05

Funding sensitivities

This chapter looks at factors affecting scheme funding levels, including changes in equity prices, gilt yields and life expectancy.

Summary

- This chapter shows how the funding of DB schemes and markets has changed since 2006, and how the funding of DB schemes at 31 March 2022 would change as a result of plausible changes in markets and longevity.

The following sections cover:

- The historical changes in s179 scheme funding since 2006. The series in this section take the estimated funding position at 31 March in previous years' editions of *The Purple Book*.
- Various funding sensitivities. All of these are on an s179 basis, taking the funding position as at 31 March 2022[1] as the base and using *The Purple Book 2022* dataset.

Change in s179 funding position over time

- Both the historical net funding position and funding ratio had been broadly trending downwards between March 2006 and August 2016. This trend has subsequently reversed and both measures are now higher than the levels they were at on 31 March 2006, with the net funding position reaching an all-time high of £193 billion at 31 March 2022.
- The proportion of schemes in deficit on an s179 basis reached an all-time low of 34 per cent in March 2022. This is 15 percentage points lower than the previous historical low of 49 per cent in March 2021.

Funding sensitivities as at 31 March 2022

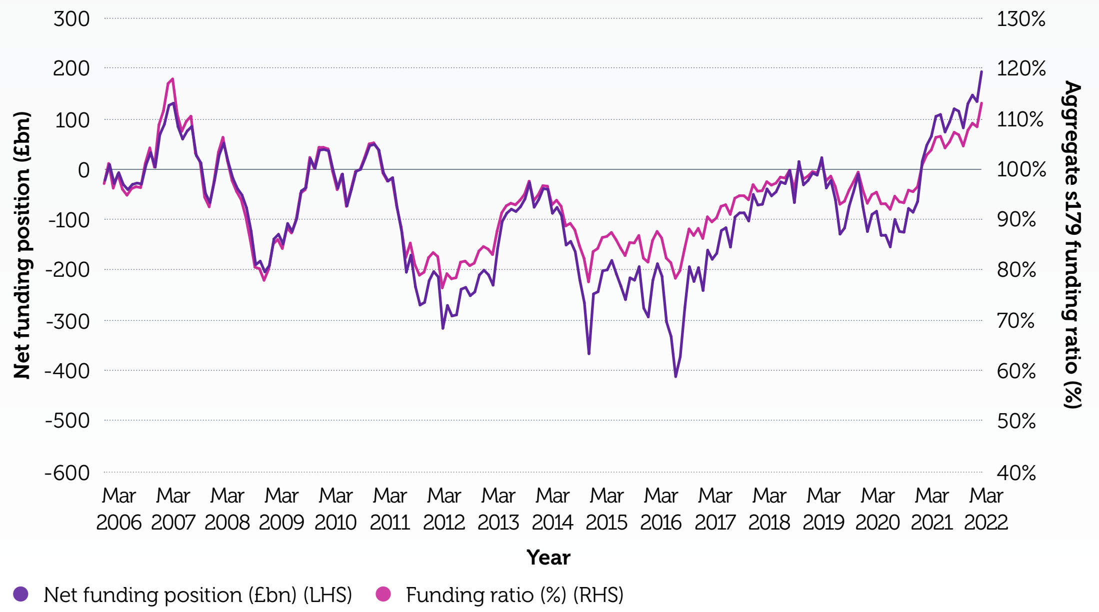
- A 0.1 percentage point (10 basis point) rise in both nominal and real gilt yields increases the 31 March 2022 net funding position by £11.1 billion from £193.0 billion to £204.1 billion. A 2.5 per cent rise in equity prices would improve the net funding position by £9.3 billion.
- A 0.1 percentage point (10 basis point) reduction in both nominal and real gilt yields raises aggregate scheme liabilities by 1.7 per cent and raises aggregate scheme assets by 0.9 per cent. A 2.5 per cent increase in equity markets increases scheme assets by 0.6 per cent.
- If individuals live two years longer than expected, s179 liabilities would increase by £110.9 billion, or 7.5 per cent.

