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Western Europe

UK Economics Weekly

The Surge In Pension Deficits — Causes and Implications

- The recent collapse in long yields will, if sustained, produce sizeable debt service savings for the government and private sector. But, with long yields used to discount the liabilities of defined benefit (DB) pension schemes, the drop in gilt yields will also sharply lift DB pension deficits. We expect the upcoming PPF7800 index (due to be published 10 February) will show the aggregate deficit of DB pension schemes (on a s179 basis) surged to about £380bn in January (21% of annual GDP) — by far a record high — from £266bn in Dec-14. On a full buyout basis, the aggregate DB pension deficit now probably is about £850bn.

- We believe there is little chance of aggressive measures to reverse this trend (eg early sales of APF holdings of long gilts, change in regulatory measurement of DB pension liabilities). Our rates strategists note that the surge in pension deficits may well extend the 'self-reinforcing LDI stop-in', as pension funds buy long gilts to protect against risks of even greater deficits if yields keep falling — and thereby keep long yields ultra-low. For the economy, there is some evidence that high pension deficits in recent years have acted as a cap on business investment and other corporate activity — offsetting some of the boost from loose monetary policy.

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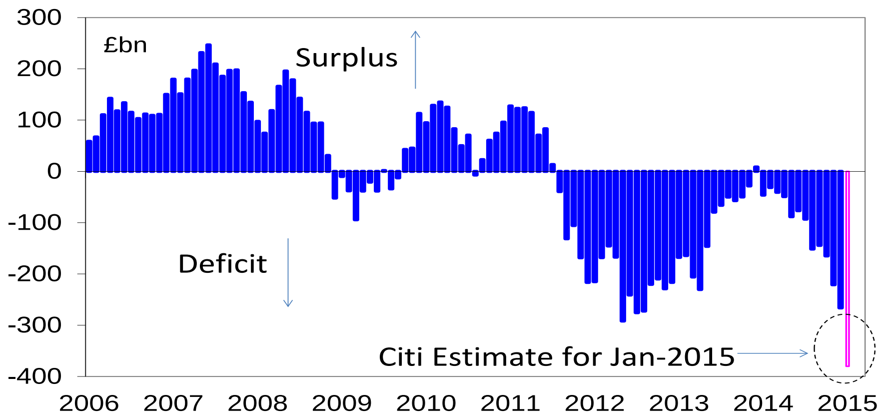
Figure 1. Citi Monetary Policy Forecasts

	Mid-2015	End-2015	End-2016	End-2017
Base Rate	0.50	0.50	1.50	2.50
QE Target	£375bn	£364bn	£265bn	£170bn

Source: Citi Research

Figure 2. UK — PPF7800 Index of Aggregate Surplus/Deficit of Defined Benefit Pension Schemes, 2006-15F



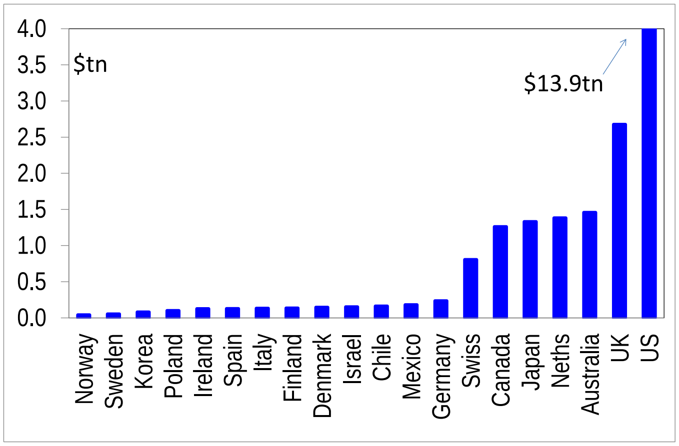
F Citi forecast for Jan-2015. Sources: PPF, DataStream and Citi Research

