

How should we assess the implications of a rise in bond yields for UK pension schemes?

Summary

In common with other, core sovereign bond markets, gilt yields are extraordinarily low by comparison with their last forty years' history. Rather than deliberate on why yields are so low we analyse four scenarios in which we consider how they may evolve from here.



Of the scenarios we consider, two involve losses of 20% for holders of gilts. We conclude that losses of this magnitude are less likely than many fear. A prolonged period of rising gilt yields resulting in losses as great as this is likely to require economic conditions comparable to those the UK experienced in the 1970s – prolonged double digit inflation; weak growth; social strife; and loss of confidence in the government's fiscal discipline. The more extreme scenario, where the loss occurs because of a sharp rise in yields, would be likely to arise from a sudden deterioration in perceptions of the creditworthiness of the UK. Such a catastrophic collapse in investor confidence would be likely to affect all UK asset prices and would demand an urgent response from the UK government.

We conclude that losses of the magnitude considered are likely to require economic and social conditions that have broader implications for pension schemes and, indeed, UK society. We hope that analysis in this paper enables those who hold contrasting market views to develop more nuanced scenarios against which to assess the implications for individual pension schemes.

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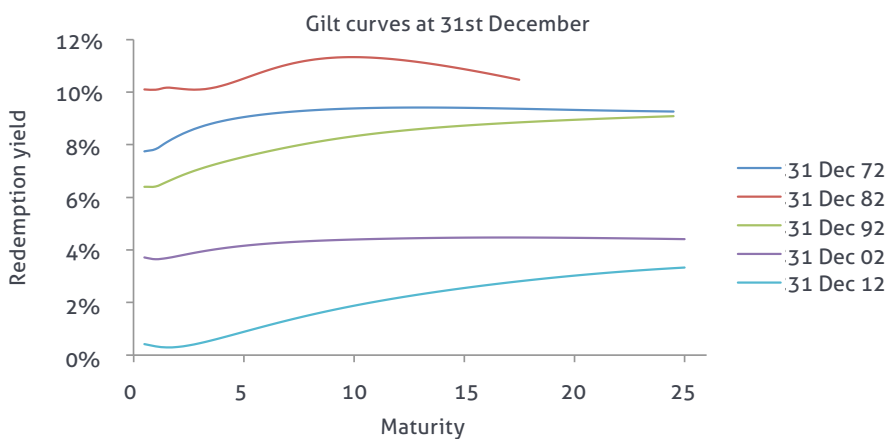


Analysis

In common with other sovereign bond markets, current gilt yields are extraordinarily low by comparison with their last forty years' history (see Chart 1). Views on why this is so are sharply divided. Some argue that this is a consequence of the current very low level of short interest rates and the current modest rate of economic expansion, which the Bank of England and other official sector forecasters expect to persist for a further three to five years. Others argue that central banks are engaged in a major monetary experiment, which may have adverse consequences for inflation and, when the central banks step back, bond yields will rise and gilt investors lose.

These views are so different that when investors meet to debate these challenges, the participants tend to line up behind one position or the other and an impasse is reached. This analysis argues for an alternative, more collaborative approach, one designed to produce views that are more nuanced, incorporating elements that both camps can accept and introducing perspectives which neither party had previously considered. In what follows we treat the opposing views as stress tests: that is, we assume that each will happen and investigate the consequences.

Chart 1: Historical gilt curves



Source: Bank of England and Cameron Hume

We explore the implications for asset prices and pension scheme liabilities in the following four scenarios:

- 1. The Japanese scenario:**
Yields grind lower and stay low for at least a decade
- 2. Sharp sell-off:**
Bonds yields rise sharply in response to a major event or change in expectations
- 3. Market expectations:**
Short term yields rise at a rate similar to that implied by the instantaneous forward curve
- 4. Steady sell-off:**
Bonds earn low negative total returns for a period of years

The question we have asked is how one should think about the implications of a rise in bond yields for UK pension schemes. This suggests that we do not spend too long considering the first and second scenarios. This is not to argue that these scenarios are not worthy of discussion, but rather that they are not as relevant to the question we have posed as the other two. We therefore deal with scenarios one and two first.

“This analysis argues for an alternative, more collaborative approach to assessing impact of bond yields for UK pension schemes by treating opposing views as stress tests and investigating the consequences.”



Scenario 1 The Japanese scenario

Under the Japanese scenario there is a further fall in yields, which increases the present value of liabilities and the overall effect on pension schemes will depend critically on the returns earned by the assets. For most schemes the interest rate sensitivity of their bond assets will be less than that of their liabilities and so their bond portfolios will under-perform the scheme's liabilities. As we believe that this scenario is worse than market expectations the other assets held by the scheme are also likely to under-perform the return of the liabilities. So, in this scenario we believe that the solvency of pension schemes will deteriorate.