Historical changes in s179 scheme funding since 2006

The estimated funding position of the universe of schemes can change over time owing to a number of factors including financial markets, actuarial assumptions, the decline in the number of DB schemes, and sponsoring employers' special contributions. The historical series in this section take the estimated funding position at 31 March from previous editions of *The Purple Book*. The monthly profiles between end-March of one year and end-February of the next are obtained by rolling forward the assets and liabilities using movements in nominal and real gilt yields and equity markets.

Figure 5.1 | Historical s179 aggregate funding ratio and net funding position of pension schemes in *The Purple Book* datasets

The net funding position has reached a record high of £193 billion while the aggregate s179 funding ratio is close to the highest historical level.



Source: PPF

> The net funding position of schemes reached an all time high of £193 billion at 31 March 2022.

1 Using the valuation guidance as in Chapter 4. For more information, see the PPF website.

Funding sensitivities continued

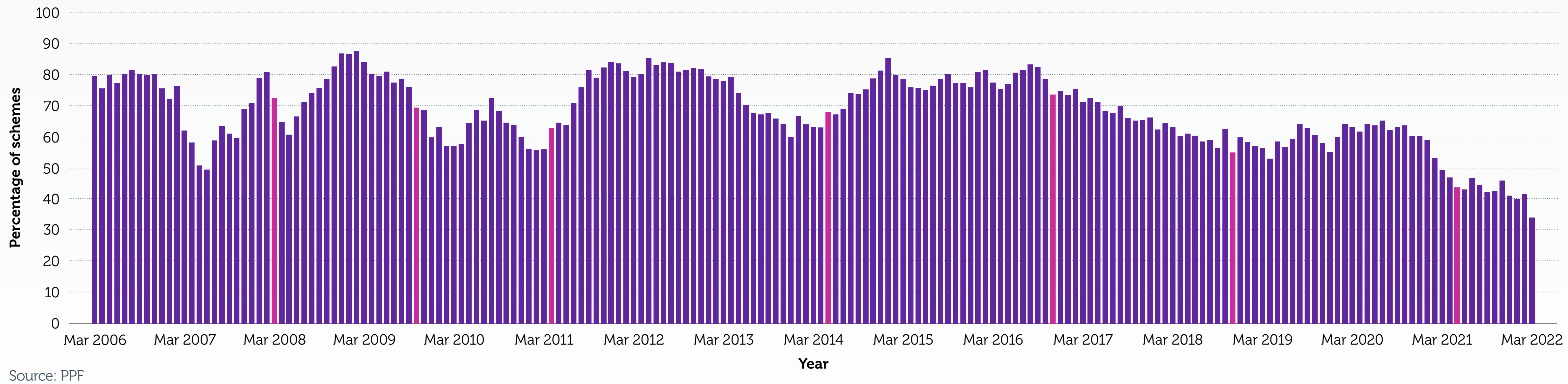
Figure 5.2 | Historical movements in assets and s179 liabilities of schemes in *The Purple Book* datasets

Liabilities have fallen significantly by £317 billion over the last two years, although prior to this there had been a general upward trend since 2006.

Source: PPF

Figure 5.4 | Historical percentage of schemes in deficit each month in *The Purple Book* datasets

In March 2022, the percentage of schemes in deficit reached an all-time low of 34 per cent, which is 15 percentage points lower than the previous all-time low of 49 per cent last year.



Source: PPF

The pink lines indicate months in which changes were made to the assumptions used to value schemes on an s179 measure. The changes to assumptions in March 2008 and October 2009 reduced the number of schemes in deficit by 412 and 566 respectively, while the changes to assumptions in April 2011 and May 2014 raised the number of schemes in deficit by 107 and 259 respectively. The changes to assumptions in November 2016, November 2018 and May 2021 reduced the number of schemes in deficit by 157, 437 and 210 respectively.