The Surge In Pension Deficits

The upcoming PPF7800 data are likely to show a further sharp rise in the aggregate deficit of defined benefit (DB) pension schemes to a new record high. The aggregate deficit already surged from £76.8bn (4% of annual GDP) in June-14 to £266.3bn (15% in Dec-14) — the highest since mid-2012. As of Dec-14, 81% of UK DB pension funds were in deficit. Taking account of the sharp drop in gilt yields in January and the modest rise in equities[1], we estimate that the upcoming data will show the aggregate PPF7800 deficit up to about £380bn (21% of GDP), far above the prior peak (£292bn in May-2012), with the average funding ratio at a new record low of 77.0% (from 82.2% in Dec-14). This note aims to assess the issues involved.

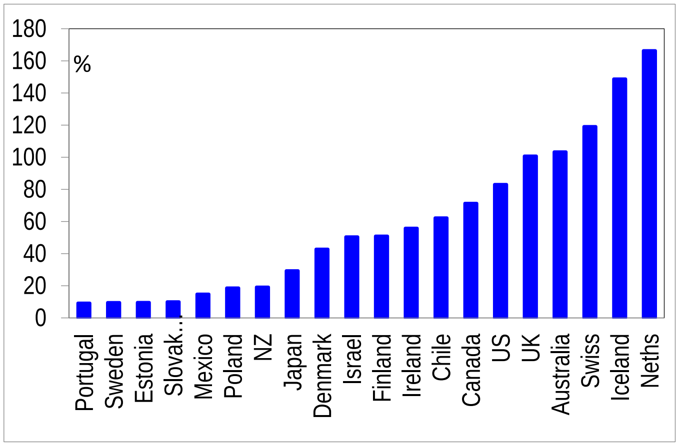
The UK has a very high level of pension assets and savings, but it is surprisingly hard to produce exact figures for the totals, partly because there are various overlapping data sources. Pension savings in the UK are held in a mix of funded occupational schemes (mostly private sector, but with some public sector schemes), personal pension schemes, and other personal non-pension savings vehicles. All private sector pensions are funded, but most public sector pensions are unfunded. In turn, occupational schemes can be split into (1) those which hold assets and operate as self-administered pension funds, for which fairly extensive data are available; (2) those which only hold an annuity contract or insurance policy, for which much less data is available. There is limited data on personal pensions.

Figure 3. Selected Countries — Assets of Funded Pension Schemes, Trillions of US$, 2013



Note: We show the 20 highest OECD countries. Sources: OECD and Citi Research

Figure 4. Selected Countries — Assets of Funded Pension Schemes, PCT of GDP, 2013



Note: We show the 20 highest OECD countries. Sources: OECD and Citi Research

OECD data (covering funded pension schemes only), put the total level of UK pension assets at £1625bn (100% of GDP, or $2676bn) for end-2013, the second biggest in absolute terms of any country in the world (the US ranks top)[2]. As a share of GDP, assets of funded pension schemes total 100.7% of GDP for the UK, exceeded among advanced economies only by the Netherlands, Iceland, Switzerland and Australia. The ONS puts UK pension fund assets at £1707bn at end-2013. These figures (both for the UK and other countries) cover occupational and personal pension assets held in pension funds, but exclude pension savings

[1] The Pension Protection Fund (PPF) estimates that a 7.5% rise in equity markets boosts s179 assets by 2.7% while a 30bp rise in gilt yields reduces scheme assets by 1.3%. Meanwhile, a 30bp rise in gilt yields reduces scheme liabilities by 6.0%. The rules of thumb strictly speaking only apply to small changes from the 31 March 2014 level. The PPF judges that 15-year gilt yields are the key benchmark. In January, 15-year yields fell by 51bp, the sixth biggest MoM drop of the last 15 years, reaching a new record low.

[2] Source: Pension markets in Focus, OECD, Dec-2013.

held in insurance companies. Hence, the true level of pension assets is probably greater.

