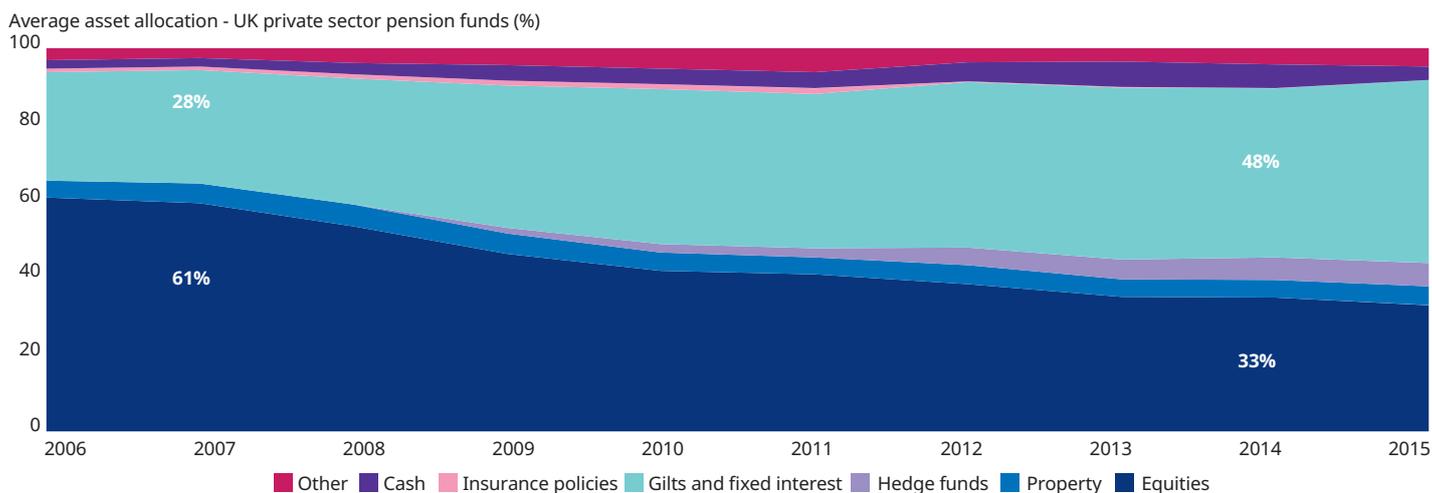
### Pension funds already dominate the long-dated index-linked gilt market

As is well known, UK private sector defined benefit pension funds are in (very) long term terminal decline. According to statistics in the latest Purple Book from the Pensions Regulator, only 13% of private sector defined benefit schemes remain open to new members and around two thirds are now closed to future accrual. As schemes have matured, the focus has shifted. Pension funds everywhere have attempted to de-risk in order to manage funding level volatility. Allocations to equities have slumped while allocations to bonds have soared. The trend of increased allocation to bonds shows no signs of slowing down and this journey has much further to go.

Data from the latest Purple Book indicates that, as at 31 March 2015, private sector pension funds had around 48% of their assets invested in bonds, of which 42% was invested in index-linked gilts. This equates to around 20% of their overall portfolios, or around £260 billion in aggregate using 31 March 2015 asset values. Given that pension scheme liabilities can stretch decades into the future, this is likely to be concentrated in the long-dated part of the market.

In contrast, the over 15-year index-linked gilt market was valued at a little more than £317 billion at that time (£338 billion in June 2016), indicating that pension scheme holdings amounted to over 80% of the total – they dominate the market. As the motivation for buying is grounded in risk mitigation, long-dated index-linked gilt yields are unlikely to settle at a level consistent with normal economic fundamentals. Prices are more likely to be set by the trade-off between the supply of index-linked gilts and the demand created by pension funds seeking hedging assets. The situation is not quite as stark in the fixed-interest gilt market, but here too pension funds are a key investor, wielding significant influence alongside insurance companies.