Figure 5.3 | Historical aggregate funding position for schemes in deficit and surplus

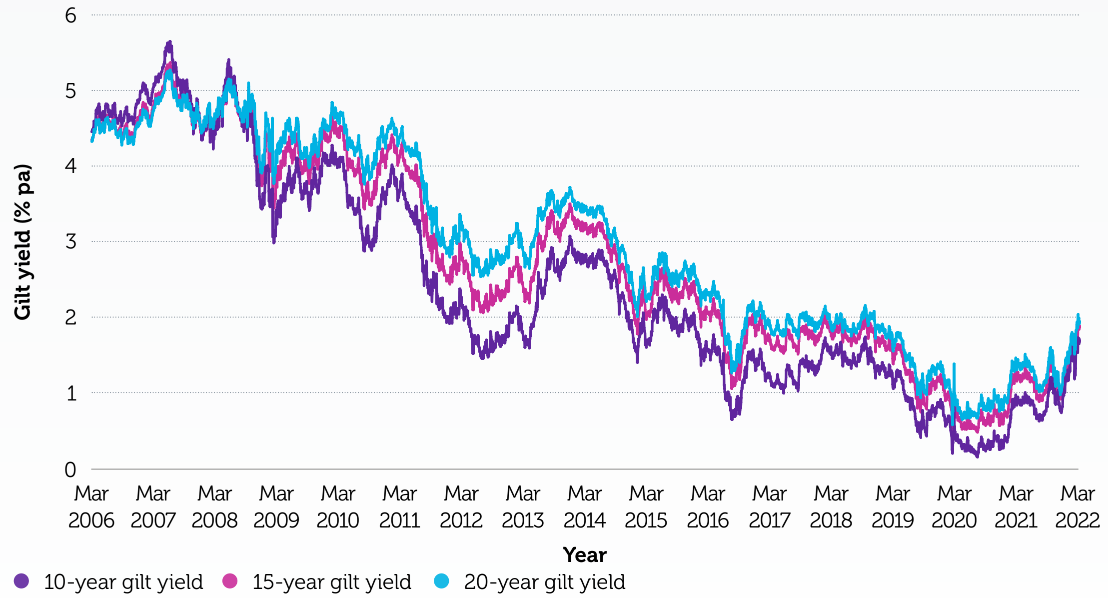
The deficit of schemes in deficit was at its largest in August 2016 at £451 billion. At 31 March 2022 this deficit was £61 billion, down £67 billion from the £128 billion experienced at 31 March 2021.

Source: PPF

The funding position of schemes in surplus has been more stable over time than the funding position of schemes in deficit.

Figure 5.5 | Movements in gilt yields

Gilt yields have increased since their all-time lows in March 2020.



Source: Bloomberg

Figure 5.6 | Movements in equity indices

The FTSE All-Share and All-World Ex-UK Total Return Indices have recovered from their sharp declines in March 2020 and have reached historical highs over the last year.

Source: Bloomberg

Funding sensitivities continued

Funding sensitivities: rules of thumb

Funding ratios are sensitive to movements in financial markets, with equity and gilt prices in particular having a major impact upon scheme assets, and gilt yields affecting liability values. This section shows the effect on scheme funding positions of changes in equity and gilt markets. The impact of a change of a 7.5 per cent rise in equity prices and a 0.3 percentage point increase in gilt yields have been accurately calculated and then the rest of the results have been calculated by pro-rating these two impacts.

The sensitivities do not take into account the use of derivative instruments to hedge changes in interest rates, inflation, equity levels or life expectancy.

Figure 5.7 | Impact of changes in gilt yields and equity prices on s179 funding positions from a base net funding position of £193.0 billion as at 31 March 2022

Small changes in gilt yields have a slightly larger impact on s179 funding positions than small changes in equity prices.