Inflows of savings to self-administered pension schemes totalled £47.3bn in 2013[3] (and an annualized pace of £40.3bn in Q1-Q3 2014), while inflows to personal pensions in fiscal year 2012/13 totalled £19.5bn[4]. This gives a total for pension inflows of £60-70bn per year. Again, the true total is probably slightly higher, because of inflows to insured pension funds, which the ONS put at £5.5bn in 2010[5].

Occupational pension schemes are a mix of Defined Benefit (DB, which offer some guaranteed level of pension payment, often linked to salary) and Defined Contribution (DC, for which pension payments depend on investment returns). Personal pensions in effect are DC. Among occupational schemes, the number of active members of DB schemes (ie where people are in work and contributions are still being made) is falling sharply, with a switch to DC schemes. However, the average contribution rate to DB schemes (20.6% of pay, including contributions by employers and employees) is much higher than that into DC schemes (9.1%). As a result, the vast bulk of inflows to self-administered pension schemes goes into funds rather than Defined Contribution (DC) funds: of the £47.3bn inflow to self-administered pension schemes in 2013, £41.3bn went to DB schemes, with only £4.7bn going to DC schemes (and £1.4bn to hybrid schemes). The expansion of pension membership with automatic enrolment (which takes effect over 2012-17) is likely to expand pension coverage, but so far does not seem to have significantly altered trends in pension contributions.

Likewise, the vast bulk of pension assets are in DB schemes. For example, the PPF7800 index (which covers DB schemes eligible for the PPF[6]) shows DB pension assets at £1122bn as of end-2013 (and £1237bn at end-2014), accounting for 66% of total pension fund assets (and the PPF index does not include all DB pension schemes, notably excluding those for local government employees).

Measuring Pension Deficits

The concept of whether a pension scheme is underfunded compared to its liabilities only really applies to DB schemes (since DC schemes and personal pensions do not have guaranteed liabilities). Among DB schemes, there are four main measures of pension deficits, based on similar valuations of assets (at market prices) but different methods of valuing liabilities (ie future pension payments).

- **Accounting basis** (IAS 19 or FRS 17), with liabilities valued using the yield on high quality corporate bonds of appropriate duration and currency, typically AA-rated). This is reported quarterly, with daily estimates published by Hewitt.

- **"Technical provisions" (TP) basis.** This is the method used by the Pension Regulator in its 3-yearly assessment of the funding position of individual pension schemes, with liabilities discounted using "prudent" assumptions agreed with the Regulator for bond yields, mortality rates and so forth. The Pension Regulator recently noted that the average discount rate used was close to the yield on AA

[3] Source: MQ5 Release, ONS, Dec 2014.

[4] See Pension Trends, Chapter 8: Pension contributions, ONS, Nov 2014.

[5] See "Improved methods for calculating private pension contributions", May 2012.

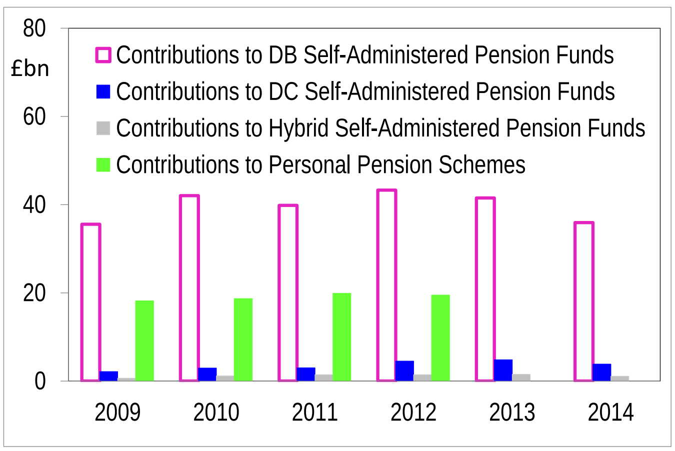
[6] The PPF guarantees to pay compensation to members of eligible defined benefit pension schemes, when there is a qualifying insolvency event in relation to the employer and where there are insufficient assets in the pension scheme to cover Pension Protection Fund levels of compensation.

corporate bonds and about 1.2-1.3% above corresponding gilt yields[7]. The Pension Regulator provides annual figures for the funding position of companies assessed in each round.

