Pension Protection Fund

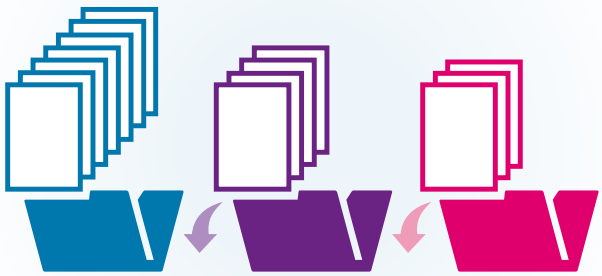
The Purple Book 2020

DB pensions universe risk profile

Contents

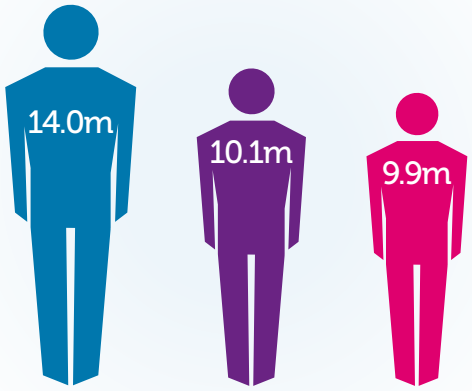
Overview

Number of eligible schemes



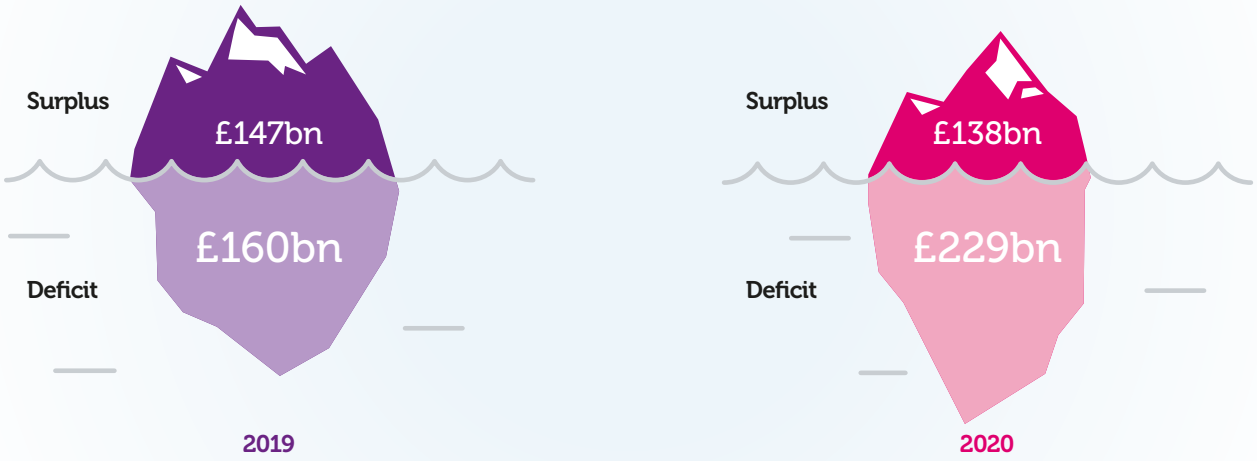
7,751 (2006) 5,436 (2019) 5,327 (2020)

Number of members

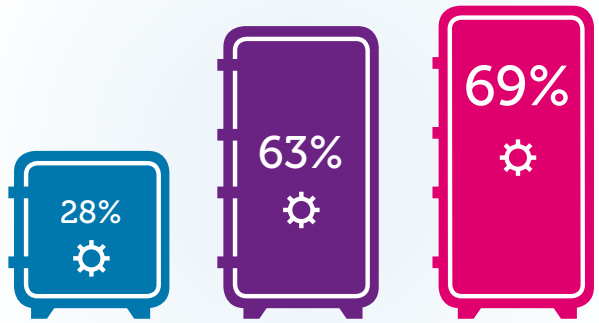


2006 2019 2020

Surplus/deficit of schemes in surplus/deficit

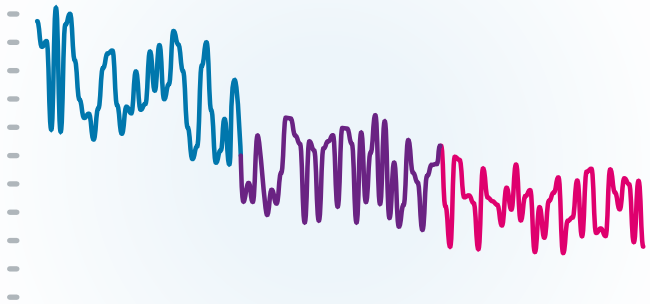


Bonds trend



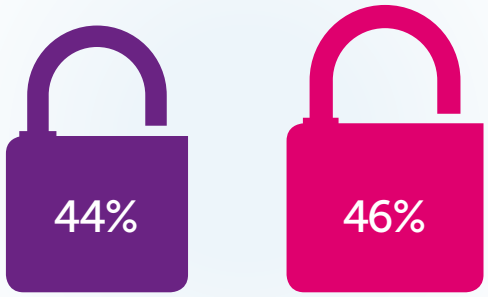
2006 2019 2020

Equities trend



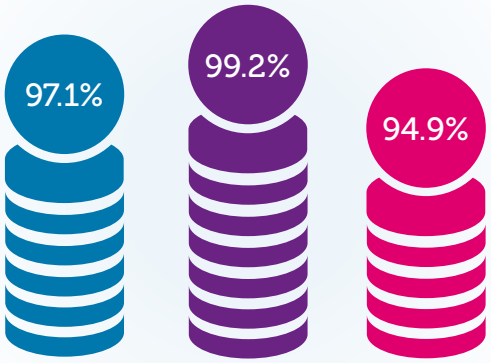
61% (2006) 24% (2019) 20% (2020)

Proportion of schemes closed to all benefit accrual



2019 2020

Scheme funding



2006 2019 2020

PPF probability of success

2019 2020

Number and liabilities of schemes in PPF assessment

£11.2bn
2019

£13.6bn
2020

1. Executive summary

This is the 15th edition of the Pensions Universe Risk Profile (*The Purple Book*). *The Purple Book* provides the most comprehensive data on the UK universe of Defined Benefit (DB) pension schemes in the private sector.

Data

There are estimated[1] to be 5,327 schemes in the Pension Protection Fund (PPF) eligible universe as at 31 March 2020, a reduction from 5,436 as at 31 March 2019. The declining universe reflects schemes winding up, scheme mergers and schemes entering PPF assessment. This year, *The Purple Book* dataset covers 5,318 schemes – 99.8 per cent of the estimated 5,327 schemes eligible for PPF compensation.

Schemes with more than 5,000 members make up almost 75 per cent of each of total assets, liabilities and members, while only forming seven per cent of the total number of schemes in *The Purple Book 2020* dataset. Conversely, schemes with fewer than 1,000 members make up 80 per cent of the total number of schemes but only around 10 per cent of total assets, liabilities and members.

1 The number of schemes in the PPF-eligible universe as at 31 March 2020 could be different from 5,327 if any of these schemes are discovered to be ineligible for PPF protection or if any other schemes are discovered to be eligible for PPF protection as at 31 March 2020.

Scheme demographics

The proportion of schemes open to new members remained at 11 per cent, the same as in *The Purple Book 2019*. While the open share fell sharply from 2006 to 2010, the decline has slowed since then. Schemes that are closed to new members continue to close also to new benefit accrual, with a rise to 46 per cent from 44 per cent in 2019. The proportion of schemes closed to new benefit accrual is now higher than the proportion closed to new members.

There are around 1 million active members in *The Purple Book 2020* dataset who are members of a scheme still open to new benefit accrual and who continue to accrue benefits. This is a reduction of seven per cent over the year. The number has fallen each year since the first edition of *The Purple Book* in 2006, when there were 3.6 million active members.

Schemes that remain open tend to be larger in terms of membership. 24 per cent of members were in open schemes with a further 45 per cent in schemes that are closed to new members but open to new benefit accrual.

The Purple Book 2020 dataset includes 9.9 million DB scheme members, down from 10.1 million last year. Of these:

- 43 per cent are pensioner members;
- 46 per cent are deferred members; and
- 11 per cent are active members.

Scheme funding

Universe scheme funding worsened in the year to 31 March 2020. The net funding position on a section 179 (s179) basis as shown in the PPF 7800 Index worsened to a deficit of £90.7 billion compared to a deficit of £12.7 billion the year before, while the aggregate funding ratio decreased to 94.9 per cent from 99.2 per cent. The decrease in the aggregate funding ratio is the result of market movements, primarily the result of lower gilt yields driving up liability values by more than the corresponding increase in asset values, together with decreases in equity values. This was offset to some extent by the impact of reflecting up-to-date valuations and the latest eligible universe available by updating to the new *Purple Book 2020* dataset.

On an estimated full buy-out basis, the net funding position worsened to a deficit of £668.5 billion from a deficit of £644.9[2] billion the year before, although the funding ratio improved slightly from 71.5[2] per cent to 71.8 per cent.

2 Figure updated from last year to reflect improvements in the methodology used to estimate full buy-out liabilities.

Asset allocation

The aggregate proportion of schemes' assets invested in equities fell from 24.0 per cent to 20.4 per cent while the proportion in bonds rose from 62.8 per cent to 69.2 per cent. The decrease in the value of equities between 31 March 2019 and 31 March 2020 contributed towards the decrease in the proportion of assets invested in equities over this period.

Within bonds, the proportions held were broadly unchanged from last year with index-linked bonds making up the biggest proportion at 46.1 per cent. Corporate bonds accounted for 28.0 per cent of the bonds held and government fixed interest bonds contributed 25.9 per cent of the total.

Within equities, the UK-quoted proportion fell from 16.6 per cent to 13.3 per cent. The overseas-quoted proportion fell slightly from 69.7 per cent to 69.0 per cent, while the proportion of unquoted/private equities increased from 13.7 per cent to 17.7 per cent. The decrease in the value of UK and overseas equities between 31 March 2019 and 31 March 2020 contributed towards the decreases in the proportions of equities that are invested in UK and overseas equities over this period.

Risk reduction

DB pension schemes have continued to close to new benefit accrual. They have also continued to move their investment allocation away from equities and towards bonds, continuing the trend for de-risking assets.

Based only on current recovery plans in place, total annual recovery plan payments are indicated to decrease by around 87 per cent over the next 10 years, from around £14.5 billion in 2020 to around £1.8 billion in 2030, as schemes increasingly become fully funded on a Technical Provisions basis. However, this only shows the current position, so changes may be made to existing recovery plans and new recovery plans may be put in place in the future if experience is different from what has currently been assumed by schemes.

Analysis of The Pensions Regulator's (TPR) latest Technical Provisions and recovery plan data shows that in Tranche 13[3], the average recovery plan length was 6.1 years, over a year less than that of Tranche 10 (comparable given the three-year valuation cycle) and a year less than that of Tranche 12. Assets as a percentage of Technical Provisions increased from 88.6 per cent in Tranche 10 to 93.4 per cent in Tranche 13.

The total number of contingent assets submitted to the PPF for the 2020/21 levy year was 395, compared with 419 in 2019/20. This is largely because fewer Type A contingent assets (employer parent or group guarantees) were certified for PPF levy purposes.

There were £59 billion worth of risk transfer deals (buy-ins, buy-outs and longevity swaps) in the year to 30 June 2020, up from £37 billion the previous year and more than 50 per cent higher than the previous record of £39 billion in the year to 30 June 2014. However, this is still a relatively small amount in the context of the whole universe of schemes.

PPF levy, claims and compensation

- In 2019/20, the levy totalled £564 million, the same as the previous year.
- The top 100 levy payers accounted for 51 per cent of the total levy, similar to last year.
- 28 per cent of schemes had no risk-based levy while 3.0 per cent of schemes saw the cap of 0.75 per cent of smoothed liabilities apply to their risk-based levy.
- 82 per cent of the total levy came from schemes sponsored by employers categorised as 'Non-Subsidiaries £30 million+ and Large Subsidiaries', 'Credit Rated' or 'Group £50m+' for Experian scorecard purposes.

In the year to 31 March 2020, 41 new schemes entered PPF assessment. This is higher than last year when there were 26 new schemes and is similar to the levels observed in each of the four years up to 31 March 2018 but much lower than the levels seen before this. The total value of the year's claims was £0.5 billion (as measured on an s179 basis), which is much lower than last year's record claims of £1.9 billion when there was a very large claim from the Kodak Pension Plan No. 2. While our funding ratio (as measured on our own accounting basis, and including schemes in PPF assessment) fell from 118.6 per cent as at 31 March 2019 to 113.4 per cent as at 31 March 2020, claims were not the main reason for this, in contrast to last year.

In the year to 31 March 2020, the PPF made compensation payments of £860 million compared with £775 million in the previous year. As at 31 March 2020, there were 169,861 records in respect of members receiving compensation[4], up from 148,005 a year earlier. The average annual payment per record to members receiving PPF compensation was £4,588, up from £4,382 at 31 March 2019.

3 Tranche 13 covers schemes with valuation dates between 22 September 2017 and 21 September 2018. https://www.thepensionsregulator.gov.uk/en/document-library/research-and-analysis/scheme-funding-analysis-2020/scheme-funding-analysis-2020-annex

4 Some members have more than one record in the data.

PPF risk developments

The table below highlights some of the key results from the PPF's financial modelling:

Probability of success	83%, down from 89% last year as a result of the COVID-19 pandemic hitting financial markets in March 2020
Funding horizon and target funding margin	2030 and 10%, unchanged since last year

We have also carried out sensitivity and stress testing to understand the key financial risks to which we are exposed. This also supports validation of the financial model used.

We continue to monitor, and seek to understand, the impacts of the key risks we face including:

- The impact of economic trends, including the COVID-19 pandemic and Brexit, on both our financial position and that of the scheme universe. This includes consideration of the level of claims that may occur in the future.
- The impact of changes in the regulatory environment including potential changes to the scheme funding regime, changes to Retail Price Index (RPI) calculation and increased disclosure requirements for climate change risk. We have also been seeking to understand the impact of new guidance for commercial pension scheme consolidators.

Economy and market background

The following table sets out how some key market indicators in the assessment of universe scheme assets and s179 liabilities have changed over the year:

Market indicator	Change over the year to 31 March 2020
10-year fixed interest gilt yield	-0.67pp
15-year fixed interest gilt yield	-0.70pp
20-year fixed interest gilt yield	-0.71pp
5–15-year index-linked gilt yield	-0.28pp
FTSE All-Share Index (TR)	-18.45%
FTSE All-World Ex-UK Index (TR)	-5.54%

pp = percentage point(s)
TR = total return

2. The data

Summary

- This chapter contains information on the number and distribution of schemes in *The Purple Book 2020* dataset and the estimated universe of PPF-eligible schemes.
- The main analysis in *The Purple Book 2020* is based on the most recent scheme returns submitted to TPR by 31 March 2020. This covered a dataset of 5,318 DB schemes, covering 9.9 million members[5]. This represents virtually all PPF-eligible schemes and universe liabilities. At the time of writing, complete 2020 information for the remaining schemes was not yet available and so these have been excluded from the sample. A full description of the data used is set out in the appendix.
- It is estimated that the eligible universe of schemes was 5,327 as at 31 March 2020, a reduction from 5,436 as at 31 March 2019. The declining universe reflects schemes winding up, scheme mergers and schemes entering PPF assessment.
- The fact that the dataset accounts for such a large proportion of the universe means that results for the whole universe would only be slightly different from those presented in *The Purple Book 2020*.
- As in previous *Purple Books*, the bulk of the analysis uses funding with pension scheme liability values measured on an s179 basis. This is, broadly speaking, what would have to be paid to an insurance company to take on the payment of PPF levels of compensation.

Figure 2.1 | Distribution of schemes excluding those in assessment by size of scheme membership as at 31 March 2020

***The Purple Book 2020* sample includes almost all of the estimated PPF-eligible schemes, including all schemes with 5,000 or more members.**

Source: PPF

Number of members	2–99	100–999	1,000–4,999	5,000–9,999	10,000+	Total
Estimated 2020 universe (number of schemes)	1,941	2,318	719	161	188	5,327
The Purple Book 2020 dataset (number of schemes)	1,936	2,315	718	161	188	5,318
The Purple Book 2020 dataset as a % of 2019 PPF-eligible DB universe	99.7%	99.9%	99.9%	100.0%	100.0%	99.8%

Figure 2.2 | Distribution of assets, s179 liabilities and members in *The Purple Book 2020* dataset as at 31 March 2020

Large schemes with over 5,000 members make up seven per cent of schemes in *The Purple Book 2020* dataset but almost 75 per cent of each of total assets, liabilities and members.

Source: PPF

Note: the component figures may not sum to the total because of rounding.

Number of members	2–99	100–999	1,000–4,999	5,000–9,999	10,000+	Total
Assets (£bn)	17.2	150.7	276.1	208.1	1,048.5	1,700.6
s179 liabilities (£bn)	17.3	161.3	297.7	220.6	1,094.4	1,791.3
Number of members (000's)	84	810	1,634	1,120	6,223	9,872

The Purple Book 2020 aggregate deficit of £90.7 billion at 31 March 2020 is different from the aggregate deficit of £135.9 billion published in the PPF 7800 Index as at 31 March 2020. This is because *The Purple Book 2020* aggregate deficit is based on new data submitted by schemes in 2020 whereas the PPF 7800 Index as at 31 March 2020 is based on data submitted by schemes in 2019.

5 One individual can have multiple memberships (for example of different pension schemes). Hence the number of members exceeds the number of individuals.