Assets less s179 liabilities (£bn)							
Movement in equity prices	Movement in gilt yields						
	-0.3pp	-0.2pp	-0.1pp	0.0pp	0.1pp	0.2pp	0.3pp
7.5%	188.3	199.0	209.7	220.7	231.8	243.0	254.4
5.0%	179.1	189.7	200.5	211.5	222.6	233.8	245.2
2.5%	169.9	180.5	191.3	202.3	213.4	224.6	236.0
0.0%	160.7	171.3	182.1	**193.0**	204.1	215.4	226.8
-2.5%	151.5	162.1	172.9	183.8	194.9	206.2	217.6
-5.0%	142.3	152.9	163.7	174.6	185.7	197.0	208.4
-7.5%	133.0	143.7	154.5	165.4	176.5	187.7	199.1

Source: PPF

A 0.1 percentage point rise in both nominal and real gilt yields would have improved the end-March 2022 s179 net funding position by £11.1 billion from £193.0 billion (bold) to £204.1 billion (shaded). That's more than the £9.3 billion impact of a 2.5 per cent increase in equity prices (shaded).

Figure 5.8 | Impact of changes in gilt yields and equity prices on assets from a base of 100 as at 31 March 2022

Small changes in gilt yields have a slightly larger impact on assets than small changes in equity prices.

Assets relative to a base of 100							
Movement in equity prices	Movement in gilt yields						
	-0.3pp	-0.2pp	-0.1pp	0.0pp	0.1pp	0.2pp	0.3pp
7.5%	104.3	103.4	102.5	101.7	100.8	99.9	99.1
5.0%	103.8	102.9	102.0	101.1	100.2	99.4	98.5
2.5%	103.2	102.3	101.4	100.6	99.7	98.8	98.0
0.0%	102.7	101.8	100.9	**100.0**	99.1	98.3	97.4
-2.5%	102.1	101.2	100.3	99.4	98.6	97.7	96.9
-5.0%	101.6	100.7	99.8	98.9	98.0	97.2	96.3
-7.5%	101.0	100.1	99.2	98.3	97.5	96.6	95.8

Source: PPF

A 2.5 per cent increase in equity prices would raise scheme assets by 0.6 per cent (shaded). A 0.3 percentage point decrease in gilt yields would increase scheme assets by 2.7 per cent (shaded).

Figure 5.9 | Impact of changes in gilt yields on s179 liabilities as at 31 March 2022

A 0.1 percentage point movement in gilt yields would impact s179 liabilities by 1.7 per cent.

Impact on s179 liabilities						
	Movement in both nominal and real gilt yields					
	-0.3pp	-0.2pp	-0.1pp	0.1pp	0.2pp	0.3pp
Percentage change	5.2%	3.5%	1.7%	-1.7%	-3.5%	-5.2%

Source: PPF

Figure 5.10 | Impact of changes in nominal or real gilt yields on s179 liabilities as at 31 March 2022 (base = £1,473.9 billion)

As at 31 March 2022, the s179 liabilities were almost three times as sensitive to changes in nominal yields as to changes in real yields.

Impact on s179 liabilities				
	Change in nominal yields		Change in real yields	
	-0.1pp	0.1pp	-0.1pp	0.1pp
£ billions	1,493.6	1,454.2	1,480.6	1,467.2
Percentage change	1.3%	-1.3%	0.5%	-0.5%

Source: PPF

Note: s179 liabilities are assessed using a combination of various nominal and real gilt yields. Whereas figure 5.9 shows the impact of universal stresses across both nominal and real yields, figure 5.10 stresses the nominal and real gilt yields separately.

Figure 5.11 | Impact of changes in life expectancy assumptions on s179 liabilities as at 31 March 2022 (base = £1,473.9 billion)

If individuals live two years longer than expected, s179 liabilities would increase by around £111 billion, or 7.5 per cent. Conversely, if individuals live two years shorter than expected, s179 liabilities would decrease by around £109 billion, or 7.4 per cent.

	s179 liabilities (£bn)	% change from base
Age rating +2 years	1,364.8	-7.4%
Age rating -2 years	1,584.8	7.5%

Source: PPF

Note: the impact of increased length of life has been approximated by age rating down by two years – that is, replacing the life expectancy assumptions for each individual by an individual currently two years younger.