- **S179 basis**, used for the PPF 7800 index, published monthly. This values the portion of pension benefits covered by the PPF guarantee, discounted on a buyout basis (using a mix of conventional and index linked gilt yields) — ie the amount that must be paid to an insurance company for it to take on the payment of PPF compensation levels.

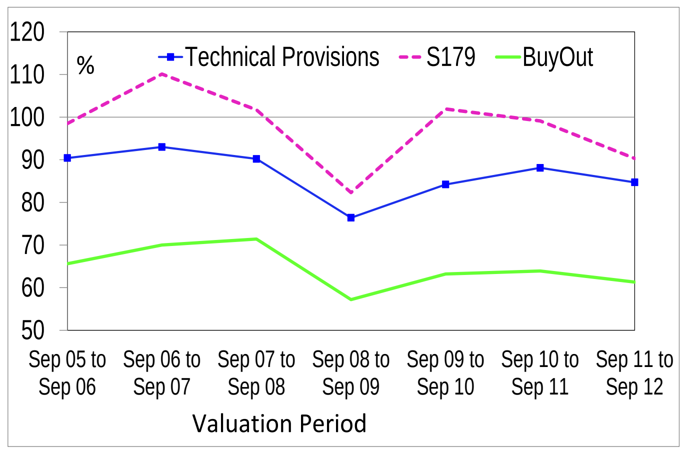
- **Buy out basis**, with the full value of pension benefits discounted on a buyout basis ie the amount that must be paid to an insurance company for it to take on the full payment of future pension benefits and remove investment risk totally from the pension scheme. The Pension Regulator provides annual estimates of deficits for the PPF7800 index on a buyout basis.

Figure 5. UK — Inflows to Pension Funds, £bn, 2009-2014



Note: Inflows to personal pensions measured on financial year basis, latest data are for 2012/13. Sources: ONS and Citi Research

Figure 6. UK – Alternative Measures of Average Funding Ratio of DB Pension Funds Undergoing 3-Yearly Valuation, 2005-14



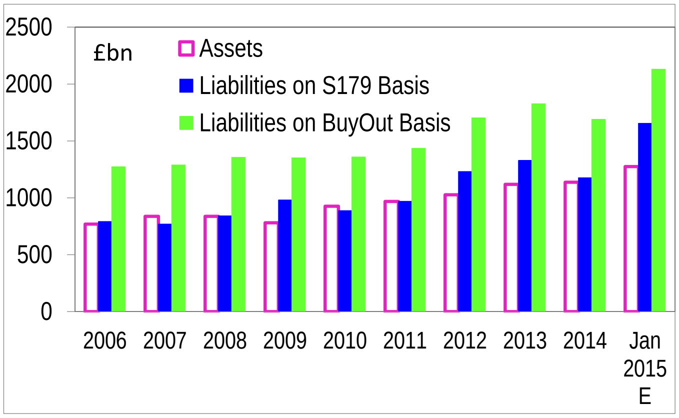
Note: Data from the 3-yearly assessments for each scheme and so each figure covers roughly one third of the total number of pension schemes.
Sources: UK Pension Regulator and Citi Research

On average in the last five years (measured as of end-March each year), DB pension liabilities for the PPF7800 schemes on a buyout basis have been 44% (£484bn) higher than liabilities on the s179 basis. The average funding ratio (ie assets/liabilities) of 94% on the PPF7800 index (ie an average £83bn deficit)) has translated into an average funding ratio of 65% (ie average deficit of £567bn) on the buyout basis. For the 3-yearly assessments from late-2005 to late 2012 (latest data), the average funding ratio on a TP basis was roughly 10 percentage points worse than on the s179 basis but not as bad as the buyout measure.