Scenario 2 The sharp sell-off scenario

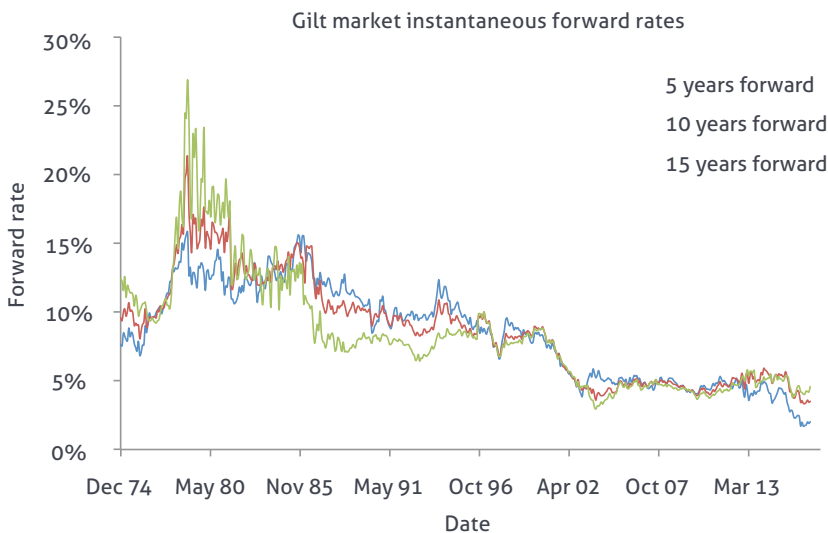
Historically, abrupt sell-offs such as we have seen in some of the Eurozone bond markets in recent years, have been most frequently triggered by concerns of an imminent default. However, the threat of an imminent UK sovereign default would affect all UK asset prices, not just the gilt market, and as we have seen elsewhere the implications for sterling asset prices depend critically on the choices made by politicians and any international bodies called upon for help. In short, if the likelihood of a UK default rises sharply, then the implications for the solvency of UK pension schemes will depend not only on the behaviour of asset prices but also the political response. At one extreme is the example provided by the Hungarian government, which effectively nationalised private sector pensions in 2010. Perhaps a more plausible example is the coordinated action of the IMF, ECB and EU in addressing stresses in the Eurozone periphery.

Having dealt with the first two scenarios summarily let us consider the other two.

Scenario 3 The market expectations scenario

It is not possible to measure directly the market's current expectations for future interest rates. The best one can do is to observe the forward rate¹. For example, the five year instantaneous forward rate is an approximation of the market's expectation of what short rates will be in five years time. The Bank of England has produced a series of instantaneous forward rates for the gilt market that stretches back to 1970.

Chart 2: Instantaneous forward rates



Source: Bank of England

“Japanese Scenario” of very low yields would result in a deterioration in pension fund solvency. In order to generate losses of 2% pa on bond holders, the yield on a gilt with 5 years to maturity would have to increase by over 15 percentage points. In summary, a prolonged period of rising gilt yields, resulting in substantial losses for bond holders, is likely to require economic conditions no better than those of the 1970s.”

¹ The forward rate is a breakeven, or risk neutral, calculation and it is standard in most introductory financial markets text books.



Chart 2 shows that the five year instantaneous forward rate is very low, while the longer dated forwards are closer to the levels seen for most of the last fifteen years. This chart suggests that the market is expecting a period of very weak growth for the next three or more years with the economy, and gilt yields, returning only slowly to the "normal" of the previous fifteen years. This would also describe the views of most of the official institutions. Households, banks and the government are trying to improve their balance sheets at the same time. As a result, the process is slow and costly in terms of lost output meaning that growth in the UK faces strong headwinds.

If interest rates were to develop in line with this definition of market expectations then pension schemes' bond assets would have the same return as their liabilities and the overall implications for schemes' net assets would depend on how other assets performed. To assess the implications of this scenario on other asset classes one should then consider whether this economic scenario is better or worse than that which investors currently expect.

Scenario 4 The steady sell-off scenario

This is the principal alternative thesis to scenario 2. Markets gradually come to expect central banks to withdraw their unconventional policies and so gilt yields rise. Alternatively, the pain of austerity may become politically insufferable, tempting politicians to regard inflation as an easier route to recovery and debt reduction. In this version of the scenario yields also rise and gilt investors lose.

The main concern in this scenario is that holders of gilts may lose a substantial sum, but how much? We begin by positing a loss of 20%, assess what this would mean for gilt yields and then seek to identify the scenarios that may produce such a loss.