2. The data continued

Figure 2.3 | *The Purple Book* datasets

The universe has declined by two per cent over the year, similar to previous years. This reflects schemes winding up, scheme mergers and schemes transferring into the PPF. The total number of members dropped below 10 million for the first time.

Source: PPF

Note: the reason for the increase in *The Purple Book* dataset from 2006 to 2008 is mainly a result of improvements to the design of the scheme return intended to permit better PPF validation procedures.

	Estimated universe	*Purple Book* dataset	Number of members (m)
2006	7,751	5,772	14.0
2007	7,542	5,892	12.7
2008	7,400	6,898	12.4
2009	7,098	6,885	12.4
2010	6,850	6,596	12.0
2011	6,550	6,432	12.0
2012	6,460	6,316	11.7
2013	6,225	6,150	11.4
2014	6,070	6,057	11.1
2015	5,967	5,945	11.0
2016	5,886	5,794	10.9
2017	5,671	5,588	10.5
2018	5,524	5,450	10.4
2019	5,436	5,422	10.1
2020	5,327	5,318	9.9

3. Scheme demographics

Summary

This chapter describes the dataset used for this year's edition of *The Purple Book* and includes some comparisons with data from previous years. Figures for the total number of schemes and total scheme membership are included, with breakdowns by scheme size, scheme status and member status.

How we categorise schemes has varied in previous editions of *The Purple Book* as more informative breakdowns became available. For more detailed information, see the appendix.

Some statistics from this chapter are summarised in the following table:

	Date of *The Purple Book*	
	31 March 2020	31 March 2019
Number of schemes in *The Purple Book* dataset	5,318	5,422
Proportion of schemes that are:		
open to new members	11%	11%
closed to new members (but open to new benefit accrual)	41%	44%
closed to new benefit accrual	46%	44%
winding up	2%	1%
Number of members covered by schemes in *The Purple Book* dataset, of which:	9.9m	10.1m
pensioner members	43%	42%
deferred members	46%	47%
active members (still accruing benefits)	11%	11%

- The number of active members is now just over a million. This is less than a third of those found in the first *Purple Book* dataset in 2006.
- The gradual trend of schemes closing to both new members and new benefit accrual has continued and now stands at 46 per cent. This compares with 12 per cent in *The Purple Book* dataset in 2006.
- 72 per cent of schemes have assets of less than £100 million.

Scheme status

Figure 3.1 | Distribution of schemes by scheme status

41 per cent of schemes are closed to new members, and another 46 per cent are also closed to new benefit accrual.

Source: PPF

3. Scheme demographics continued

Figure 3.2 | Distribution of schemes by scheme status and member group

Large schemes are more likely to be open to new members or new benefit accrual.

Source: PPF

Note: the percentages may not sum to 100 per cent because of rounding.

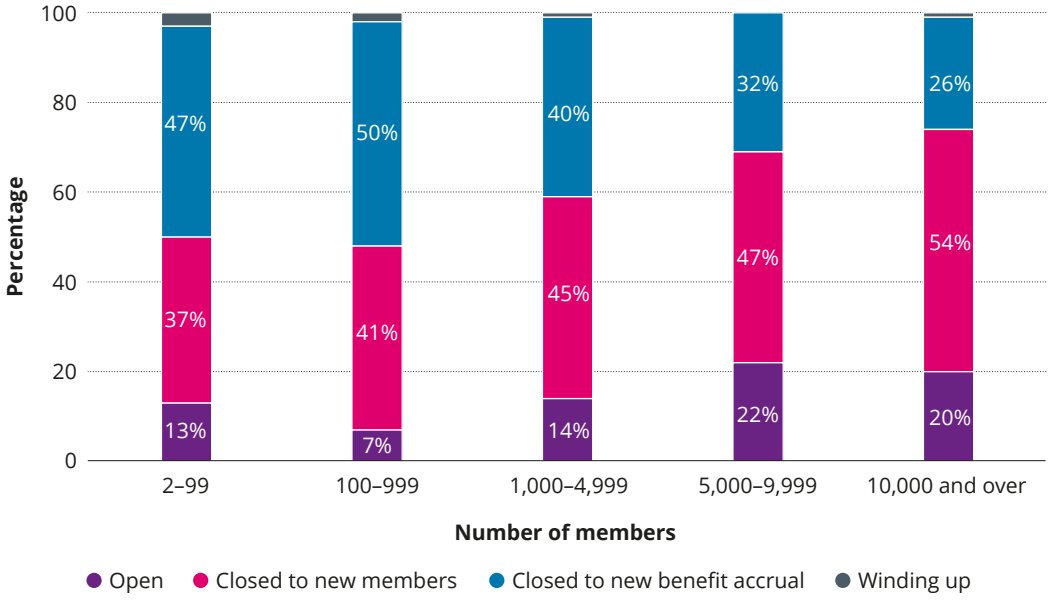


Figure 3.3 | Distribution of schemes by scheme status and year

The gradual trend of schemes already closed to new members also closing to accrual has continued, with 46 per cent of schemes now in this category.

Source: PPF

Note: the percentages may not sum to 100 per cent because of rounding.

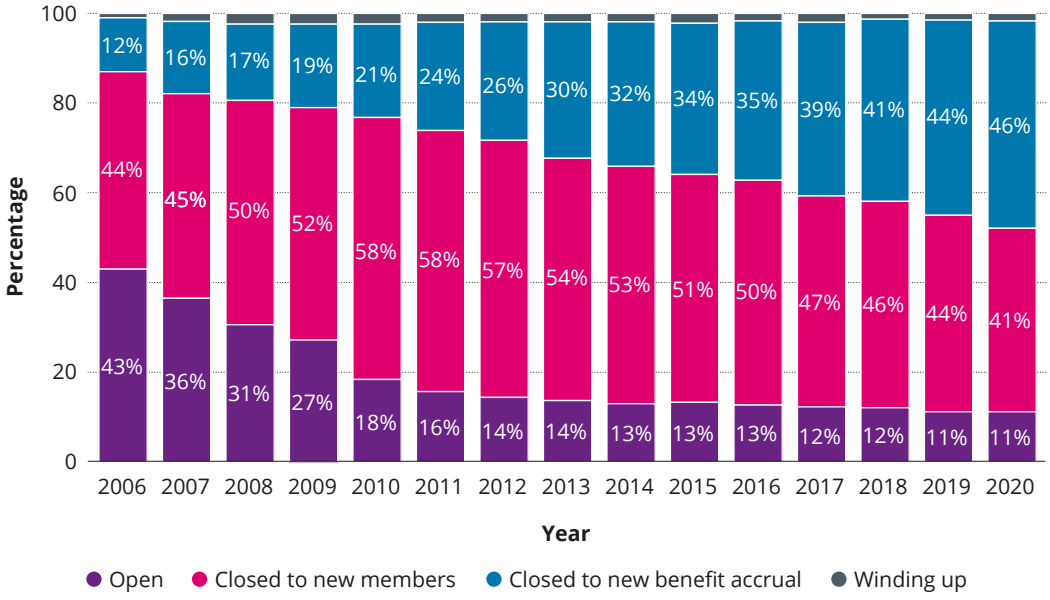
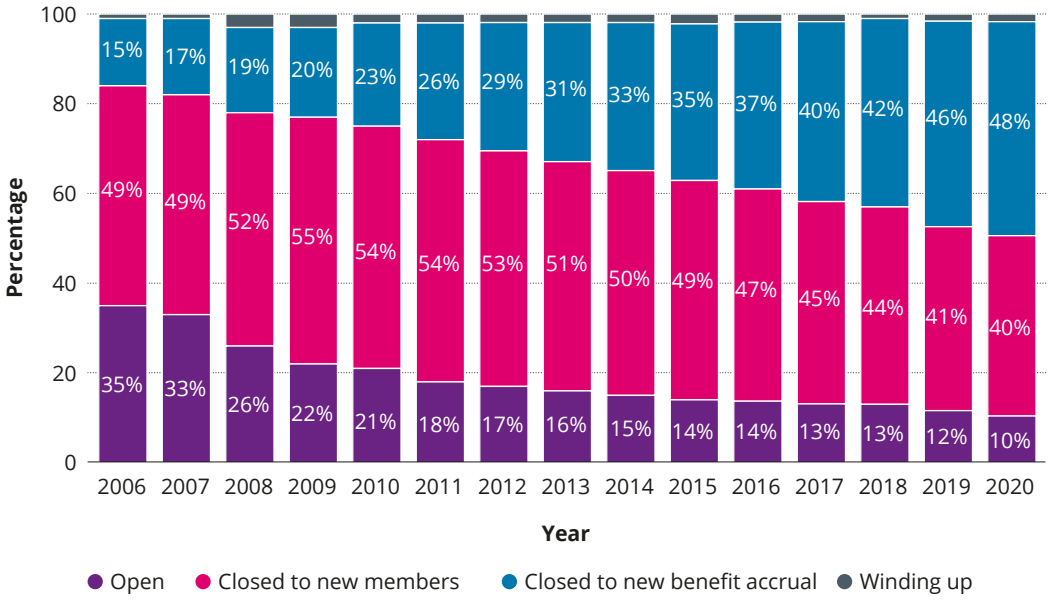


Figure 3.4 | Distribution of schemes by scheme status and year (excluding hybrid schemes[6])

The distribution of schemes by scheme status in *The Purple Book 2020* dataset is similar whether or not hybrid schemes are excluded.

Source: PPF

Note: the percentages may not sum to 100 per cent because of rounding.



Scheme status and scheme members

Figure 3.5 | Distribution of members by scheme status

Around 70 per cent of members are in schemes that have some form of new benefit accrual.

Source: PPF

6 A hybrid scheme is one that provides DB and Defined Contribution (DC) benefits. The treatment of such schemes has varied in past editions of *The Purple Book* as better data has become available (see the appendix for a detailed explanation). At present we define a scheme as closed if the DB section is closed, even if the DC section remains open.

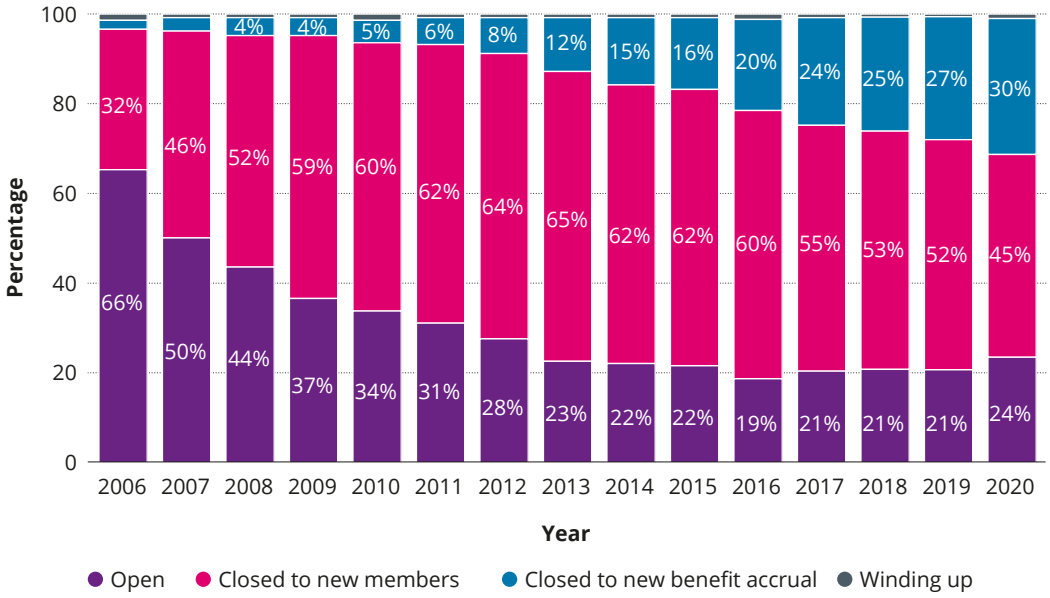
3. Scheme demographics continued

Figure 3.6 | Distribution of members by scheme status and year

The proportion of members in open schemes has stabilised in recent years following a significant decline between 2006 and 2013.

Source: PPF

Note: the percentages may not sum to 100 per cent because of rounding.



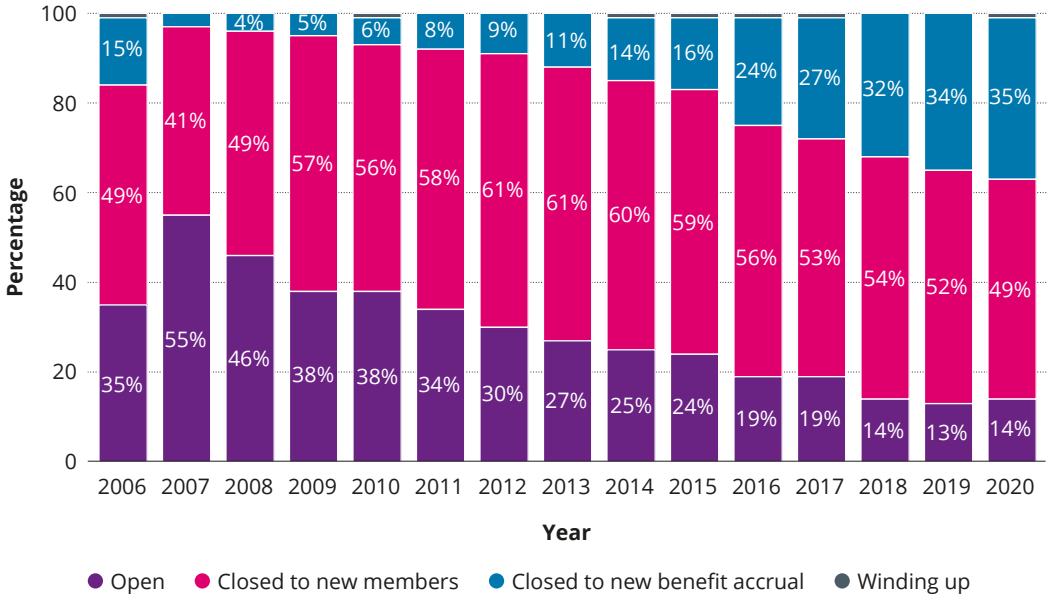
One very large scheme reported its scheme status as open this year having reported a closed status all previous years, which was the main reason for the increase in the proportion of members in open schemes this year.

Figure 3.7 | Distribution of members by scheme status and year (excluding hybrid schemes)

Excluding hybrid schemes has an effect on the distribution of members by scheme status in *The Purple Book 2020* dataset. This is partly due to one very large open scheme having a hybrid status.

Source: PPF

Note: the percentages may not sum to 100 per cent because of rounding.



Scheme membership

Figure 3.8 | Number and distribution of members by member type and scheme status as at 31 March 2020

Although around 70 per cent of members are in schemes that are open to new benefit accrual, only 11 per cent of members are actually accruing benefits.

Source: PPF

Note: the components may not sum to the total because of rounding.

Number (000's)/%	Open	Closed to new members	Closed to new benefit accrual	Winding up	All
Active members	668.7	349.4	–	–	1,018.1
	7%	4%	0%	0%	11%
Deferred members	876.0	1,980.0	1,711.7	20.5	4,588.2
	9%	20%	17%	0%	46%
Pensioner members	795.3	2,155.9	1,275.1	39.3	4,265.6
	8%	22%	13%	0%	43%
Total	**2,340.0**	**4,485.3**	**2,986.8**	**59.8**	**9,871.9**
	24%	**45%**	**30%**	**1%**	**100%**

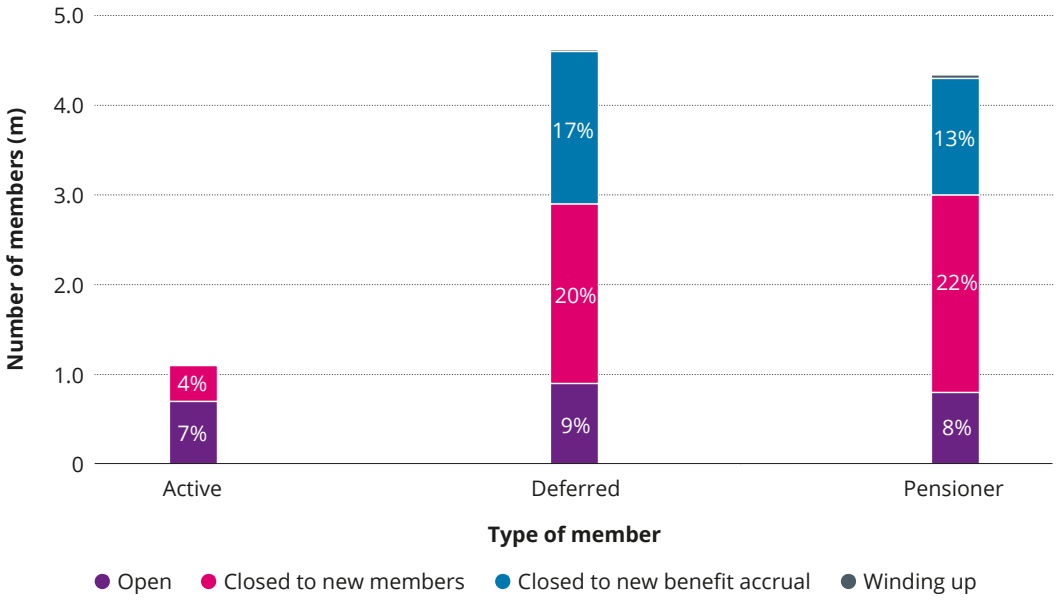
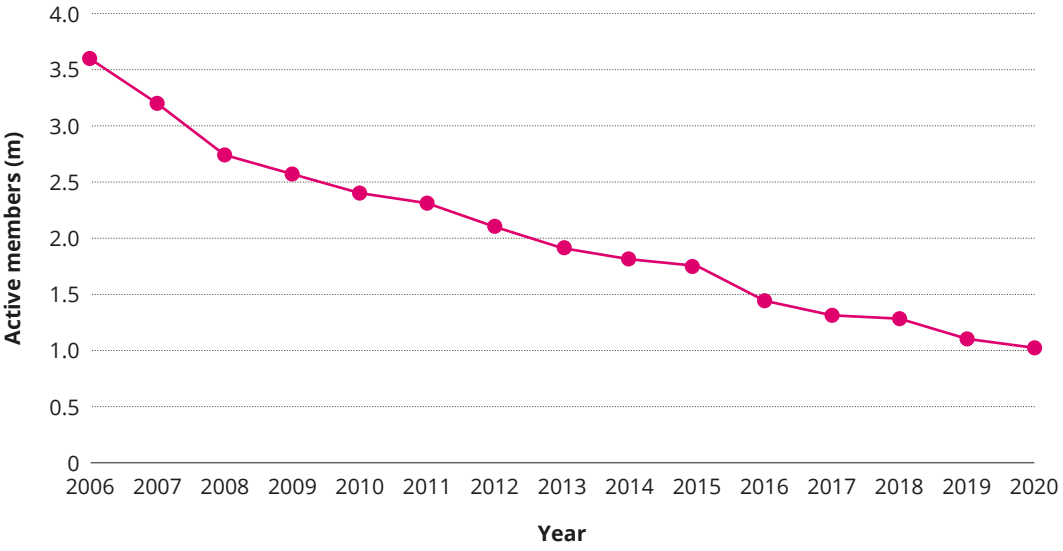


Figure 3.9 | Active members in *The Purple Book* datasets

The number of active members is less than a third of those found in the first *Purple Book* dataset in 2006.