But while the various measures show different levels for pension deficits, they all show broadly similar trends. Hence, the rise in deficits on the PPF7800 index probably; will, over time, be reflected also in the other measures. Based on previous trends, our estimate that the PPF7800 index deficit is up to £380bn as of end-January (ie 77% funding ratio) implies a deficit of about £850n (48% of annual GDP) on a buyout basis. Of course, this is by far the highest deficit on the buyout basis of recent years.

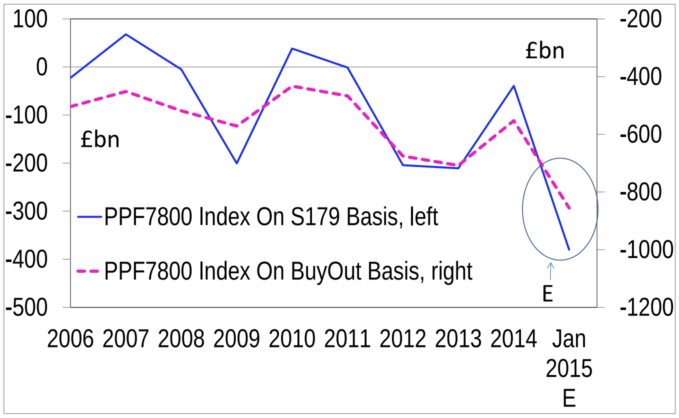
[7] See for example, “Scheme funding statistics”, The Pensions Regulator, May 2014.

Figure 7. UK – Aggregate Assets and Liabilities of PPF7800 Index Pension Schemes on S179 and Buyout Basis, 2006-15E



Note: 2006-14 data are as of March each year. Jan-2015 figure is Citi estimate.
Sources: The Pension Regulator and Citi Research

Figure 8. UK – Aggregate Assets and Liabilities of PPF7800 Index Pension Schemes on S179 and Buyout Basis, 2006-15E

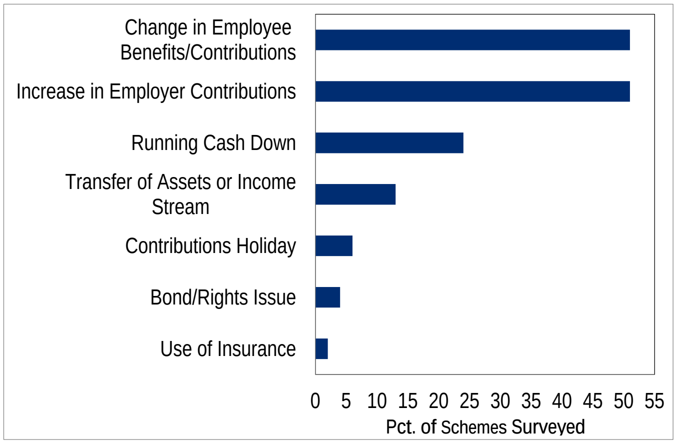


Note: 2006-14 data are as of March each year. Jan-2015 figure is Citi estimate.
Sources: The Pension Regulator and Citi Research

Effects of Higher Pension Deficits on the Economy

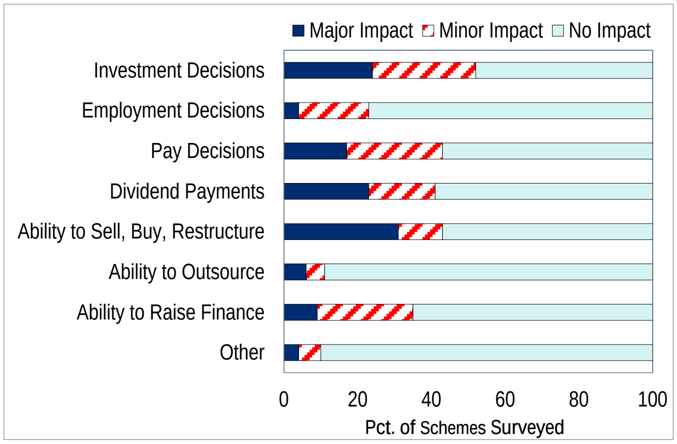
Of course, if gilt yields rise sharply, pension deficits will fall. But, given the prospect of persistent ECB QE, plus expanded BoJ QE and disinflationary global pressures, it seems quite possible that the low yield environment (and hence very high pension deficits) will persist. There is no obligation on companies to correct pension deficits immediately. However, over time, therefore, a sustained period of higher pension deficits would probably boost company contributions to pension funds, draining cashflow. The PPF deficit measure is used to calculate the level of annual required contributions to the PPF, and hence higher deficits on this measure impose a genuine financial cost to the company that sponsors the pension fund.