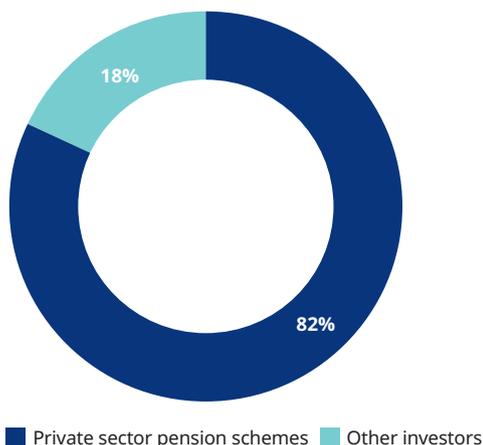
**Figure 1: Allocations have shifted away from equities in favour of bonds**



Source: The Pensions Regulator Purple Book 2015, as at 31 March 2015

**Figure 2: Pension funds own almost all of the market**

Estimated long-dated index-linked gilt market ownership



Source: Pensions Regulator Purple Book 2015, Schroders, Datastream, as at 31 March 2015

This has some implications for the functioning of the long-dated index-linked gilt market. Pension funds are not active traders of bonds. They invest in them to match their liabilities. That means that once invested, they are unlikely to sell those bonds again in future, other than if their portfolio is restructured or an active manager is making stock selection decisions. The reality is that the vast majority of assets invested in liability matching portfolios are managed on a relatively passive basis. Therefore, it is reasonable to assume that over 80% of the long-dated index-linked gilt market fails to trade on a regular basis. Prices bear little relationship with any concept of fundamental value as the key buyers are relatively price insensitive, driven by risk management rather than return maximisation priorities. It is notable that pension funds bought more index-linked gilts in 2015 than in any year of the past five, despite real yields being close to historic lows throughout much of the year.

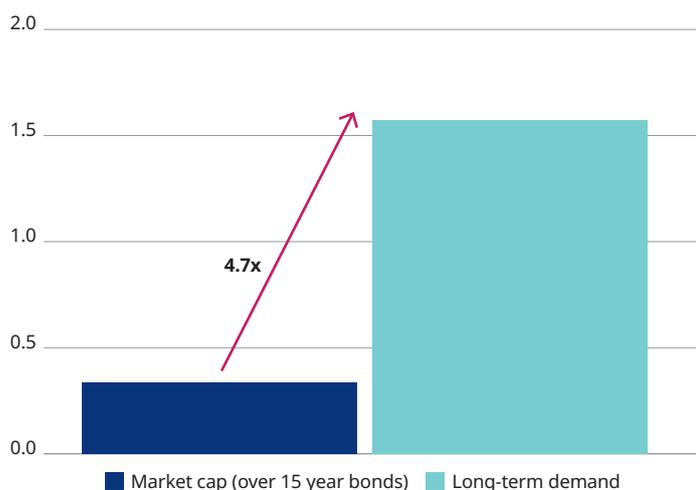
This is not just hearsay. Last spring and early summer, when commodity prices collapsed, consensus inflation expectations fell with them. Inflation expectations priced into most applicable government bond markets worldwide also declined as demand for inflation hedging assets fell. For example, market-implied 20-year breakeven inflation fell by 0.2% in the US and 0.3% in France. However, 20-year breakeven inflation actually rose by 0.1% in the UK over the same period. This occurred as UK index-linked gilts became more expensive relative to fixed-interest gilts over the period. Despite an environment when inflation expectations were falling on a global basis, index-linked gilts were more in demand than fixed-interest gilts. This is completely counterintuitive and flies in the face of what was occurring in the wider world.

**Long term demand is many multiples of the current market size**

This long term supply/demand imbalance does not bode well for the future. As funding levels (hopefully) improve over time, demand for liability matching assets is only set to grow as schemes de-risk further. For a fully-funded scheme, there is no need to take investment risk, so the natural asset allocation is a portfolio of assets designed to match the liabilities of the scheme. As around 75% of UK pension liabilities are inflation-linked, the bulk of this demand is likely to be for long-dated index-linked gilts.

UK private sector pension liabilities are valued at just over £2 trillion on a buyout basis, which suggests that potential demand for long-dated index-linked gilts could be of the magnitude of £1.6 trillion. This is almost five times the current size of the market. There are not even close to enough bonds out there to meet this demand, suggesting that long-dated index-linked gilt yields are likely to remain suppressed for the foreseeable future. It is true that over recent years many pension funds have changed the inflation measure used in the calculation of their liabilities from the retail prices index (RPI) to the consumer prices index (CPI), a structurally lower measure, but this is unlikely to change our conclusions to a material extent, given the scale of the supply/demand mismatch.