Source: PPF



3. Scheme demographics continued

Figure 3.10 | Distribution of member type, by scheme membership size

The proportion of active members increases as scheme membership size increases.

Source: PPF

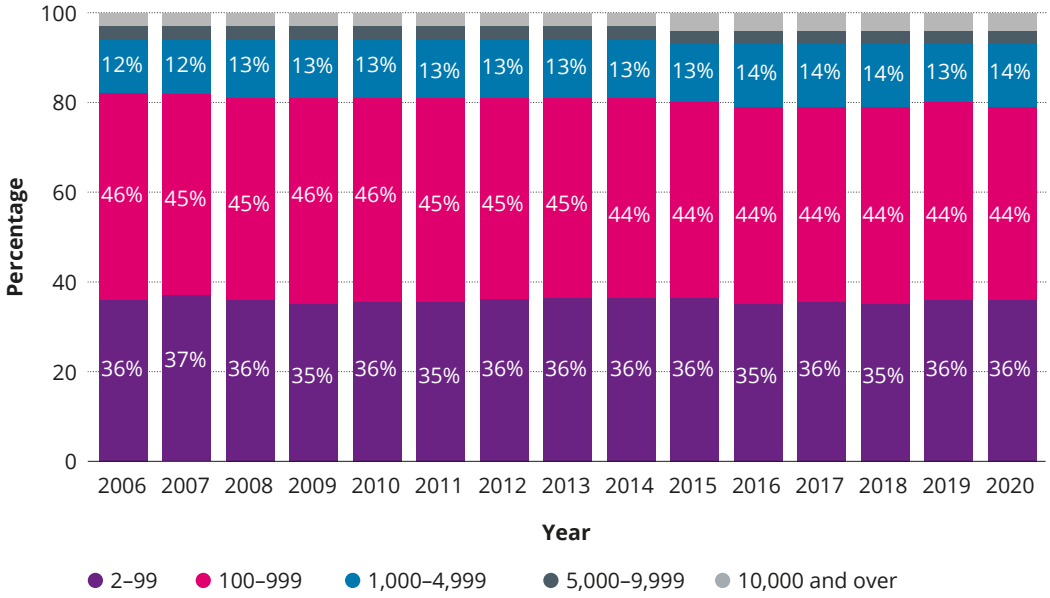
Note: the percentages may not sum to 100 per cent because of rounding.

Figure 3.11 | Proportion of schemes by scheme membership size, by year

The distribution of schemes by scheme membership size has remained relatively stable over time, suggesting that there is little correlation between scheme size and removal from the eligible universe.

Source: PPF

Note: the percentages may not sum to 100 per cent because of rounding.

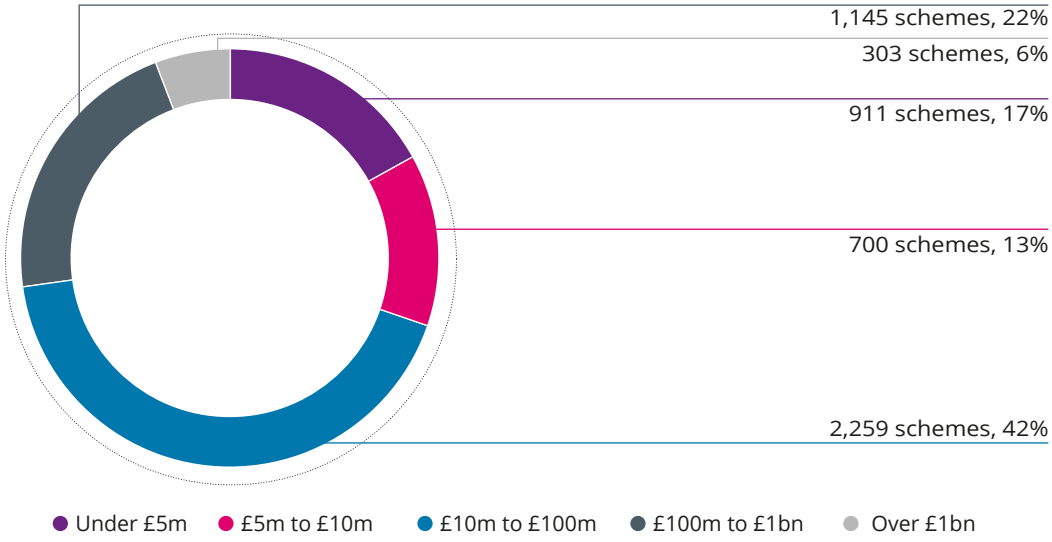


Asset size

Figure 3.12 | Distribution of schemes by asset size

72 per cent of schemes have assets of less than £100 million.

Source: PPF

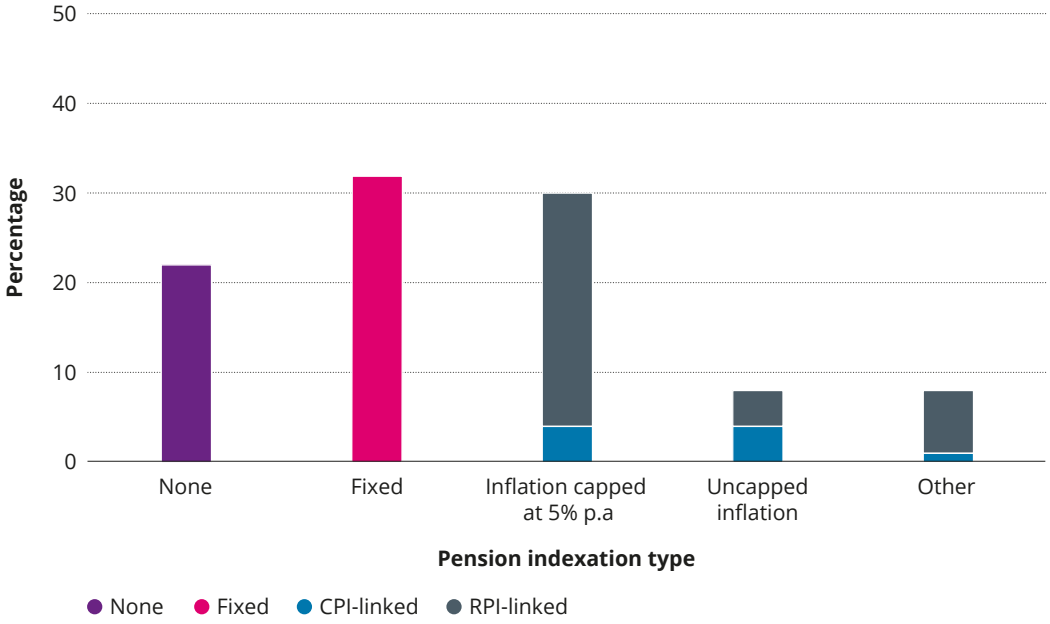


Pension indexation types

Figure 3.13 | Pension indexation types for scheme benefits accrued before 6 April 1997

More than three quarters of schemes provide indexation on scheme benefits accrued before 6 April 1997.

Note: this is based on scheme return data provided by schemes, where the scheme return specifies that in cases where there is more than one rate of indexation, the rate applying to the largest proportion of protected liabilities should be submitted.



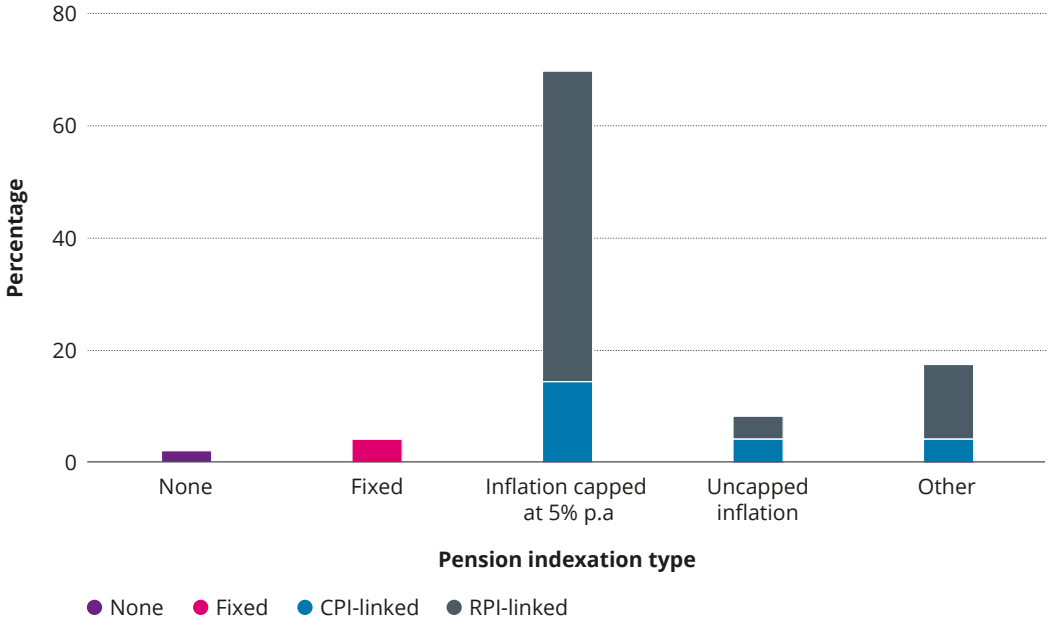
3. Scheme demographics continued

Figure 3.14 | Pension indexation types for scheme benefits accrued after 5 April 1997

Around two thirds of schemes provide indexation of inflation capped at 5 per cent a year on scheme benefits accrued after 5 April 1997.

Note: this is based on scheme return data provided by schemes, where the scheme return specifies that in cases where there is more than one rate of indexation, the rate applying to the largest proportion of protected liabilities should be submitted.

Note: most of the schemes with no pension indexation don't have any scheme benefits that were accrued after 5 April 1997. The remaining instances may be errors in scheme return data submitted by schemes.



4. Scheme funding

Summary

This chapter covers funding on an s179 basis as at 31 March 2020[7]. Funding information supplied in scheme returns submitted to TPR is processed so that the funding ratios can be estimated at a common date, allowing consistent totals to be used. In *The Purple Book* Deficit-Reduction Contributions (DRCs), as submitted for levy purposes, have been added to the asset values submitted in s179 valuations.

A scheme that is 100 per cent funded on an s179 basis has broadly enough assets to pay an insurance company to take on the scheme with PPF levels of compensation.

In addition, this chapter considers estimated full buy-out funding information. This has been calculated using the same valuation assumptions and underlying data as for the s179 calculations. An approximate allowance is then made for the difference between the PPF level of compensation and full scheme benefits, which has been improved this year to better reflect the difference in benefits and this updated methodology has been applied to the figures for all previous years[8]. Some of the statistics summarising these calculations are shown below:

	The Purple Book	
Item	**31 March 2020**	31 March 2019
Net s179 funding position (£bn)	**90.7 deficit**	12.7 deficit
s179 liabilities (£bn)	**1,791.3**	1,628.0
Assets (£bn)	**1,700.6**	1,615.3
Funding ratio:		
s179 basis	**94.9%**	99.2%
Estimated full buy-out basis	**71.8%**	71.5%

The following table sets out how some of those market indicators used to assess and roll forward pension scheme assets and s179 liabilities have changed over the year:

Market indicator	Change over the year to 31 March 2020
10-year fixed interest gilt yield	-0.67pp
15-year fixed interest gilt yield	-0.70pp
20-year fixed interest gilt yield	-0.71pp
5–15-year index-linked gilt yield	-0.28pp
FTSE All-Share Index (TR)	-18.45%
FTSE All-World Ex-UK Index (TR)	-5.54%

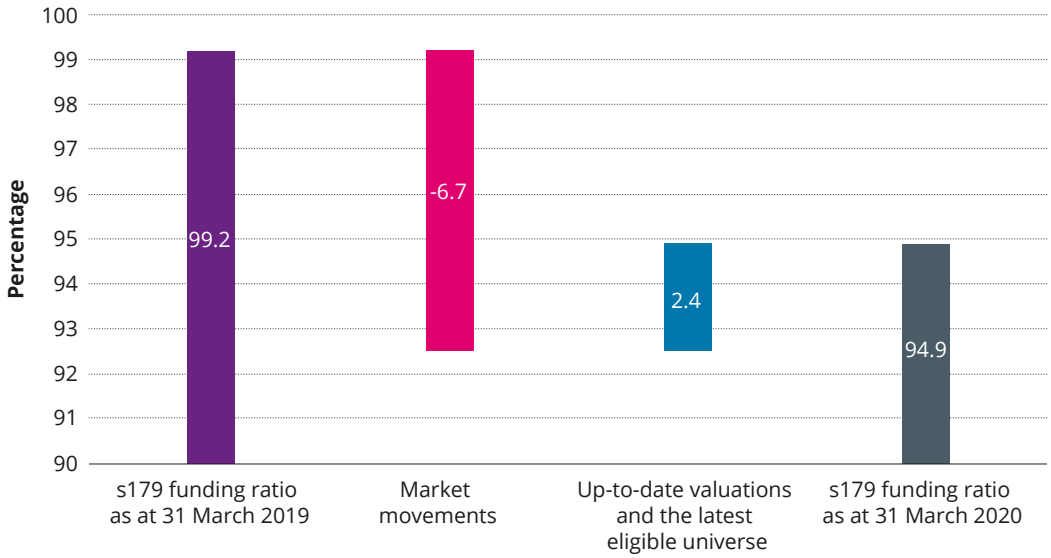
pp = percentage point(s)
TR = total return

7 Latest effective s179 assumptions guidance is available on the PPF website.
8 The updated methodology has resulted in an increase of around eight per cent to the historical estimated full buy-out liabilities we have previously published.

4. Scheme funding continued

The change in the aggregate s179 funding ratio over the year is a result of new data and market movements, as shown in the following chart.

Source: PPF



- The 4.3 percentage point decrease in the s179 funding ratio over the year to 31 March 2020 can be broken down as follows:
  - The impact of market movements has resulted in a 6.7 percentage point decrease in the s179 funding ratio. This was due to lower gilt yields driving up liability values by more than the corresponding increase in asset values as well as decreases in the values of growth assets, particularly equities.
  - Offsetting this was a 2.4 percentage point increase in the s179 funding ratio from adopting the new *Purple Book 2020* dataset, which includes more up-to-date scheme valuations.
- The s179 funding ratio is slightly lower at 31 March 2020 to that disclosed in the first *Purple Book* as at 31 March 2006. However, total assets and liability values have more than doubled over this period for the following reasons:
  - The significant increase in assets has arisen from increases in equity values (returns of around 70 per cent and 185 per cent on UK and global equities respectively) and increases in bond values, offset to some extent by schemes that have left the PPF universe.
  - The significant increase in liabilities has arisen from lower gilt yields and longer life expectancies driving up liability values, again offset to some extent by schemes that have left the PPF universe.
- Funding ratios are higher among:
  - More mature schemes (i.e. those with a higher proportion of liabilities that relate to pensioners), and
  - The smallest and largest schemes (compared to mid-size schemes).
- In the last 10 years, the proportion of liabilities that relates to pensioner members has remained relatively stable at around 40 per cent, whereas the proportion relating to active members has reduced by 11 percentage points to 21 per cent.

Overall funding

Figure 4.1 | Key funding statistics as at 31 March 2020

The net s179 funding position of the schemes in *The Purple Book 2020* dataset at 31 March 2020 was a deficit of £90.7 billion, corresponding to a funding ratio of 94.9 per cent.

Source: PPF

	s179	Estimated full buy-out
Total number of schemes	5,318	5,318
Total assets (£bn)	1,700.6	1,700.6
Total liabilities (£bn)	1,791.3	2,369.1
Net funding position (£bn)	-90.7	-668.5
Aggregate funding ratio	94.9%	71.8%
Number of schemes in deficit	3,371	4,896
Number of schemes in surplus	1,947	422
Net funding position for schemes in deficit (£bn)	-229.1	-680.9
Net funding position for schemes in surplus (£bn)	138.4	12.4

Figure 4.2 | Current and historical funding figures on an s179 basis

Funding deteriorated over the year as total liabilities increased by 10 per cent, while total assets increased by only 5.3 per cent. The deficit of schemes in deficit worsened from £159.8 billion to £229.1 billion.