Figure 9. UK – BoE Survey on Firms' Direct Response to DB Deficits, June 2013



Sources: BoE and Citi Research

Figure 10. UK – BoE Agents Survey on the Wider Effects of DB Deficits on Firms' Behavior, June 2013



Sources: BoE and Citi Research

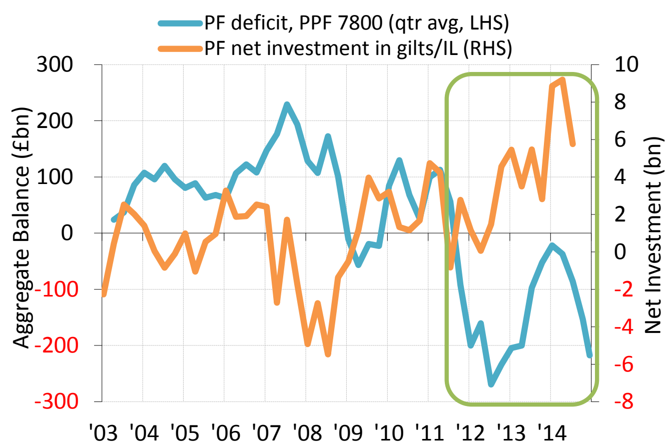
Moreover, if the 3-yearly valuation by the Pension Regulator (on a TP basis) shows a deficit, the 2004 Pensions Act requires the trustees of the pension scheme to produce a recovery plan to return to full funding. A recovery plan will typically extend over several years, and might involve a mix of higher contributions and/or contingent assets (eg a guarantee from a corporate parent or group, or security over company assets).

There is some evidence that higher pension deficits might hit business investment and other business activity. For example, a survey of companies by the BoE agents (reported in June 2013), reported that many firms had raised contributions to their DB pension fund in response to rising pension deficits, with a sizeable number of firms reporting an adverse effect on business investment, pay growth, dividend payments and scope for M&A activity, with some adverse effects on their ability to raise finance. These effects might well become more powerful, in a non-linear fashion, as the drop in gilt yields pushes pension deficits to new record highs.

Effects of Pension Deficits on the Gilt Curve

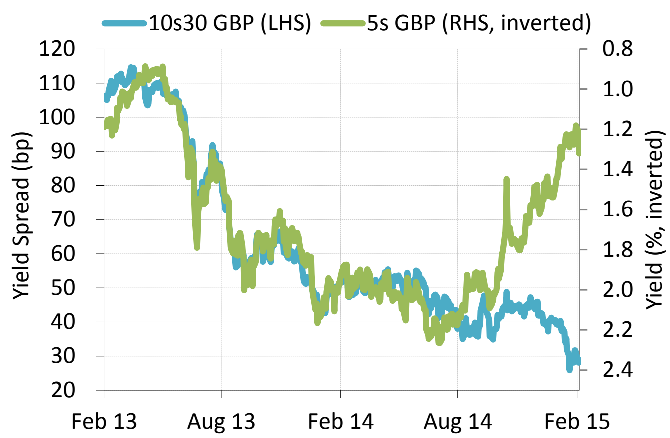
Pension funds have long been a dominant player in the market, largely explaining the pre-crisis inversion of the 10s30s curve (when gilt supply was much smaller). However, the very high pension deficits recorded over recent years have led to a surge in LDI demand for long-dated conventional and index-linked gilts, as pension funds seek to protect themselves against risks of even greater deficits if yields keep falling. Quarterly net gilt purchases by pension schemes are currently running at the highest rate for a decade (with additional indirect purchases via derivatives). This is shown by Figure 11, which also illustrates that the uptick in demand for gilts/linkers has coincided with pension funds moving into deficit. This could be described as a 'self-reinforcing LDI stop-in'.