**Figure 3: Demand swamps supply (£trillion)**



Source: The Pensions Regulator Purple Book 2015, Schroders, Datastream, as at 1 June 2016

**Continued high levels of supply provide some relief**

So far we have established that pension funds already own over 80% of the long-dated index-linked gilt market and that long-term demand is almost five times the current size of the market. Does future supply offer any respite?

The answer is a qualified “yes”. In recent years, the Debt Management Office (DMO) has been meeting around 25% of its financing remit with index-linked gilts, up on the 10-year average of around 22% and the longer term average of below 20%. However the bigger shift has occurred within index-linked gilt issuance. Here, the proportion of financing needs met by long-dated index-linked gilts has risen from an approximate 50-60% range historically to around 80% on average in the post-crisis era. Furthermore, the DMO has been launching longer and longer-dated issues within this category. The 50-year maturity cap was lifted in 2012 and a number of ultra-long index-linked gilts have been issued, driving up the average maturity of new issuance to around 30 years. The DMO even consulted on the possibility

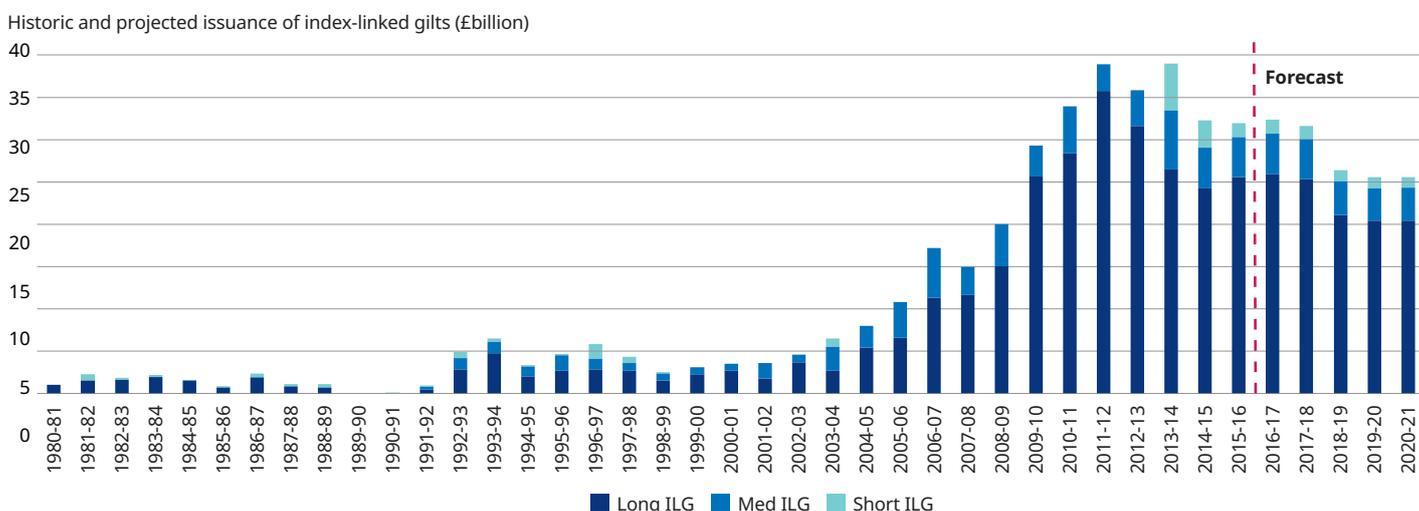
of perpetual bonds, although ultimately decided not to proceed. These moves have driven an increase in the average maturity of the total outstanding index-linked gilt market from around 13 years in 2004 to over 22 years of late.

Looking forwards, issuance of long-dated index-linked gilts is set to remain very high by historic standards. That will be true even if the government successfully achieves a budget surplus by the end of this parliament. The reasons for this are twofold:

- 1 A lower budget deficit does not necessarily equate to lower issuance of gilts. Even if the budget deficit is zero, new gilts will be needed to refinance existing maturing debt. In this instance new longer-dated bonds are issued to replace maturing very short-dated bonds. This automatically leads to net supply of longer-dated bonds even if overall net new supply of bonds is zero.
- 2 The DMO also has a choice as to the maturity profile of any new supply. If they continue to skew the issuance profile towards longer dated bonds then it is possible for long dated issuance to stay high even if overall issuance declines.