Source: PPF

			s179 liabilities				
Year	Number of schemes	Total assets (£bn)	Liabilities (£bn)	Net funding position (£bn)	Aggregate funding ratio	Deficit of schemes in deficit (£bn)	Surplus of schemes in surplus (£bn)
2006	7,751	769.5	792.2	-22.7	97.1%	-76.3	53.5
2007	7,542	837.7	769.9	67.8	108.8%	-46.8	96.5
2008	6,897	837.2	842.3	-5.1	99.4%	-67.7	62.6
2009	6,885	780.4	981.0	-200.6	79.6%	-216.7	16.0
2010	6,596	926.2	887.9	38.3	104.3%	-49.1	87.4
2011	6,432	968.5	969.7	-1.2	99.9%	-78.3	77.1
2012	6,316	1,026.8	1,231.0	-204.2	83.4%	-231.3	27.1
2013	6,150	1,118.5	1,329.2	-210.8	84.1%	-245.8	35.0
2014	6,057	1,137.5	1,176.8	-39.3	96.7%	-119.0	79.7
2015	5,945	1,298.3	1,542.5	-244.2	84.2%	-285.3	41.1
2016	5,794	1,341.4	1,563.1	-221.7	85.8%	-273.5	51.8
2017	5,588	1,541.1	1,702.9	-161.8	90.5%	-246.7	84.9
2018	5,450	1,573.3	1,643.8	-70.5	95.7%	-187.6	117.1
2019	5,422	1,615.3	1,628.0	-12.7	99.2%	-159.8	147.1
2020	5,318	1,700.6	1,791.3	-90.7	94.9%	-229.1	138.4

4. Scheme funding continued

While the aggregate s179 funding ratio at 31 March 2020 is slightly lower at 31 March 2020 than at 31 March 2006, liability values have increased by around £1 trillion and assets have increased by a similar amount.

Source: PPF

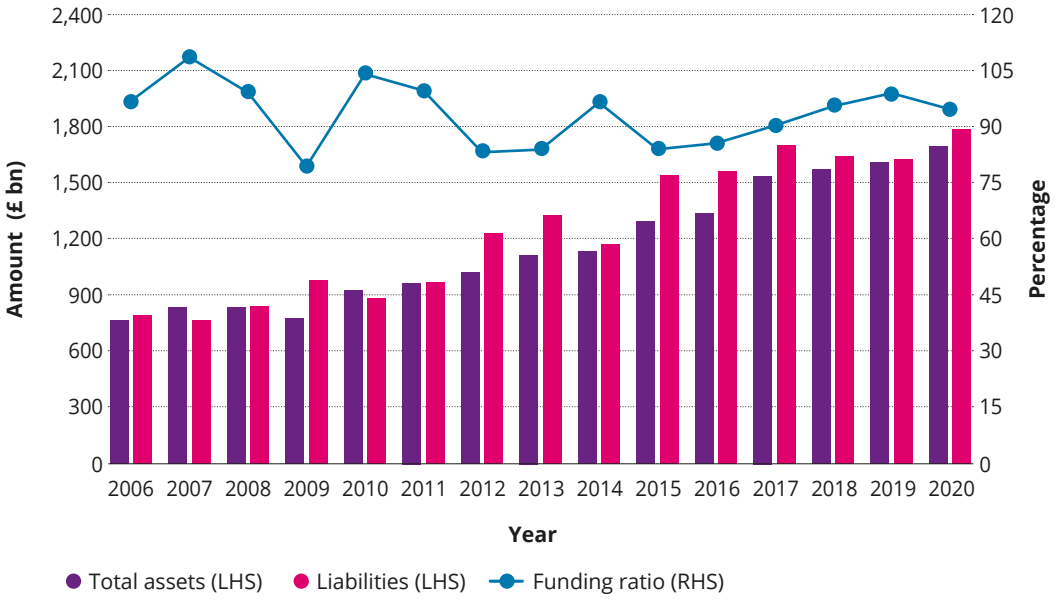


Figure 4.3 | Current and historical funding figures on an estimated full buy-out basis

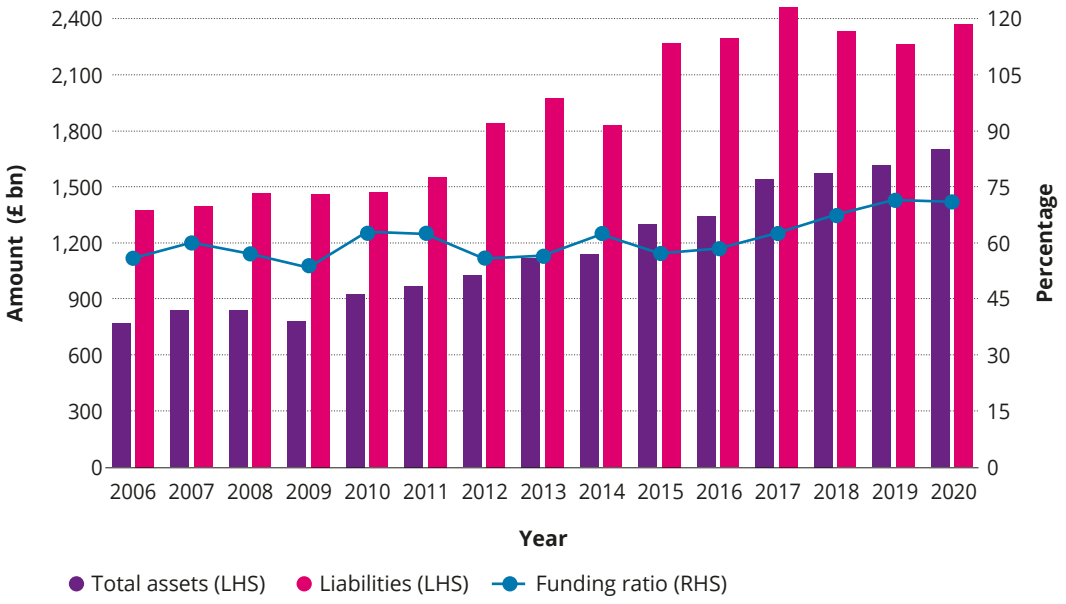
In contrast to the decrease in the aggregate s179 funding ratio, the aggregate full buy-out funding ratio hardly changed from 71.5 per cent to 71.8 per cent over the year to 31 March 2020. This is because of a fall in inflation expectations over the year, which is more significant for buy-out than for s179 liabilities.

		Estimated full buy-out		
Year	Total assets (£bn)	Liabilities (£bn)	Net funding position (£bn)	Aggregate funding ratio
2006	769.5	1,376.7	-607.2	55.9%
2007	837.7	1,393.7	-556.0	60.1%
2008	837.2	1,465.8	-628.6	57.1%
2009	780.4	1,461.1	-680.7	53.4%
2010	926.2	1,469.3	-543.1	63.0%
2011	968.5	1,551.8	-583.3	62.4%
2012	1,026.8	1,840.5	-813.7	55.8%
2013	1,118.5	1,974.7	-856.2	56.6%
2014	1,137.5	1,827.2	-689.7	62.3%
2015	1,298.3	2,269.2	-970.9	57.2%
2016	1,341.4	2,293.1	-951.7	58.5%
2017	1,541.1	2,461.7	-920.6	62.6%
2018	1,573.3	2,332.0	-758.7	67.5%
2019	1,615.3	2,260.3	-644.9	71.5%
2020	1,700.6	2,369.1	-668.5	71.8%

Since 2006, there has been a significant increase in the aggregate full buy-out funding ratio, from 55.9 per cent to 71.8 per cent at 31 March 2020.

Source: PPF

Note: the component figures may not sum to the total because of rounding.



The s179 funding ratio has fluctuated over time, from 97.1 per cent at 31 March 2006 to 94.9 per cent at 31 March 2020. Over the same period, the estimated full buy-out funding ratio has increased significantly, from 55.9 per cent to 71.8 per cent.

Analysis of funding by scheme membership size

Figure 4.4 | s179 funding ratios by size of scheme membership as at 31 March 2020

The best funded schemes were the smallest, with an aggregate s179 funding ratio of 99.6 per cent for schemes with fewer than 100 members.

Source: PPF

Note: the component figures may not sum to the total because of rounding.

Scheme size (members)	Number of schemes	Total assets (£bn)	Liabilities (£bn)	Net funding position (£bn)	Aggregate funding ratio	Simple average funding ratio*
2 to 99	1,936	17.2	17.3	-0.1	99.6%	97.6%
100 to 999	2,315	150.7	161.3	-10.6	93.4%	89.6%
1,000 to 4,999	718	276.1	297.7	-21.6	92.7%	90.7%
5,000 to 9,999	161	208.1	220.6	-12.5	94.3%	93.4%
10,000 and over	188	1,048.5	1,094.4	-45.9	95.8%	99.0%
Total	5,318	1,700.6	1,791.3	-90.7	94.9%	93.1%

* Whereas aggregate funding ratios are determined by comparing the total assets and liabilities for all schemes, the simple average funding ratio is the average of all of the schemes' individual funding ratios. Note that 11 schemes with funding ratios over 200 per cent (on an estimated full buy-out measure) were excluded from the simple averages to avoid distortions. Almost all of these schemes were small, with total assets of £0.2 billion.

4. Scheme funding continued

Figure 4.5 | Distribution of s179 funding ratios by size of scheme membership as at 31 March 2020

The smallest and largest schemes tend to be better funded on an s179 basis compared with mid-size schemes.

Source: PPF

Note: the percentages in each column may not sum to 100 per cent because of rounding.

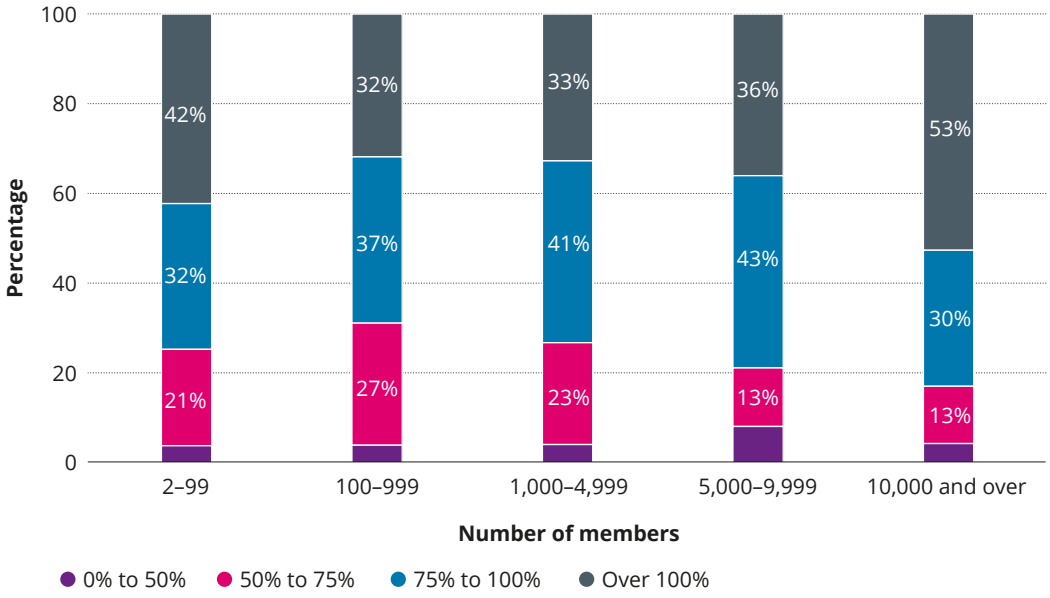


Figure 4.6 | Estimated full buy-out levels by size of scheme membership as at 31 March 2020

In aggregate the best funded schemes on a full buy-out measure were the smallest and largest schemes.

Source: PPF

Note: the columns may not sum to the totals because of rounding.

Members (number)	Number of schemes	Total assets (£bn)	Liabilities (£bn)	Net funding position (£bn)	Aggregate funding ratio	Simple average funding ratio*
2 to 99	1,936	17.2	23.7	-6.5	72.7%	73.0%
100 to 999	2,315	150.7	217.7	-67.0	69.2%	67.1%
1,000 to 4,999	718	276.1	391.3	-115.3	70.5%	69.4%
5,000 to 9,999	161	208.1	289.5	-81.4	71.9%	69.2%
10,000 and over	188	1,048.5	1,446.9	-398.4	72.5%	73.9%
Total	**5,318**	**1,700.6**	**2,369.1**	**-668.5**	**71.8%**	**69.9%**

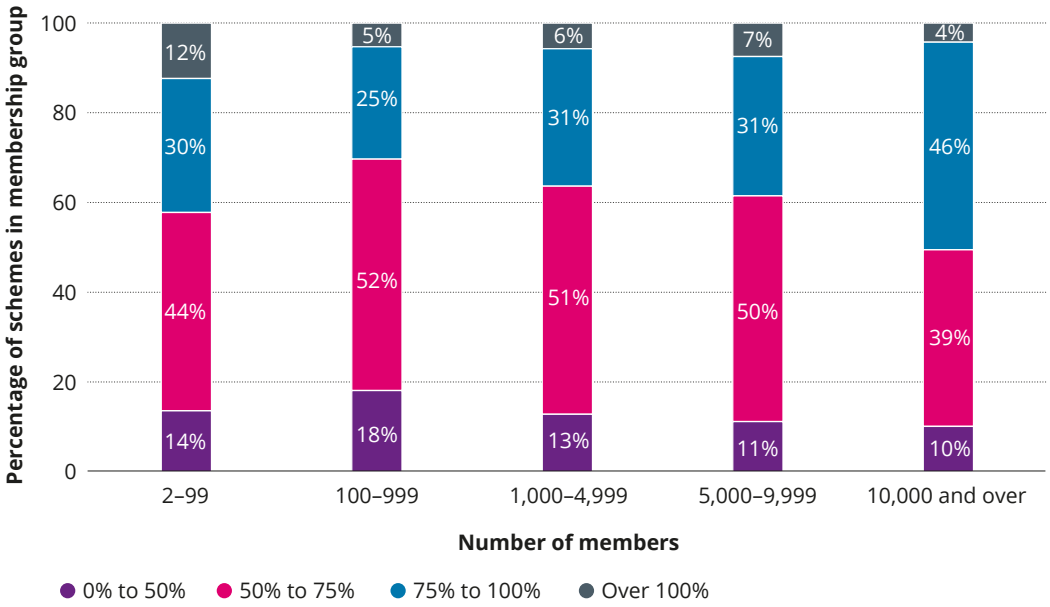
* Eleven schemes with funding ratios over 200 per cent (on an estimated full buy-out measure) were excluded from the simple averages to avoid distortions. Almost all of these schemes were small, with total assets of £0.2 billion.

Figure 4.7 | Distribution of estimated full buy-out funding ratios by size of scheme membership as at 31 March 2020

The majority of schemes had buy-out funding ratios between 50 and 100 per cent.

Source: PPF

Note: the percentages may not sum to 100 per cent because of rounding.



Analysis of funding by scheme maturity

Maturity is measured here as the percentage of the scheme liabilities relating to pensioners.

Figure 4.8 | Analysis of s179 funding ratios by scheme maturity as at 31 March 2020

The most mature schemes have an aggregate s179 funding ratio that is around 60 percentage points higher than the least mature schemes.

Source: PPF

Note: the components may not sum to the totals because of rounding.

Proportion of s179 liabilities relating to pensioners	Number of schemes	Total assets (£bn)	Liabilities (£bn)	Net funding position (£bn)	Aggregate funding ratio	Simple average funding ratio*
25% and less	1,263	208.2	276.4	-68.2	75.3%	78.7%
Between 25% and 50%	2,640	1,037.7	1,098.8	-61.1	94.4%	90.1%
Between 50% and 75%	1,153	415.2	386.7	28.5	107.4%	107.9%
Between 75% and 100%	262	39.5	29.4	10.0	134.1%	128.1%
Total	**5,318**	**1,700.6**	**1,791.3**	**-90.7**	**94.9%**	**93.1%**

* Eleven schemes with funding ratios over 200 per cent (on an estimated full buy-out measure) were excluded from the simple averages to avoid distortions. Almost all of these schemes were small, with total assets of £0.2 billion.

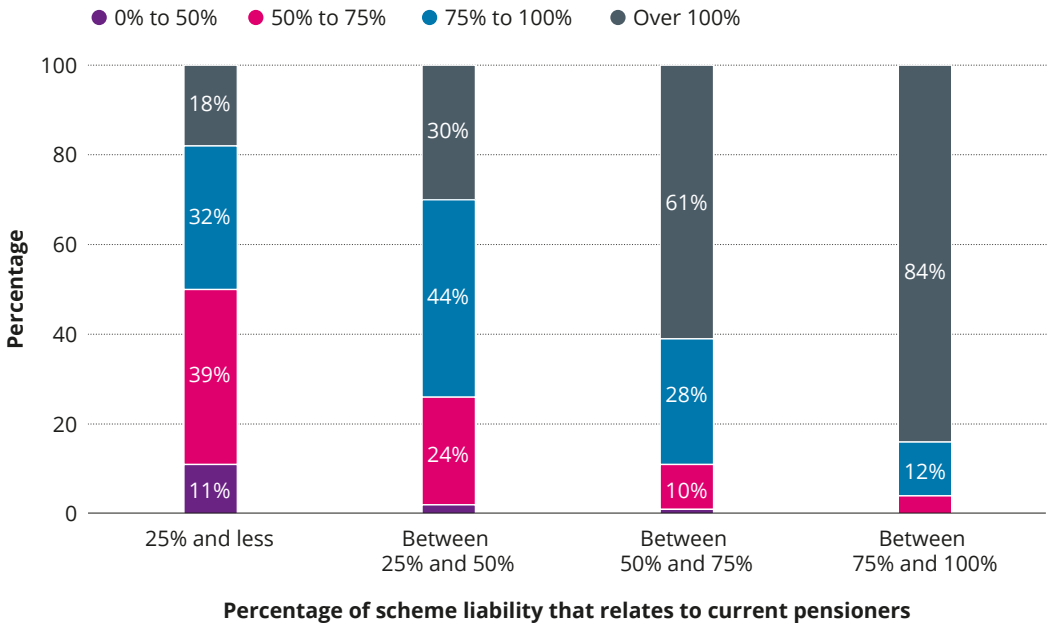
4. Scheme funding continued

Figure 4.9 | Distribution of funding ratios on an s179 basis by scheme maturity as at 31 March 2020

Funding ratios improve with scheme maturity, with 84 per cent of the most mature schemes being overfunded on an s179 basis.