Figure 11. Pension deficits vs pension fund demand for gilts/inkers



Sources: Pension Protection Fund, ONS and Citi Research

Figure 12. The 10s30s curve is flat vs the level of yields



Sources: Bloomberg and Citi Research

The stop-in is created by the direct relationship between pension fund deficits and gilt yields (owing to the way that liabilities are discounted). The pick-up in demand for gilts from pension funds has contributed to the fall in long-end yields to record lows. In turn, the rally in gilts is causing the present value of pension fund deficits to worsen. This in turn encourages more buying due to pressure from the regulator, and advice from consultants, to prepare better for a lower-for-longer world and increase hedging. In short, the more they buy, the lower yields fall; but the lower yields fall, the more they buy. Hence, it becomes self-reinforcing.

Arguably, the situation is exacerbated by QE. The Bank of England own 25% of the gilt market, comparable to the 28% held by pension funds and insurance companies. Pre-crisis, the latter owned 50-60%. This illustrates the extent to which institutional investors have been crowded out of the gilt market by QE. The end of QE in 2012, and the high level of issuance, is alleviating the problem. However, the Bank of England still own 38% of the nominal outstanding of 15yr+ gilts.

The impact of pension demand for gilts can also be seen in the gilt curve. While 10s30s remains steep relative to a 20yr history, a flattening trend has prevailed for the last couple of years. This is largely directional. The 10s30s curve is very sensitive to the front-end yields and tends to bear-flatten (and vice versa). More recently, however, 10s30s has unusually bull-flattened (Figure 12). While global factors – ECB QE, yield-grab, secular stagnation, global disinflation – have dominated, there is little doubt that domestic pension fund demand, and the 'self-reinforcing stop-in', has contributed to the flattening of the curve.

Will There Be A Policy Response to the Surge in Pension Deficits?

Given the possibility of adverse side effects on the economy from the surge in pension deficits, there is some speculation of a policy response to address the issue[8]. A range of options are possible, for example:

- Since pension liabilities are discounted using long yields, the BoE could sell its long gilts bought via QE, aiming to lift long yields and hence cut recorded pension deficits.
- The BoE could do a sort of reverse "Operation Twist", selling its QE long gilts while buying short and medium-dated gilts, aiming to push long yields up within a stable QE level.
- The BoE could reinvest proceeds from maturing QE gilts only in short- and medium-dated gilts.
- The DMO could issue a higher share of long gilts for 2015/16 (remit to be set in the March Budget).
- The Pension Regulator, PPF or accounting standards setters could change the basis on which DB pension liabilities are discounted, moving away from gilt yields and AA corporate bond yields to allow the use of markedly higher discount rates (thereby cutting the recorded value of liabilities).

We believe the first and fifth of these to be unlikely. The MPC judge QE to be a monetary policy tool and have stressed that the first tool for tightening would be to hike Bank Rate rather than unwind QE. With super-low inflation, it is unlikely that the MPC will seek to tighten monetary policy at all this year, let alone hike rates enough to bring QE unwind into play.

At the same time, the Pension Regulator probably will argue that low yields are here to stay, pension liabilities need to be properly funded, and that companies are better able to do so now given the strength in the economy and corporate profits. As the Pension Regulator warned in its mid-2014 guidance for DB pension funds "*There is potential for yields to remain low for an extended period. The risk that this occurs and the implication this has for future returns on other asset classes, are significant issues for scheme funding*…*For many employers, improved economic conditions are likely to mean they are in a stronger position to support their scheme in the future*." Given the PPF's role as a guarantor of pension benefits, a weaker framework for DB funding implies greater risk to the PPF's financial position – and hence to the government (which backstops the PPF, because the PPF is a public corporation). At a time when the government is seeking to cut the fiscal deficit and public debt ratio, such a rise in the public sector's contingent liabilities is unlikely to be welcome.