Assuming the DMO maintains the patterns of the past five years, then around 75% of gross issuance will be in fixed-interest gilts and 25% in index-linked gilts. Furthermore, around 30% of fixed-interest and 80% of index-linked gilt issuance will be in longer-dated bonds. Combined with the DMO’s aggregate gross issuance projections, this analysis suggests that a further £20-26 billion of long-dated index-linked gilts could come to the market each year through to 2021. This is very high by historic standards, cumulatively representing £113 billion of new supply over the 2016-21 fiscal years. It would equate to roughly a one third increase in the size of the long-dated index-linked gilt market as it stands. However, it would represent a drop in the ocean compared with potential pension scheme demand approaching £1.6 trillion.

**Figure 4: Long-dated issuance will remain very high by historic standards**



Source: Debt Management Office, Schroders as at 1 June 2016

A reasonable question would be why the DMO does not do more to alleviate this bottleneck? The DMO itself acknowledges that index-linked gilts would represent a more cost-effective means to finance borrowing requirements if RPI inflation was around 3% over the life of the bond (broadly equivalent to a CPI inflation rate kept in line with the Bank of England's target of 2%). The answer to this question lies in the risk management approach adopted by the DMO. Its objective is:

**“to minimise, over the long term, the costs of meeting the government’s financing needs, taking into account risk, while ensuring that debt management policy is consistent with the aims of monetary policy.”**

Issuance of index-linked gilts exposes the Treasury to uncertain future repayments, whereas the payments required under fixed-interest gilts are known in advance. The DMO is balancing the ability to borrow at what appear to be very low long-term real yields with the risk that ultimately this proves a costly move if inflation rises substantially in later years. While near term concerns have been more around deflation than inflation, the ability of anyone to predict how inflation will develop over a more than 50-year timescale is limited to say the least.

In addition, the easiest way for the government to reduce the size of its debt burden is to inflate its way out of it. For a given level of real GDP, a higher rate of inflation translates into a higher level of nominal GDP and, by consequence, a lower debt/GDP ratio. In this way a fixed debt burden reduces when inflation picks up. For this reason, a cynic may remark that policy is likely to be biased towards a preference for above average inflation, even if attempts to rekindle prices have clearly not proven hugely successful of late. However, the inflation-linked component of the national debt would grow in an inflationary environment. A policy bias towards higher inflation may therefore also have a part to play in how much of its financing needs the DMO thinks is prudent to be met by index-linked gilts.

### **What is a realistic estimate of demand in the coming years?**

While potential pension scheme demand is significant, it is highly unlikely to all materialise immediately. A significant shift in asset allocation towards index-linked gilts would require a reduced allocation to return-seeking asset classes, lowering a portfolio's expected return. This is a deterrent given the underfunded positions of many pension funds. The ability to use synthetic solutions to attempt to overcome the problem is also becoming more limited. However, even allowing for a relatively limited amount of demand in the coming years leads to the unhappy conclusion that the supply/demand crunch is unlikely to abate:

- Conservatively assuming that it could take 20 years for pension funds to become fully funded on a buyout basis could result in average annual demand of over £50 billion for index-linked gilts. This is still a multiple of projected supply
- Taking a slightly different approach, it would only take a switch of less than 2% in the average pension scheme's asset allocation in favour of long-dated index-linked gilts to consume all the annual supply. Given the sums of money involved, the move does not have to be large to exert significant influence.

Whichever way you look at it, demand is likely to outweigh supply for the foreseeable future.

### **What are the alternatives?**

Given their government backing, index-linked gilts represent the ideal high quality liability matching asset. However, they are not the only source of inflation-linked returns. Corporate inflation-linked bonds, overseas sovereign inflation-linked bonds and swap markets can all play a role in liability hedging programmes, as can some more illiquid asset classes. However, none of these are capable of making a sizeable dent in the supply/demand imbalance.