Source: PPF

Note: the percentages in each column may not sum to 100 per cent because of rounding.



Analysis of funding by scheme status

Figure 4.10 | Analysis of s179 funding ratios by scheme status as at 31 March 2020

Open schemes are over 15 percentage points worse funded than closed schemes, as measured by the aggregate s179 funding ratio.

Source: PPF

Note: the components may not sum to the totals because of rounding.

Status	Number of schemes	Total assets (£bn)	Liabilities (£bn)	Net funding position (£bn)	Aggregate funding ratio	Simple average funding ratio*
Open	593	335.0	414.7	-79.7	80.8%	85.1%
Closed to new members	2,177	932.0	929.1	2.9	100.3%	94.6%
Closed to future accrual	2,455	425.2	440.9	-15.7	96.4%	92.9%
Winding up	93	8.4	6.6	1.7	125.8%	112.7%
Total	**5,318**	**1,700.6**	**1,791.3**	**-90.7**	**94.9%**	**93.1%**

* Eleven schemes with funding ratios over 200 per cent (on an estimated full buy-out measure) were excluded from the simple averages to avoid distortions. Almost all of these schemes were small, with total assets of £0.2 billion.

Figure 4.11 | Distribution of schemes by s179 funding ratios within scheme status groups as at 31 March 2020

Three quarters of open schemes have an s179 funding ratio below 100 per cent.

Source: PPF

Note: the percentages in each column may not sum to 100 per cent because of rounding.

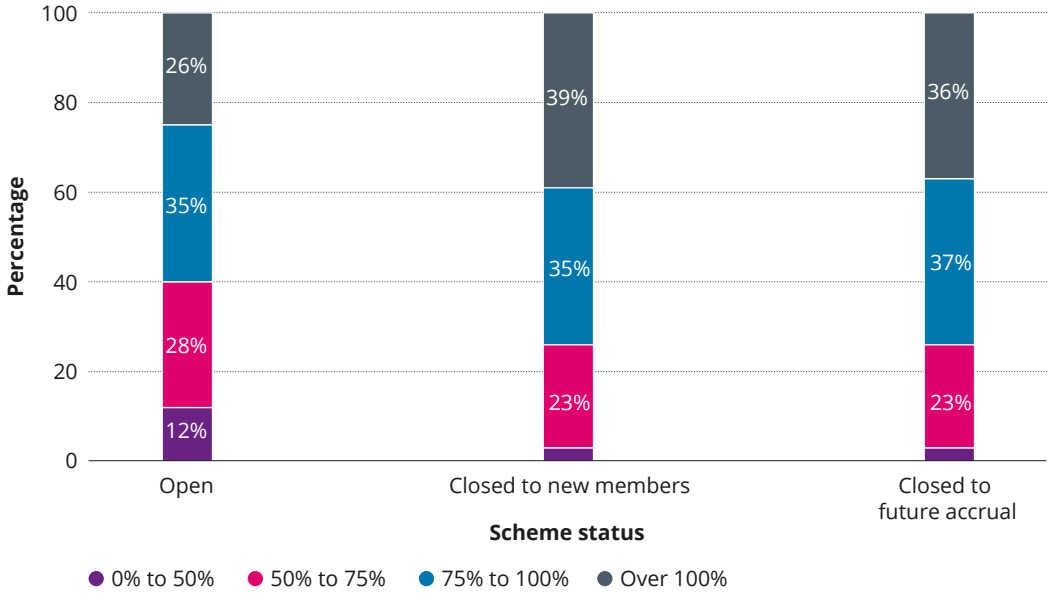


Figure 4.12 | Analysis of estimated full buy-out funding ratios by scheme status as at 31 March 2020

Open schemes are around 10 percentage points worse funded than closed schemes, as measured by the aggregate buy-out funding ratio.

Source: PPF

Note: the components may not sum to the totals because of rounding.

Status	Number of schemes	Total assets (£bn)	Liabilities (£bn)	Net funding position (£bn)	Aggregate funding ratio	Simple average funding ratio*
Open	593	335.0	525.7	-190.6	63.7%	67.1%
Closed to new members	2,177	932.0	1,245.8	-313.8	74.8%	70.8%
Closed to future accrual	2,455	425.2	588.7	-163.5	72.2%	69.2%
Winding up	93	8.4	9.0	-0.6	93.2%	87.3%
Total	**5,318**	**1,700.6**	**2,369.1**	**-668.5**	**71.8%**	**69.9%**

* Eleven schemes with funding ratios over 200 per cent (on an estimated full buy-out measure) were excluded from the simple averages to avoid distortions. Almost all of these schemes were small, with total assets of £0.2 billion.

Figure 4.13 | Distribution of schemes by estimated full buy-out funding ratios within scheme status groups as at 31 March 2020

Almost a quarter of open schemes have an estimated full buy-out funding ratio of less than 50 per cent.

Source: PPF

Note: the percentages in each column may not sum to 100 per cent because of rounding.

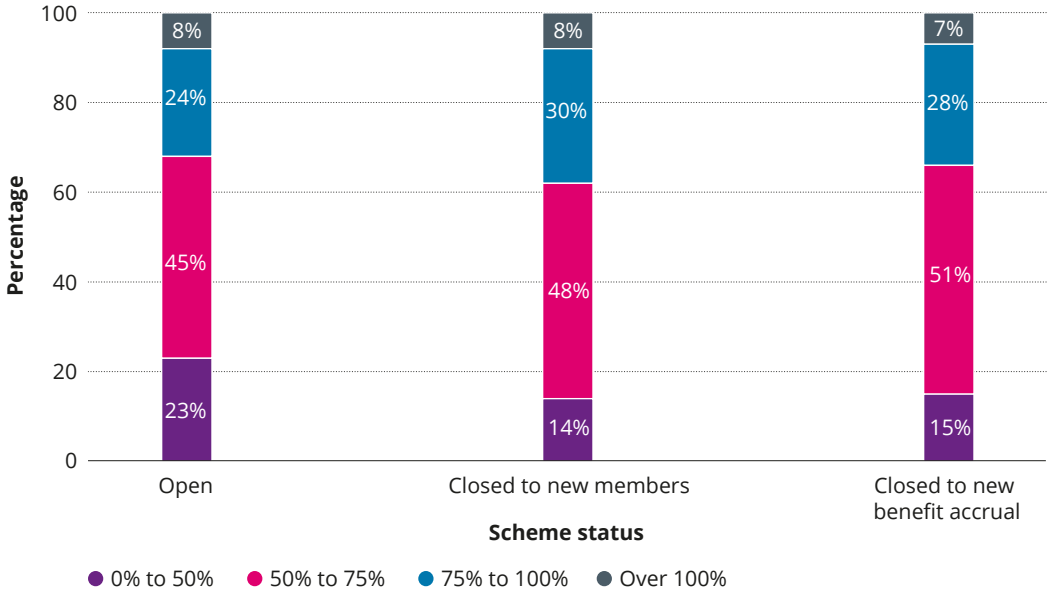
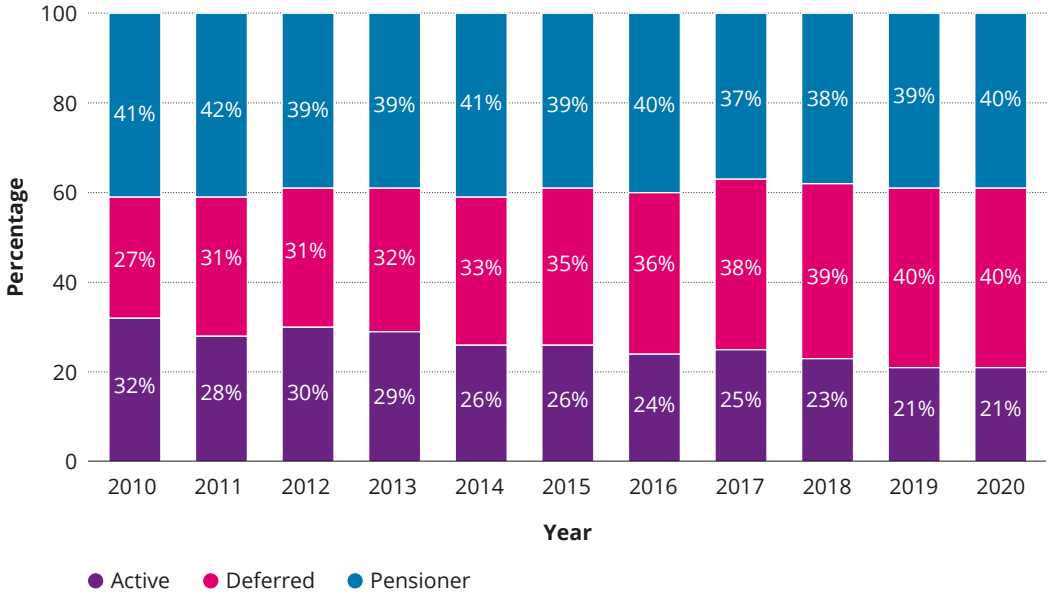


Figure 4.14 | s179 liabilities by member status in current and historical *Purple Book* datasets

The proportion of liabilities that relates to actives has reduced by 11 percentage points over the last 10 years.

Source: PPF

Note: the percentages in each column may not sum to 100 per cent because of rounding.



5. Funding sensitivities

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 2020 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' *Purple Books*.
- Various funding sensitivities. All of these are on an s179 basis, taking the funding position as at 31 March 2020[9] as the base and using *The Purple Book 2020* 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 while both measures have been volatile over the last year, they are still significantly higher than the low points they reached in 2016.
- The proportion of schemes in deficit on an s179 basis was 63 per cent in March 2020, which is lower than the average (since March 2006) of 71 per cent.

Funding sensitivities as at 31 March 2020

- A 0.1 percentage point (10 basis point) rise in both nominal and real gilt yields increases the 31 March 2020 net funding position by £17.7 billion from -£90.7 billion to -£73.0 billion. A 2.5 per cent rise in equity prices would improve the net funding position by £7.8 billion.
- A 0.1 percentage point (10 basis point) reduction in both nominal and real gilt yields raises aggregate scheme liabilities by 1.9 per cent and raises aggregate scheme assets by 1.0 per cent. A 2.5 per cent increase in equity markets increases scheme assets by 0.5 per cent.
- If all members were to live two years longer than expected, s179 liabilities would increase by £148.2 billion, or 8.3 per cent.

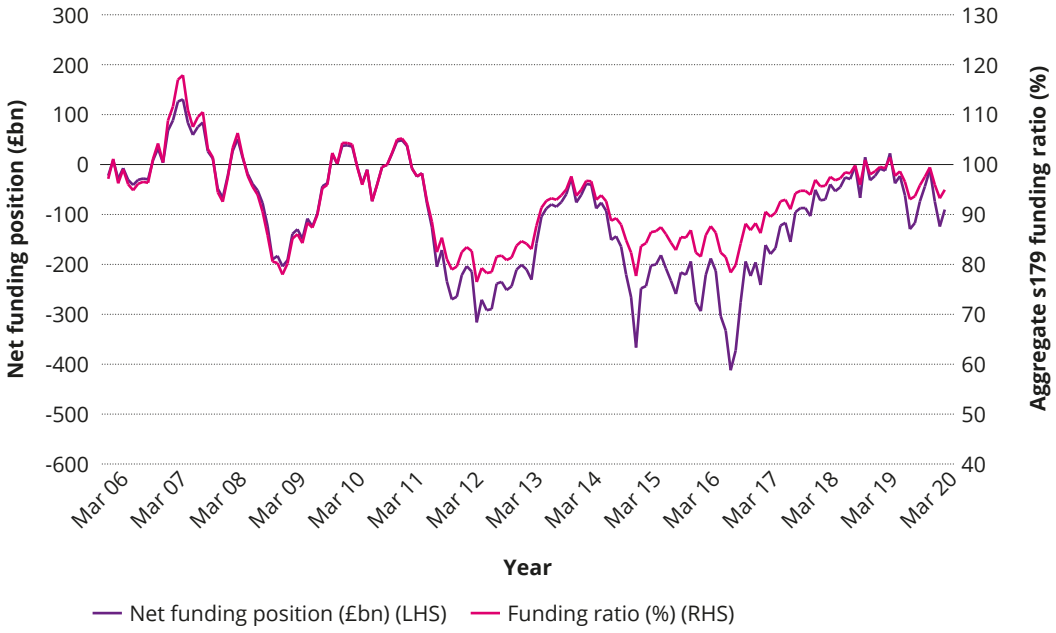
Historical changes in s179 scheme funding since 2006

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 *Purple Books*. 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

Although the aggregate s179 funding ratio and net funding position have been volatile over the last year, they are both still significantly higher than their low points in 2016.

Source: PPF



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

5. Funding sensitivities continued

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

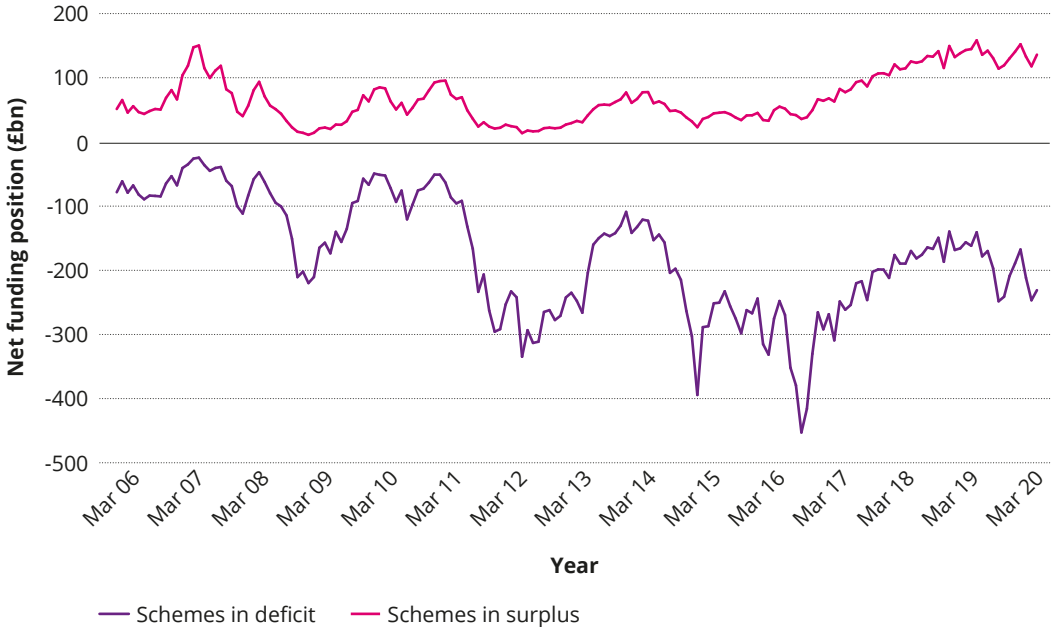
There has been a general upward trend in both assets and liabilities since 2006.

Source: PPF

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 2020 this deficit was £229 billion, up £69 billion from the £160 billion experienced at 31 March 2019.

Source: PPF

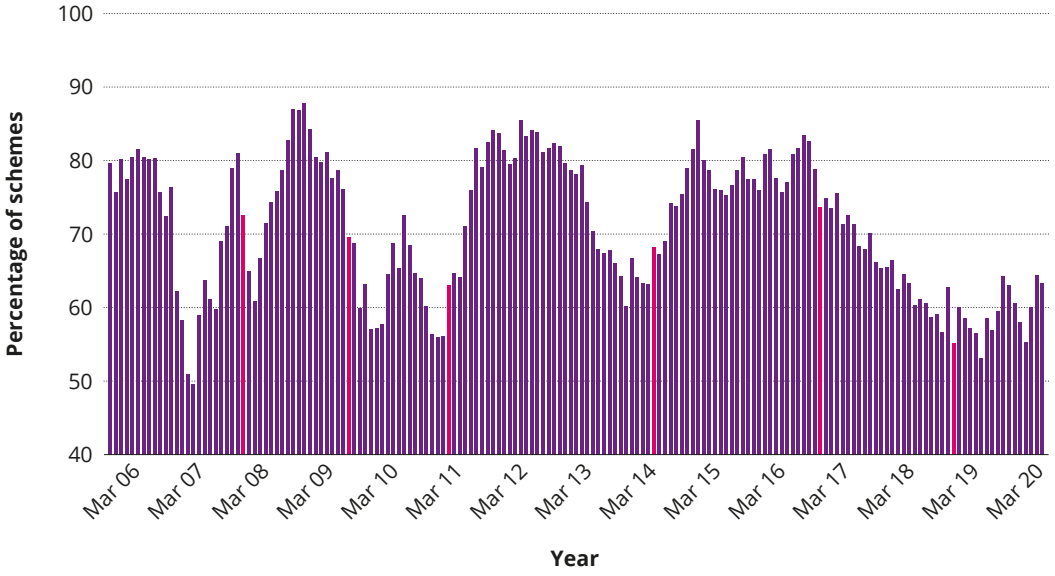


The funding position of schemes in surplus has been more stable over time than the funding position of schemes in deficit.