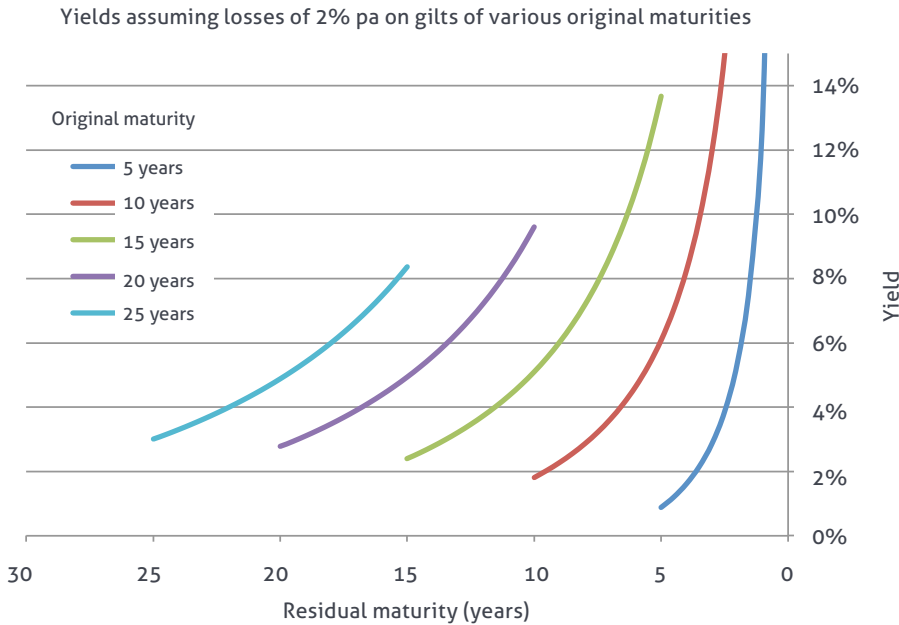
Chart 3, below, shows how the yields of bonds with original maturities between 5 and 25 years rise if the total return on each is a loss of 2% pa². The exercise is run for ten years so that the cumulative loss at the end of the period is 20%. For example, a bond with an original maturity of 15 years currently yields 2.4%; in ten years time after losing 2% pa, when it would have 5 years to maturity, it would yield 13.7%.

In this scenario short term rates rise to very high levels - off-the scale of this chart - and the yield curve would slope strongly downwards, often an indication that monetary policy is too tight and may produce a recession. A plausible scenario in which this would occur is an inflationary pick-up to which the Bank of England responds by raising interest rates quickly and to historically very high rates, but at a rate that is on the one hand insufficient to quell inflation but nevertheless leaves longer term forward rates lower than they are now. In other words, the market moves to price in long term growth and inflation to be lower than currently expected. The circumstances in which this scenario might occur are if inflation soars, but growth remains poor and the Bank of England cannot raise rates fast enough because of abject social conditions and, probably, political interference.

² It is straightforward to calculate the implications of a slower or more rapid sell-off.



Chart 3: The rise in yields from a prolonged weak gilt market



Source: Cameron Hume

A variant on this scenario has shorter term yields rising by less, but longer rates rising by more, so that longer term forward rates increase from their present level. However, as Chart 2 hints, the market currently expects rates to continue rising beyond five years. So, this scenario would have rates rising sharply over the next five years and then continuing to rise rapidly for the subsequent five years. We have not seen such a feature in the gilt market since the 1976 IMF crisis. This suggests that in this case the gilt market is unable or unwilling to fund government spending. The policies which led to this environment in the 1970s were the combination of budget deficits, inflexible labour and capital markets, and a monetary policy that chose to accommodate the inflationary shock of the oil crisis to preserve what was called the "social contract".

The implications of the two versions of this scenario will be most dependent on the specific circumstances of each pension scheme. Most pension schemes' assets are less sensitive to rising rates than their liabilities, so the sharply rising rates of this scenario should help their solvency position. On the other hand, the consequences of high inflation will depend on the inflation exposure embedded in scheme liabilities. We understand that, in aggregate, schemes have a material mis-match at low levels of inflation between the inflation written into their pension promises and the amount of inflation-protection they have bought, but whether this remains the case when inflation is materially greater than 5% we are unsure. Finally, how would the other assets of the pension scheme perform in such environments?



Conclusion

The historically low levels of sovereign bond yields today divide commentators. The purpose of the exercise above was to develop an approach that might tease out more nuanced implications for pension schemes. We have not argued for the relative likelihood of each scenario, but simply set out our interpretation of what economic and social circumstances might accompany each scenario. Over time, economic conditions should improve and this will lead to higher short term interest rates and a rise in gilt yields. For such a rise to result in material losses for holders would require not an improvement in economic conditions but rather a switch to a different adverse scenario.

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