Sterling inflation-linked corporate bonds provide an alternative source of contractual inflation-linked returns, albeit with added credit risk. However, this market is only likely to play a very small part in overall inflation-hedging programmes for two reasons:

- It is a relatively small market, valued at about £40 billion
- It suffers from significant industry and stock concentration risk. Almost half of the market has been issued by Network Rail, although these bonds are technically no longer corporate debt as the government has brought them onto its books. In addition, a further 30% has been issued by utility companies. This limits its attractiveness.

Swap markets have developed significantly and represent a viable alternative. However, supply here is also now highly constrained. Banks are resistant to entering into long-term contracts that remain on their balance sheets as the regulatory capital charges they face for bearing such long-term risks make this a particularly unappealing proposition. They therefore have limited appetite for entering swap contracts with pension funds, unless they believe they can offload the exposure to other market participants. However, beyond the UK government, there are few market participants willing to take on the other side of this trade. Swaps have a role to play but will not fill the supply shortfall.

Overseas inflation-linked bond markets also offer some appealing characteristics. Markets such as the US do not suffer from the same structural imbalances as the UK as the majority of their pension scheme liabilities are fixed, rather than inflation-linked. This means that the cost of

buying inflation protection can be much lower in these markets. For example, the real yield on a 30-year US Treasury Inflation-Protected Security (TIPS) is around 1.7% higher than that available on an equivalent maturity index-linked gilt. Around 1 percentage point of this difference reflects the fact that payments on UK index-linked gilts are linked to RPI, whereas TIPS are linked to CPI, a structurally lower measure. Even allowing for this, US TIPS still appear to offer a material yield pick-up over index-linked gilts.

However, several key issues stand out which mean that TIPS do not fit naturally in a liability hedging portfolio:

- 1 Leaving aside the different measures used, the underlying inflation rates in the UK and US are different. Although they are positively correlated and follow similar trends, the two inflation rates can at times diverge significantly. This means that TIPS can only ever represent an imperfect match for UK pension scheme liabilities.
- 2 The long-dated US TIPS market is only a fraction of the size of the long-dated index-linked gilt market. Other overseas markets are smaller still.
- 3 Returns on TIPS are denominated in dollars so the impact of currency hedging on returns would need to be taken into account.

### TIPS offer a useful yield pick-up...

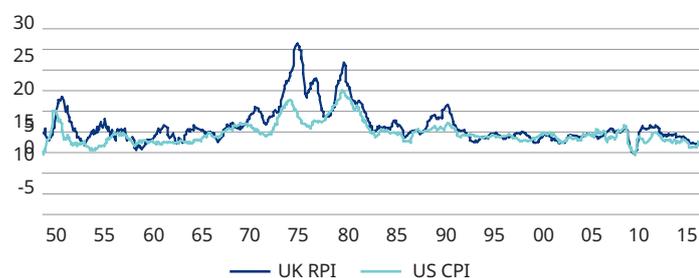
30-year TIPS vs 30-year index-linked gilt yield (%)



Source: Bloomberg, as at 1 June 2016

### ...but the pay-back is in inflation differences

12 month inflation rate (%)



Source: Datastream, as at 30 April 2016

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Pension funds are also increasingly considering more illiquid asset classes as a source of inflation-linked returns. These include investments in infrastructure, social housing and ground rents, among other more esoteric asset classes. While outside the scope of this paper these can play a valuable role in portfolios, although given the long-term nature of these investments, management of liquidity risk at the overall portfolio level will be paramount.

### Implications

Pension funds and their need for UK index-linked gilts may be a supply/demand mismatch made in hell, but that is not going to change any time soon. Other sources of inflation protection can only bring partial relief. Given the supply/demand mismatch, any periods when real yields rise are likely to be pounced upon by eager buyers. This will limit the potential for any material sustained increase in long-dated real yields. The clear implication is that waiting for yields to be “attractive” could result in permanent inaction and unnecessary risk.

Nimble pension funds may be able to time the market and add to their index-linked gilt holdings during brief periods of higher real yields. However, such a strategy demands a significant amount of skill and, just as importantly, a highly organised and efficient governance structure. For the rest, a combination of a liability driven investment programme and a structured and disciplined flightpath, which focuses on reducing risk when funding levels permit, is likely to represent the best course of action.

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