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

In March 2020, 63 per cent of schemes were in deficit, up from 57 per cent the previous year.

Source: PPF



The magenta 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 and November 2018 reduced the number of schemes in deficit by 157 and 437 respectively.

Figure 5.5 | Movements in gilt yields

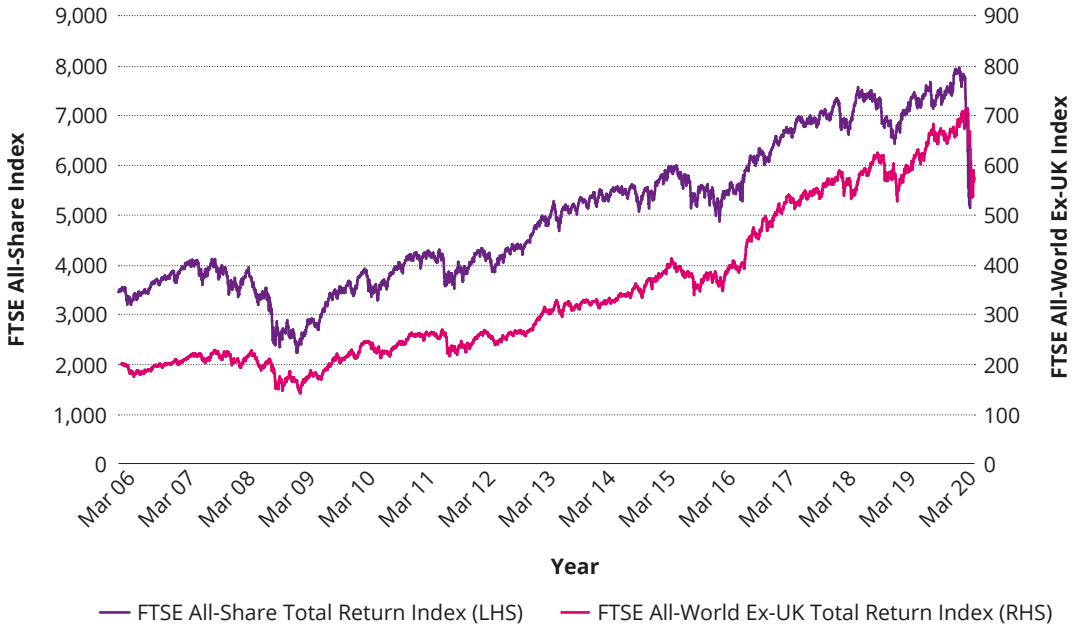
The downward trend of gilt yields has continued. They reached their all-time low in March 2020.

Source: Bloomberg

Figure 5.6 | Movements in equity indices

The FTSE All-Share and All-World Ex-UK Total Return Indices reached all-time highs at the beginning of 2020 but declined sharply in March 2020.

Source: Bloomberg



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 -£90.7 billion as at 31 March 2020

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

Source: PPF

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%	-119.4	-102.2	-84.9	-67.3	-49.5	-31.6	-13.5
5.0%	-127.2	-110.1	-92.7	-75.1	-57.4	-39.4	-21.3
2.5%	-135.1	-117.9	-100.5	-82.9	-65.2	-47.2	-29.1
0.0%	-142.9	-125.7	-108.3	**-90.7**	-73.0	-55.0	-36.9
-2.5%	-150.7	-133.5	-116.1	-98.5	-80.8	-62.8	-44.7
-5.0%	-158.5	-141.3	-123.9	-106.3	-88.6	-70.6	-52.5
-7.5%	-166.3	-149.1	-131.7	-114.1	-96.4	-78.5	-60.3

A 0.1 point rise in both nominal and real gilt yields would have improved the end-March 2020 s179 net funding position by £17.7 billion from -£90.7 billion (bold) to -£73.0 billion (shaded). That's more than the £7.8 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 2020

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%	104.4	103.4	102.4	101.4	100.4	99.4	98.4
5.0%	104.0	102.9	101.9	100.9	99.9	98.9	98.0
2.5%	103.5	102.5	101.5	100.5	99.5	98.5	97.5
0.0%	103.1	102.0	101.0	**100.0**	99.0	98.0	97.0
-2.5%	102.6	101.6	100.6	99.5	98.5	97.6	96.6
-5.0%	102.1	101.1	100.1	99.1	98.1	97.1	96.1
-7.5%	101.7	100.7	99.6	98.6	97.6	96.6	95.7

Source: PPF

A 2.5 per cent increase in equity prices would raise scheme assets by 0.5 per cent (shaded). A 0.3 point decrease in gilt yields would increase scheme assets by 3.1 per cent (shaded).

Figure 5.9 | Impact of changes in gilt yields on s179 liabilities as at 31 March 2020

A 0.1 percentage point movement in gilt yields would impact s179 liabilities by 1.9 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	5.8%	3.9%	1.9%	-1.9%	-3.9%	-5.8%

Source: PPF

Figure 5.10 | Impact of changes in nominal or real gilt yields on s179 liabilities as at 31 March 2020 (base = £1,791.3 billion)

As at 31 March 2020, the s179 liabilities were almost twice as sensitive to changes in real yields as to changes in nominal yields.

Impact on s179 liabilities				
	Change in nominal yields		Change in real yields	
	-0.1pp	0.1pp	-0.1pp	0.1pp
£bn	1,803.9	1,778.7	1,814.5	1,768.0
Percentage change	0.7%	-0.7%	1.3%	-1.3%

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.

5. Funding sensitivities continued

Figure 5.11 | Impact of changes in life expectancy assumptions on s179 liabilities as at 31 March 2020 (base = £1,791.3 billion)

If individuals live two years longer than expected, s179 liabilities would increase by £148.2 billion, or 8.3 per cent. Conversely, if individuals live two years shorter than expected, s179 liabilities would decrease by £143.7 billion, or 8.0 per cent.

	s179 liabilities (£bn)	% change from base
Age rating +2 years	1,647.6	-8.0%
Age rating -2 years	1,939.5	8.3%

Source: PPF

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.

6. Insolvency risk

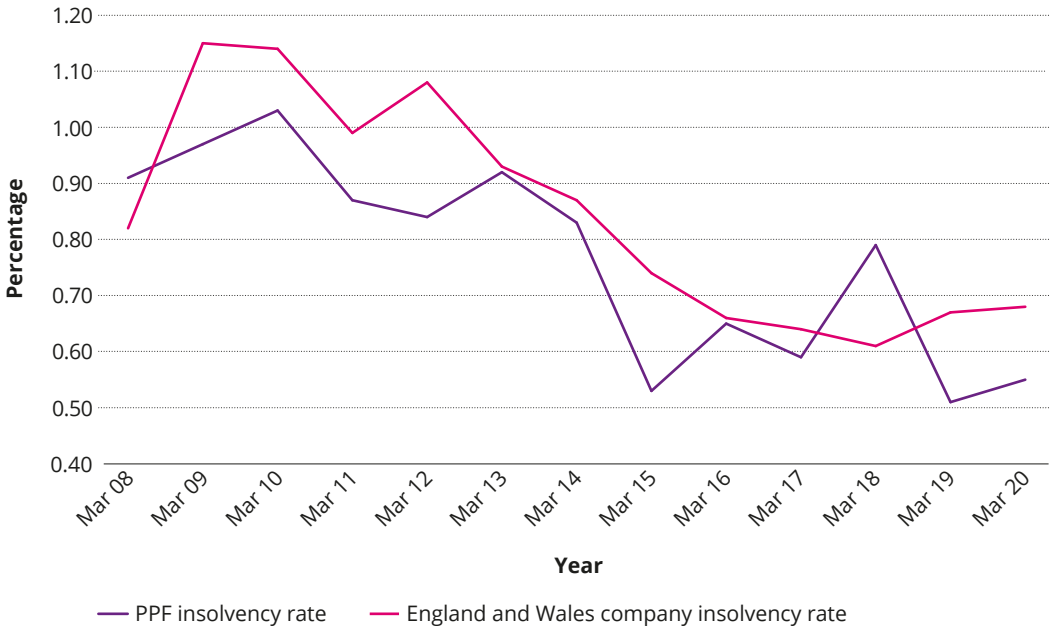
Summary

- This chapter shows the annual insolvency rate for employers in the PPF universe and companies in England and Wales. It also shows the number of England and Wales company insolvencies compared with the rate of UK real GDP growth. Finally it shows a proxy for insolvency risk over the next year, for different scheme sizes.
- The average insolvency rate in the PPF universe has increased by 0.04 percentage points to 0.55 per cent at 31 March 2020.
- Similarly, the average annual insolvency rate of companies in England and Wales increased by around 0.01 per cent at 31 March 2020. This was caused by an increase of around 4 per cent in the number of annual England and Wales company insolvencies.
- UK real GDP growth was -1.7 per cent in Q1 2020, down from 2.0 per cent in Q1 2019.
- In aggregate, larger schemes tend to have a lower insolvency risk than those with fewer members.

Figure 6.1 | Annual insolvency rates*

The PPF annual insolvency rate has increased over the last year by around 0.05 percentage points to 0.55 per cent. The England and Wales company insolvency rate remained at about the same level as last year at 0.7 per cent.

Source: PPF, Office for National Statistics (ONS)



* The England and Wales company insolvency rate has been calculated based on the 2.5 million companies in England and Wales that are VAT/PAYE registered with HMRC. Insolvencies in England and Wales account for around 93 per cent of UK insolvencies. In comparison, there are around 14,500 companies in the PPF universe, or around 13,000 if companies that participate in multiple schemes are only counted once.

6. Insolvency risk continued

Figure 6.2 | England and Wales underlying company insolvencies (seasonally adjusted)

The number of insolvencies in England and Wales increased by 4 per cent in the year to 31 March 2020. UK real GDP fell by 3.7 percentage points over the same period.

Source: ONS and the UK Insolvency Service

Note: as the ONS and UK Insolvency Service revise their methodology and receive new data, the figures for previous time periods may be updated.

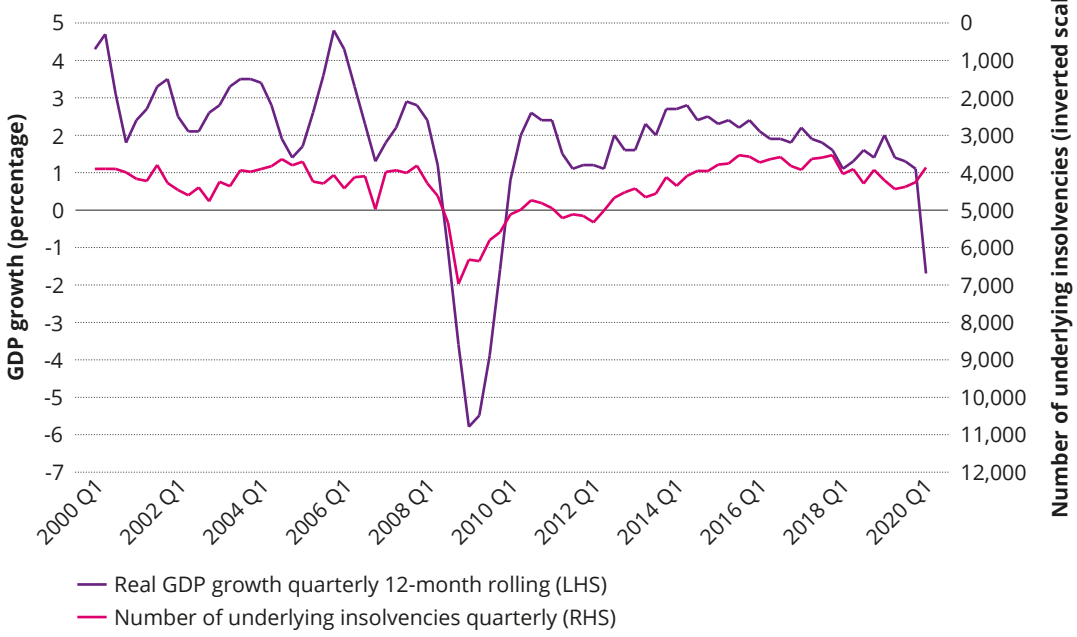
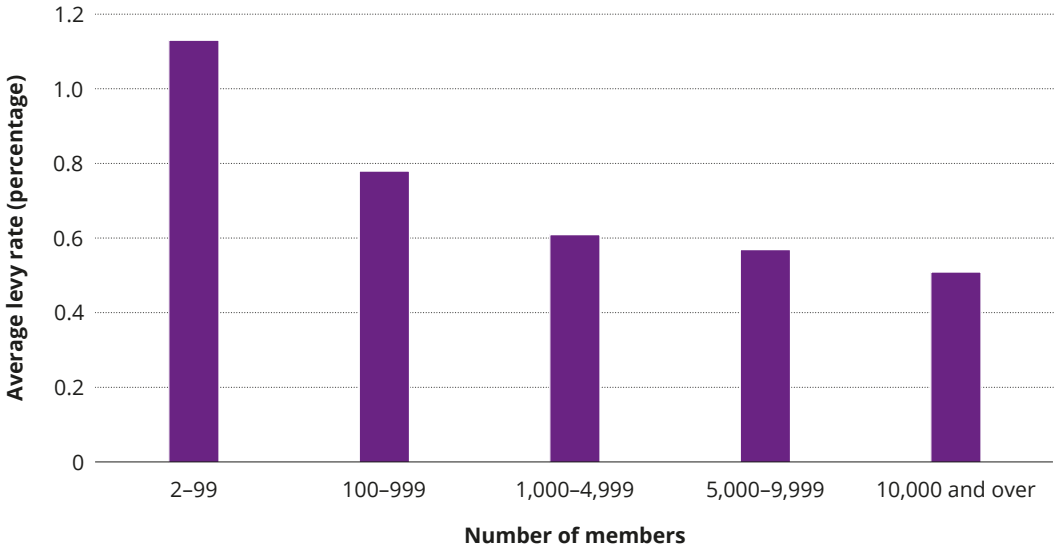


Figure 6.3 | Average levy rates of sponsoring companies by scheme membership size as at 31 March 2020*

Schemes with the fewest members tend to have sponsors with higher insolvency probabilities.

Source: PPF



* Schemes' risk-based levy rates, as used in calculating the PPF levy, have been used as a proxy for the insolvency probabilities.

7. Asset allocation

Summary

- This chapter contains information on how DB schemes have invested scheme assets since 2006 and how asset allocations in *The Purple Book 2020* dataset vary according to different scheme characteristics, such as scheme size.
- Around 99 per cent of schemes' asset allocations in *The Purple Book 2020* dataset had an effective date in the year 2018 or 2019.
- The aggregate proportion of schemes' assets invested in equities fell from 24.0 per cent to 20.4 per cent, which was partly because of market volatility in March 2020 that led to decreases in the value of equities over the year to 31 March 2020. Meanwhile the proportion in bonds rose from 62.8 per cent to 69.2 per cent.
- Within bonds, the proportions held were broadly unchanged from last year with index-linked bonds making up the biggest proportion at 46.1 per cent. Corporate bonds accounted for 28.0 per cent of the bonds held and government fixed interest bonds contributed 25.9 per cent of the total.
- Smaller schemes tend to have higher proportions in government and corporate fixed interest bonds than in index-linked bonds.
- Within equities, the UK-quoted proportion fell from 16.6 per cent to 13.3 per cent and the proportion of overseas-quoted equities decreased slightly from 69.7 per cent to 69.0 per cent. This would have been partly because of volatility in UK-quoted and overseas-quoted equities in March 2020 that led to decreases in the value of these equities over the year to 31 March 2020. Meanwhile unquoted/private equities increased by 4.0 per cent to 17.7 per cent.
- Smaller schemes tend to hold higher proportions in UK equities with smaller proportions in both overseas and unquoted/private equities.
- The best funded schemes tend to have the greatest proportion of their assets invested in bonds and a smaller proportion invested in equities.
- As scheme maturity increases, the proportion of assets invested in equities falls.

Asset data[10]

Figure 7.1 | Distribution of schemes by asset allocation date*

Around 99 per cent of schemes provided an asset allocation with an effective date in 2018 or 2019.

Source: PPF

Note: the percentage column does not sum to 100 per cent due to rounding.

Asset allocation year	Number of schemes	Percentage of *The Purple Book 2020* dataset
2006–2012	2	0.0%
2013	–	0.0%
2014	1	0.0%
2015	3	0.1%
2016	3	0.1%
2017	32	0.6%
2018	1,823	34.3%
2019	3,433	64.6%
2020	21	0.4%
Total	**5,318**	**100%**

* There can be a significant gap between the date of the scheme return and the date at which the asset allocation was taken. This means that the date at which asset allocation data is provided differs from scheme to scheme.

10 Asset allocations submitted by schemes are not adjusted for market movements. Most of this chapter uses weighted average asset allocations. For example, the weighted average share of equities is the total amount of equities across all schemes divided by the total amount of assets across all schemes. The simple average takes the arithmetic average of each scheme's proportion of its assets held in equities.

7. Asset allocation continued

Figure 7.2 | Weighted average asset allocation in total assets

In *The Purple Book 2020* dataset, the proportion invested in bonds rose while the proportion in equities fell.