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[8] See, for example, "Time to debate impact of current exceptionally low bond yields", Dr Ros Altmann, January 2015.

The fourth option is relatively straightforward and likely, while we judge the third option is probably more likely than the second ("Operation Reverse-Twist"). However, the effects of these options are unlikely to be dramatic. The reinvestment flow from maturing gilts is relatively modest, and a shift in the maturity split of issuance would probably have to be quite large to have much a sizeable effect on long yields. Nevertheless, this issue is likely to be worth watching, especially if gilt yields remain ultra-low – or even plumb new lows – and, correspondingly, pension deficits stay high or escalate further.

Figure 13. Economic Indicators

Tue	*Industrial Production (Dec)*	Forecast: 0.3% MM, 1.0% YY	Prior: -0.1% MM, 1.1% YY
10 Feb	*Manufacturing Output (Dec)*	Forecast: 0.3% MM, 2.4% YY	Prior: +0.7% MM, 2.7% YY
	Surveys suggest that manufacturing output continues to expand at a solid pace, and a figure in line with our forecast would put Q4 manufacturing output up 0.3% QoQ and mark the seventh consecutive quarter of expansion. Industrial production was hit in November by lower oil and gas output and, with the drop in oil prices giving reasons to lower output and do maintenance work, this sector may not rebound in the December data.		

Source: Citi Research

Figure 14. Economic Calendar, 2 February — 20 February 2015

2 February	3 February	4 February	5 February	6 February
Manufacturing PMI (Jan) Dec 52.7 Jan 53.0	Construction PMI (Jan) Dec 57.6 Jan 59.1	Services PMI (Jan) Dec 55.8 Jan 57.2 MPC Meeting Starts	Halifax House Prices (Jan, 08:00) Dec 1.1% MM, 8.7% YY Jan 2.0% MM, 9.9% YY ECB's *Economic Bulletin* (09:00) EU Commission's *Winter Economic Forecasts* (09:00) MPC Meeting Ends: No Change in Rate or QE	KPMG/REC UK Report On Jobs (00:01) Trade Balance – Goods and Services (Dec) Nov £-1.8bn Dec £-2.9bn
9 February	**10 February**	**11 February**	**12 February**	**13 February**
G-20 Meeting of Finance Ministers & Central Bank Governors (Istanbul, Feb 9-10)	Industrial Production (Dec) Nov -0.1% MM, 1.1% YY DecE 0.3% MM, 1.0% YY Manufacturing Output (Dec) Nov 0.7% MM, 2.7% YY DecE 0.3% MM, 2.4% YY		RICS House Price Survey (Jan, 00:01) Riksbank Interest Rate Outcome (08:30) Bank of England's *Inflation Report* (10:30) Informal Meeting of EU Heads of State & Government (Brussels) (Feb 12-13)	Construction Output (Dec)
16 February	**17 February**	**18 February**	**19 February**	**20 February**
Eurogroup Meeting of EA Finance Ministers (14:00, Brussels)	Consumer Prices (Jan) Retail Prices (Jan) Producer Input Prices (Jan) Producer Output Prices (Jan) EcoFin Meeting of EU Finance Ministers (08:00, Brussels)	LFS Unemployment (Oct-Dec) Claimant Count Unemployment (Jan) Average Earnings (Dec) MPC Minutes (Feb 5) BoE Agents' Summary of Business Conditions (Feb)		Public Sector Net Borrowing ex Banks (Jan) Retail Sales Volumes (Jan)

E Citi estimate. B Billion. P Provisional. R Revised. Note: All data are released at 9.30 a.m., except those marked otherwise.
Sources: BoE, CBI, ONS, national sources and Citi Research.

Appendix A-1

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