Year/ *The Purple Book* dataset	Asset class								
				Breakdown of other investments					
	Equities	Bonds	Other invest-ments	Property	Cash and deposits	Insurance policies	Hedge funds*	Annuities*	Misc
2006	61.1%	28.3%	10.6%	4.3%	2.3%	0.9%	n/a	n/a	3.1%
2007	59.5%	29.6%	10.9%	5.2%	2.3%	0.8%	n/a	n/a	2.5%
2008	53.6%	32.9%	13.5%	5.6%	3.0%	1.1%	n/a	n/a	3.8%
2009	46.4%	37.1%	16.5%	5.2%	3.9%	1.4%	1.5%	n/a	4.5%
2010	42.0%	40.4%	17.6%	4.6%	3.9%	1.4%	2.2%	n/a	5.4%
2011	41.1%	40.1%	18.8%	4.4%	4.1%	1.6%	2.4%	n/a	6.3%
2012	38.5%	43.2%	18.3%	4.9%	5.1%	0.2%	4.5%	n/a	3.6%
2013	35.1%	44.8%	20.1%	4.7%	6.7%	0.1%	5.2%	n/a	3.5%
2014	35.0%	44.1%	20.9%	4.6%	6.1%	0.1%	5.8%	n/a	4.3%
2015	33.0%	47.7%	19.3%	4.9%	3.5%	0.1%	6.1%	n/a	4.7%
2016	30.3%	51.3%	18.4%	4.8%	3.0%	0.1%	6.6%	2.1%	1.7%
2017	29.0%	55.7%	15.3%	5.3%	-0.9%	0.1%	6.7%	3.3%	0.8%
2018	27.0%	59.0%	14.0%	4.8%	-2.5%	0.1%	7.0%	3.4%	1.2%
2019	24.0%	62.8%	13.2%	5.0%	-4.4%	0.3%	7.4%	4.0%	1.0%
2020	20.4%	69.2%	10.4%	4.9%	-7.2%	0.1%	6.8%	5.0%	0.8%

* n/a denotes not available, where schemes may have been invested in these asset classes but the percentages cannot be determined from the data held.

The decrease in the value of equities between 31 March 2019 and 31 March 2020 contributed towards the decrease in the proportion of assets invested in equities over this period.

The weighted average proportion of assets held in cash and deposits being negative represents a number of large schemes with significant negative cash holdings which are likely to be related to investments such as swaps and repurchase agreements.

Source: PPF

Note: figures may not sum to 100 per cent or the 'other investments' total due to rounding.

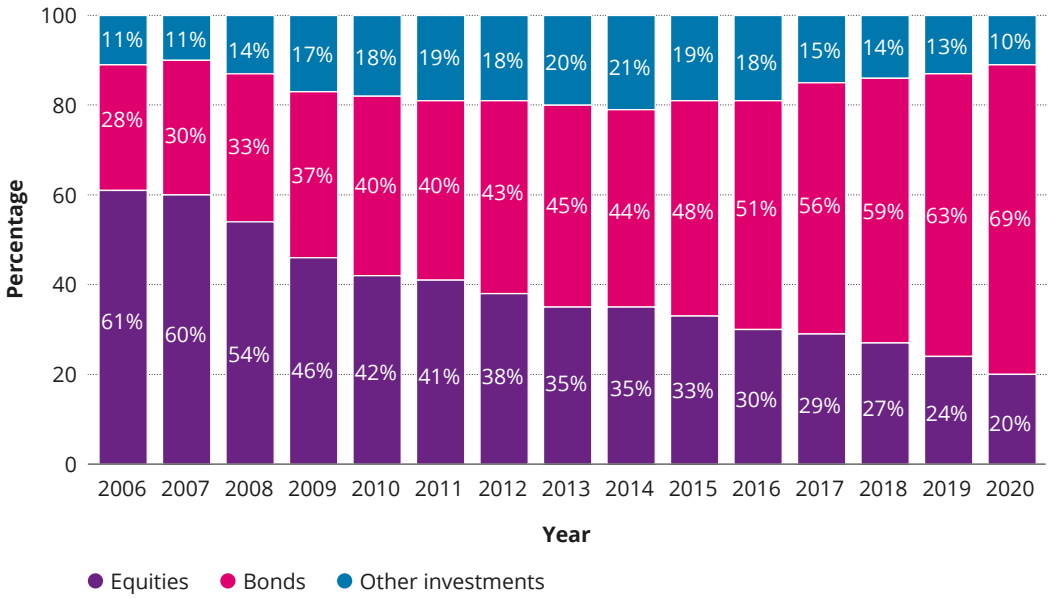


Figure 7.3 | Asset allocation: simple averages

A comparison of simple and weighted averages in 2020 shows there is a greater weighted allocation to bonds and smaller allocations to equities and other investments. This reflects the fact that the larger schemes hold a greater proportion of bonds than smaller schemes.

Year/ *The Purple Book* dataset	Asset class								
				Breakdown of other investments					
	Equities	Bonds	Other invest-ments	Property	Cash and deposits	Insurance policies	Hedge funds*	Annuities*	Misc
2006	52.6%	22.6%	24.8%	2.1%	3.9%	14.9%	n/a	n/a	3.6%
2007	53.5%	24.0%	22.5%	2.5%	3.7%	13.7%	n/a	n/a	2.6%
2008	50.2%	26.5%	23.3%	2.9%	4.4%	13.0%	n/a	n/a	2.9%
2009	46.6%	29.2%	24.2%	2.8%	5.6%	12.4%	0.7%	n/a	2.6%
2010	43.1%	32.6%	24.3%	2.6%	5.7%	12.3%	0.9%	n/a	2.8%
2011	43.7%	32.6%	23.7%	2.7%	4.9%	11.8%	1.0%	n/a	3.3%
2012	43.7%	36.1%	20.2%	3.5%	5.5%	4.4%	3.7%	n/a	3.2%
2013	40.6%	39.1%	20.3%	3.6%	6.2%	2.0%	5.0%	n/a	3.5%
2014	39.4%	39.0%	21.6%	3.5%	6.4%	1.8%	6.2%	n/a	3.9%
2015	38.8%	39.4%	21.8%	3.6%	5.7%	1.7%	7.3%	n/a	3.7%
2016	36.8%	41.1%	22.1%	3.7%	5.4%	1.2%	7.9%	2.4%	1.5%
2017	34.5%	41.4%	24.1%	3.7%	3.6%	0.7%	7.9%	6.8%	1.3%
2018	32.4%	43.1%	24.5%	3.3%	1.8%	0.6%	8.5%	8.9%	1.4%
2019	30.4%	47.0%	22.7%	3.4%	-0.8%	0.5%	8.9%	9.4%	1.3%
2020	27.8%	52.3%	19.9%	3.4%	-3.2%	0.6%	7.9%	9.7%	1.7%

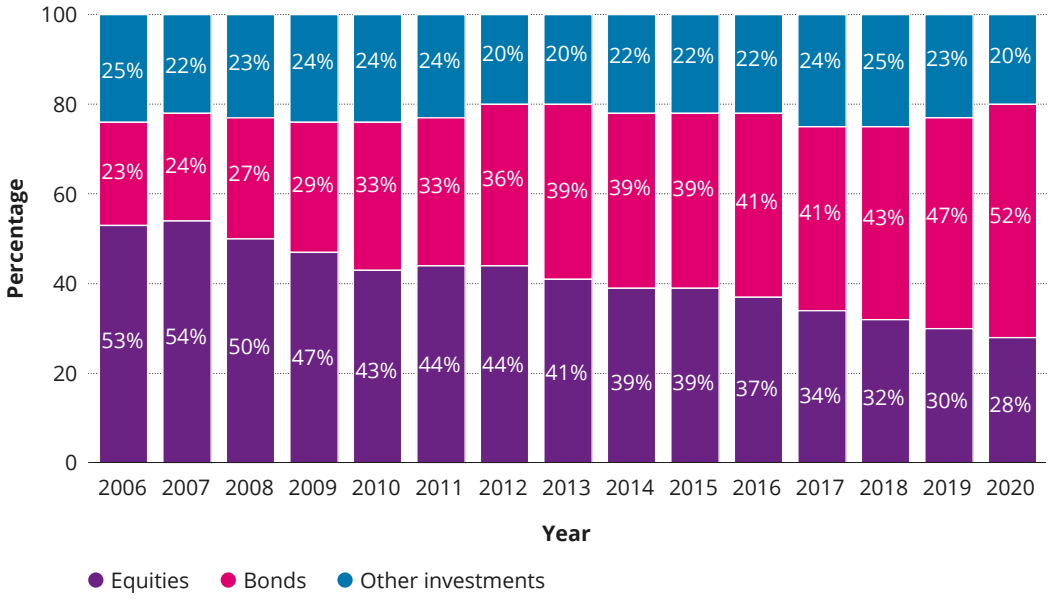
* n/a denotes not available, where schemes may have been invested in these asset classes but the percentages cannot be determined from the data held.

The decrease in the value of equities between 31 March 2019 and 31 March 2020 contributed towards the decrease in the proportion of assets invested in equities over this period.

The simple average proportion of assets held in cash and deposits being negative represents schemes with negative cash holdings which are likely to be related to investments such as swaps and repurchase agreements.

Source: PPF

Note: figures may not sum to 100 per cent or the 'other investments' total due to rounding.



7. Asset allocation continued

Figure 7.4 | Bond splits

The proportion of bonds in each class has remained broadly unchanged in recent years.

Year/ *The Purple Book* dataset	Bonds					
	Weighted average			Simple average		
	Government fixed interest	Corporate fixed interest	Index-linked	Government fixed interest	Corporate fixed interest	Index-linked
2008	33.2%	32.6%	33.9%	47.2%	33.0%	19.8%
2009	29.0%	38.3%	32.6%	45.6%	37.3%	17.1%
2010	24.6%	42.2%	33.1%	37.3%	43.0%	19.8%
2011	19.6%	44.3%	36.1%	31.2%	47.1%	21.7%
2012	17.7%	44.8%	37.5%	28.2%	49.4%	22.4%
2013	18.5%	40.6%	40.9%	27.0%	49.6%	23.4%
2014	18.6%	40.3%	41.1%	23.8%	51.9%	24.4%
2015	20.3%	37.7%	42.0%	23.8%	51.2%	25.0%
2016	21.9%	33.7%	44.4%	24.4%	49.0%	26.6%
2017	24.1%	31.4%	44.5%	25.9%	46.8%	27.3%
2018	24.1%	28.8%	47.1%	27.2%	42.1%	30.8%
2019	25.4%	28.4%	46.2%	29.0%	38.9%	32.1%
2020	25.9%	28.0%	46.1%	29.4%	36.1%	34.6%

Source: PPF

Note: the rows may not sum to 100 per cent due to rounding.

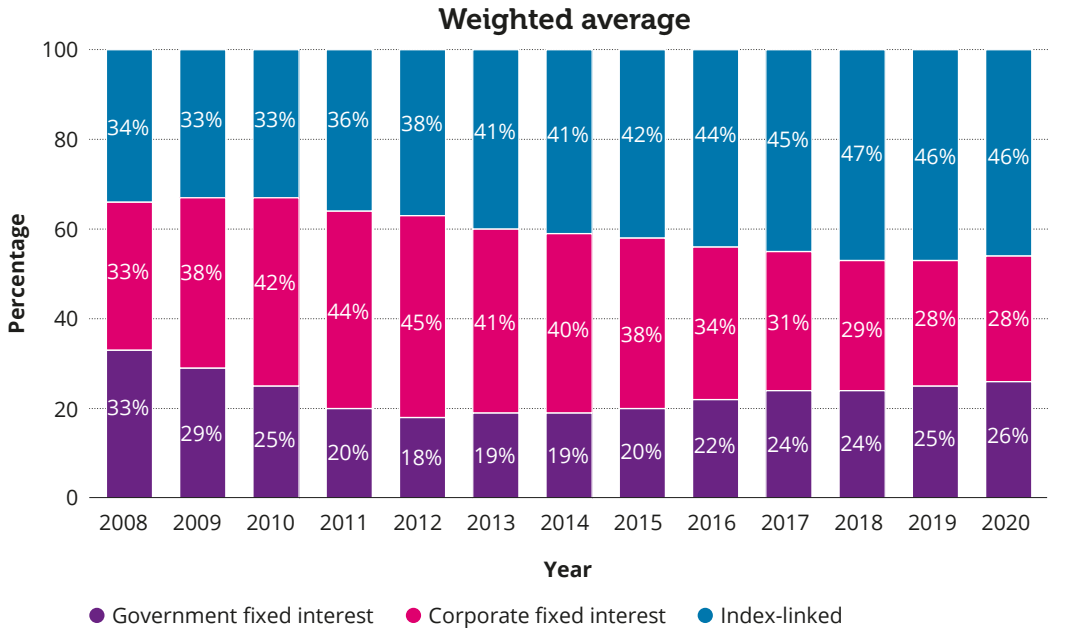


Figure 7.5 | Equity splits

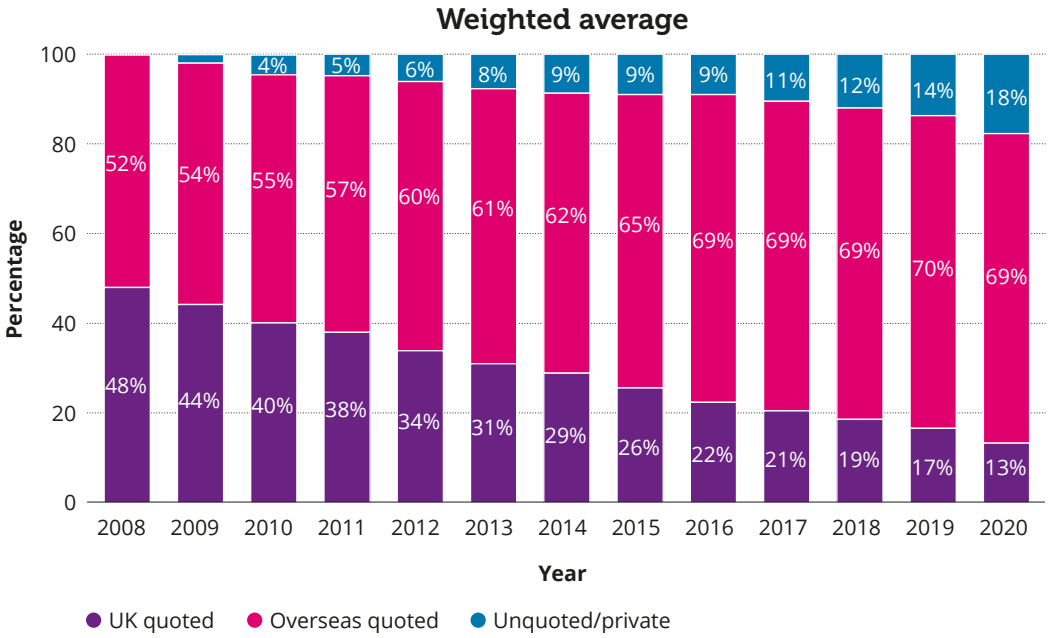
Within equities, the proportion invested in private equities continued to rise, while the proportion invested in UK equities continued to fall.

Year/ *The Purple Book* dataset	Equities					
	Weighted average			Simple average		
	UK quoted	Overseas quoted	Unquoted/ private	UK quoted	Overseas quoted	Unquoted/ private
2008	48.0%	51.6%	n/a	60.4%	39.6%	n/a
2009	44.2%	53.8%	1.9%	57.6%	41.7%	0.7%
2010	40.1%	55.3%	4.4%	55.3%	43.7%	1.0%
2011	38.0%	57.2%	4.8%	52.7%	46.1%	1.2%
2012	33.9%	60.0%	6.1%	49.9%	48.5%	1.7%
2013	31.0%	61.3%	7.7%	47.5%	50.3%	2.2%
2014	28.9%	62.4%	8.7%	44.9%	52.7%	2.4%
2015	25.6%	65.4%	9.0%	42.2%	55.3%	2.5%
2016	22.4%	68.6%	9.0%	38.8%	58.6%	2.6%
2017	20.5%	69.0%	10.5%	36.3%	61.0%	2.7%
2018	18.6%	69.4%	12.0%	32.1%	65.0%	3.0%
2019	16.6%	69.7%	13.7%	29.6%	66.7%	3.7%
2020	13.3%	69.0%	17.7%	26.9%	68.4%	4.8%

The decrease in the value of UK and overseas equities between 31 March 2019 and 31 March 2020 contributed towards the decreases in the proportions of equities that are invested in UK and overseas equities over this period.

Source: PPF

Note: the figures may not sum to 100 per cent due to rounding.



7. Asset allocation continued

Figure 7.6 | Weighted average asset allocation of schemes by asset size

The proportion of assets held in bonds tends to increase with scheme asset size, while equities display the opposite relationship.

Source: PPF

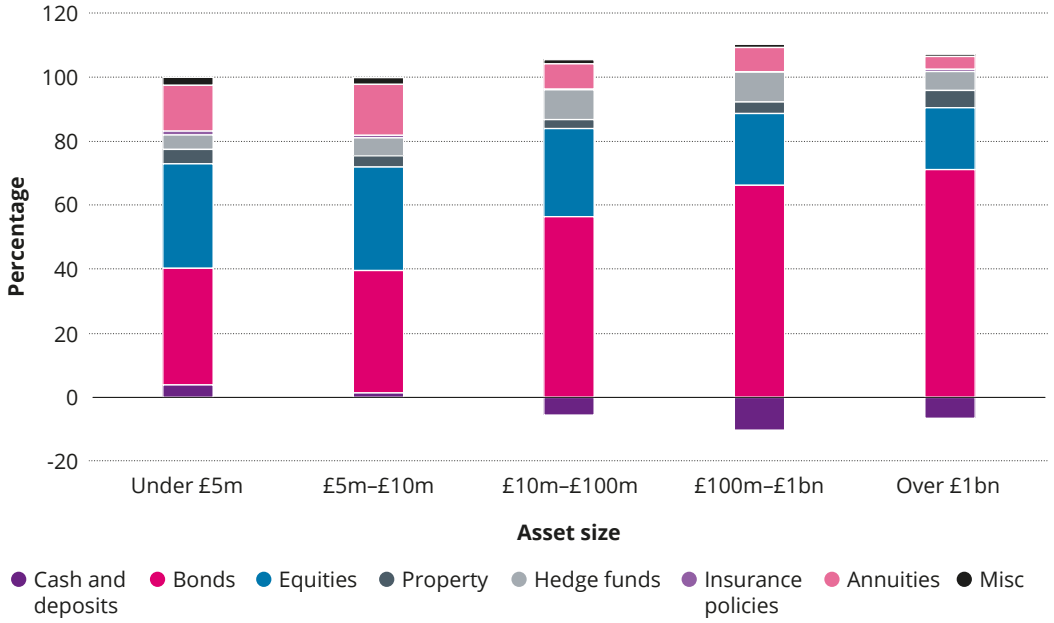


Figure 7.7 | Weighted averages of equity and bond holdings split by asset size

Larger schemes tend to hold a higher proportion of overseas equities within their equity portfolio, and a higher proportion of index-linked bonds in their bond portfolio.

Source: PPF

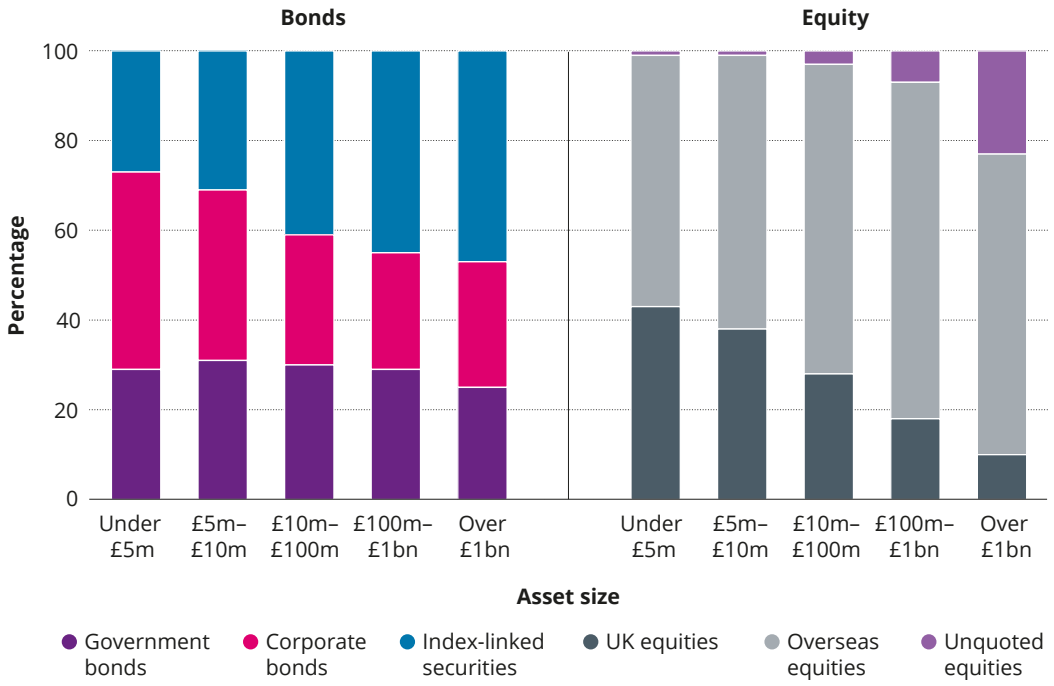
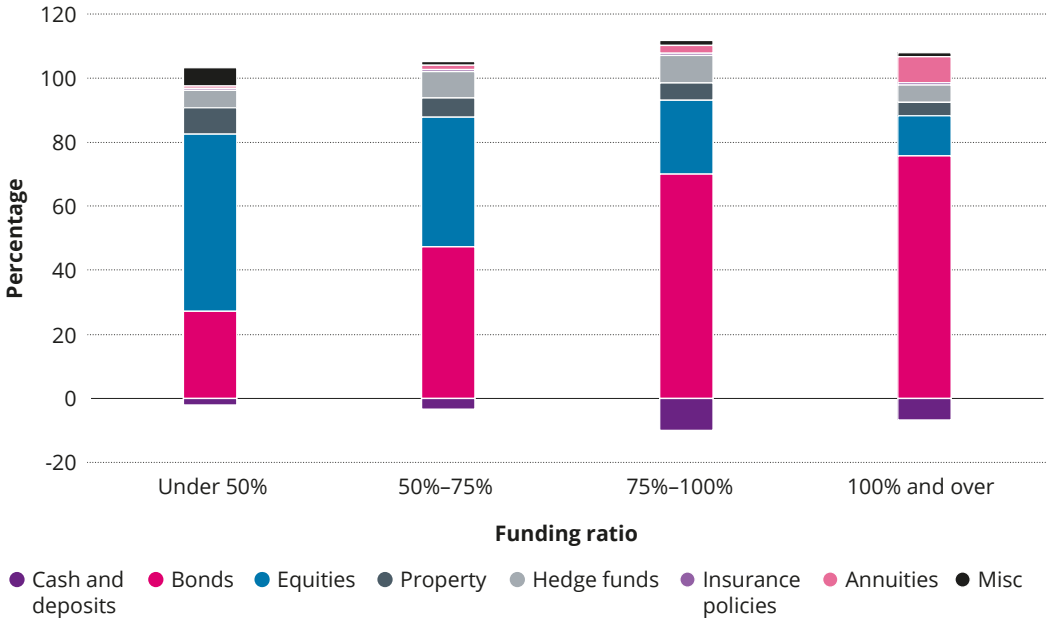


Figure 7.8 | Weighted average asset allocation by s179 funding ratio

The best funded schemes tend to have the greatest proportion of assets invested in bonds, with a smaller proportion invested in equities.

Source: PPF



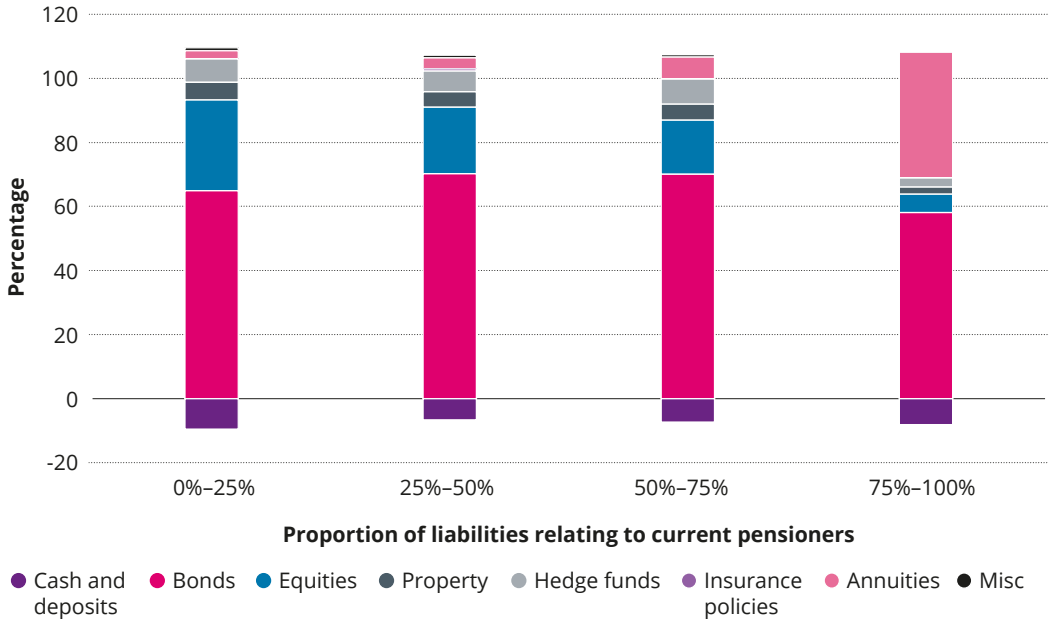
Schemes that are in surplus on an s179 basis have the greatest proportion of assets invested in bonds, which is consistent with the stability of the s179 funding position of these schemes over time as shown in figure 5.3.

Figure 7.9 | Weighted average asset allocation of schemes by scheme maturity

As scheme maturity increases, the proportion of equities falls.

Source: PPF

Note: the heavy concentration in 'Annuities' for mature schemes is explained by one large scheme with a heavy concentration in annuity policies.



8. Risk reduction

Summary

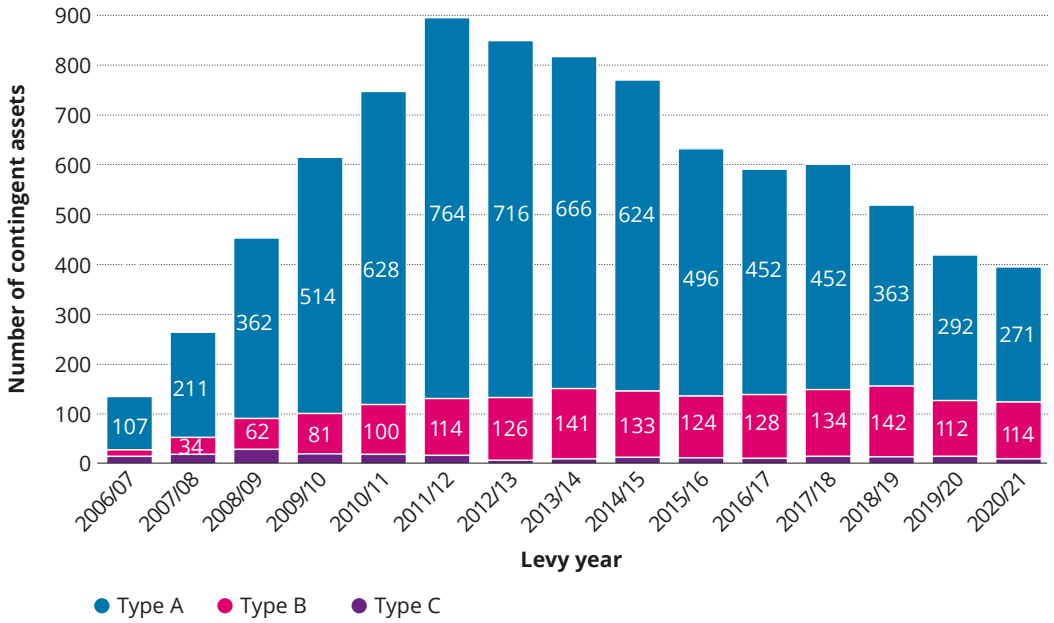
- This chapter contains information on the risk reduction measures DB schemes have put in place or undertaken, including contingent assets, longevity swaps, buy-ins and buy-outs. It also shows information on how recovery plan lengths and funding measures relative to DB schemes' Technical Provisions have changed over time.
- The total number of contingent assets submitted to the PPF for the 2020/21 levy year was 395, compared with 419 in 2019/20. This reflects a reduction in the number of Type A and Type C Contingent Assets (employer parent or group guarantees and letters of credit or bank guarantees).
- Based only on current recovery plans in place, total annual recovery plan payments are indicated to decrease by 87 per cent over the next 10 years as schemes increasingly become fully funded on a Technical Provisions basis. The rate of decrease is planned to be similar between different scheme sizes and in aggregate, annual recovery plan payments are set to fall from around £14.5 billion in 2020 to around £1.8 billion in 2030. Changes may be made to existing recovery plans and new recovery plans may be put in place in the future if experience is different from what has currently been assumed by schemes.
- Analysis of TPR's latest Technical Provisions and recovery plan data shows that in Tranche 13[11], the average recovery plan length was 6.1 years, over a year less than that of Tranche 10 (comparable given the three-year valuation cycle) and a year less than that of Tranche 12. The average funding ratio as measured by assets divided by Technical Provisions was 93.4 per cent in Tranche 13, 4.8 percentage points higher than Tranche 10.
- Technical Provisions as a percentage of s179 liabilities increased to 100.1 per cent from 96.9 per cent in Tranche 10. There was also a rise in Technical Provisions as a percentage of buy-out liabilities, from 68.9 per cent to 73.5 per cent.
- Total risk transfer business covering buy-outs, buy-ins and longevity swaps amounted to £256 billion between the end of 2007 and the second quarter of 2020. 35 per cent of these deals were longevity swaps.
- Over the year to 30 June 2020, the total value of risk transfer deals was £59 billion, up from £37 billion in the year to 30 June 2019 and was more than 50 per cent higher than the previous record of £39 billion in the year to 30 June 2014.

Contingent assets

Figure 8.1 | Contingent assets by type

The number of recognised contingent assets is the lowest since levy year 2007/08.

Source: PPF



Type A Contingent Assets are parent/group companies' guarantees to fund the scheme, up to a prearranged amount.

Type B Contingent Assets comprise security over holdings of cash, real estate and/or securities.

Type C Contingent Assets consist of letters of credit and bank guarantees.

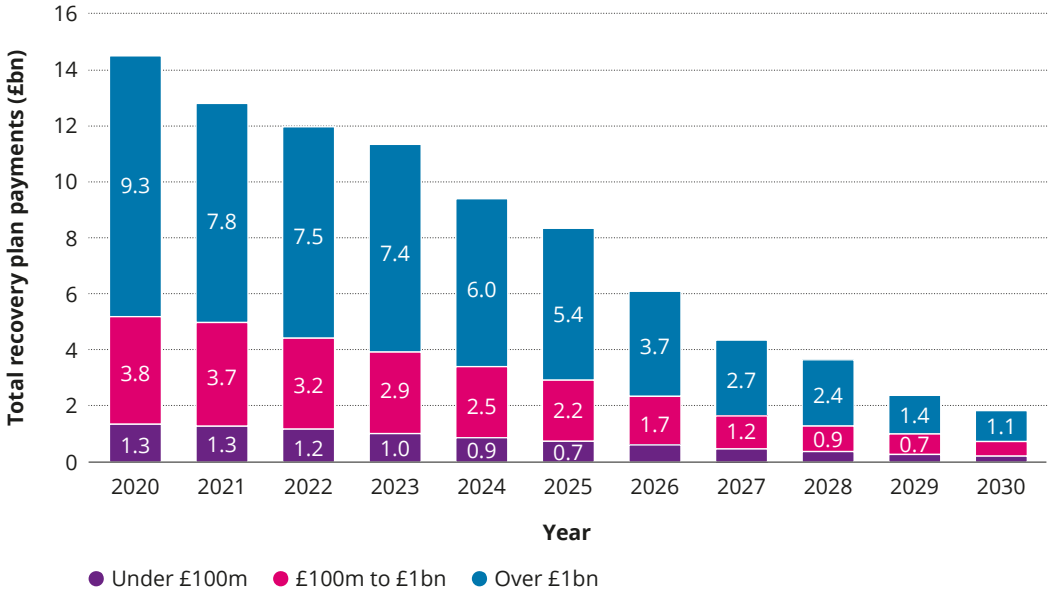
11 Tranche 13 covers schemes with valuation dates between 22 September 2017 and 21 September 2018.

Recovery plan payments

Figure 8.2 | Planned recovery plan payments until 2030 by asset size

Total annual recovery plan payments are planned to reduce by 87 per cent over the next 10 years, from around £14.5 billion in 2020 to around £1.8 billion in 2030.

Source: TPR



The scheme funding regime

Figure 8.3 | Technical Provisions and recovery plan lengths (unweighted averages)

In Tranche 13, the average recovery period was 6.1 years, over a year shorter than Tranche 10 (comparable given the three-year valuation cycle).

Source: 'Scheme funding analysis 2020 Annex', TPR, August 2020

Notes:
a) Valuation dates run from 22 September to 21 September.
b) 74.8 per cent of schemes with Tranche 13 valuations reported in respect of Tranches 10, 7, 4 and 1.

Tranche	Year of valuation	Number of recovery plans	Average length of recovery plan (years)	Assets as a percentage of Technical Provisions	Technical Provisions as a percentage of s179 liabilities	Technical Provisions as a percentage of buy-out liabilities
1	2005/06	2,127	8.0	79.8%	105.0%	66.9%
4	2008/09	2,048	9.5	71.3%	101.5%	71.9%
7	2011/12	1,770	8.3	78.4%	99.9%	70.7%
10	2014/15	1,403	7.3	88.6%	96.9%	68.9%
11	2015/16	1,462	7.5	87.0%	95.8%	69.2%
12	2016/17	1,481	7.1	88.8%	96.9%	68.8%
13[12]	2017/18	1,093	6.1	93.4%	100.1%	73.5%

12 Tranche 13 covers schemes with valuation dates between 22 September 2017 and 21 September 2018.

8. Risk reduction continued

Buy-out, buy-in and longevity hedging

Buy-out and buy-in transactions provide schemes with the opportunity to remove risk relating to all or part of their liability. Under a buy-out deal, a scheme transfers its entire liability and scheme assets to an insurer in exchange for a premium. Insurers tend to require assets significantly in excess of Technical Provisions to compensate for the risk transferred. Buy-in deals result in an insurance policy as a scheme asset.

While both longevity swaps and buy-in/buy-outs can mitigate the risk of greater than expected life expectancy, under the former there is no transfer of the underlying scheme assets to a counterparty. Longevity swaps entail the pension scheme exchanging fixed payments for cash flows that vary in accordance with the longevity experience of a reference population (either the named scheme members or a wider sample).

Figure 8.4 | Value of risk transfer deals since 2007

£51.6 billion of risk transfer deals were completed in 2019, the highest year on record and about 80 per cent higher than the £28.9 billion of deals completed in 2018.

Source: Hymans Robertson, 'Buy-outs, buy-ins and longevity hedging'

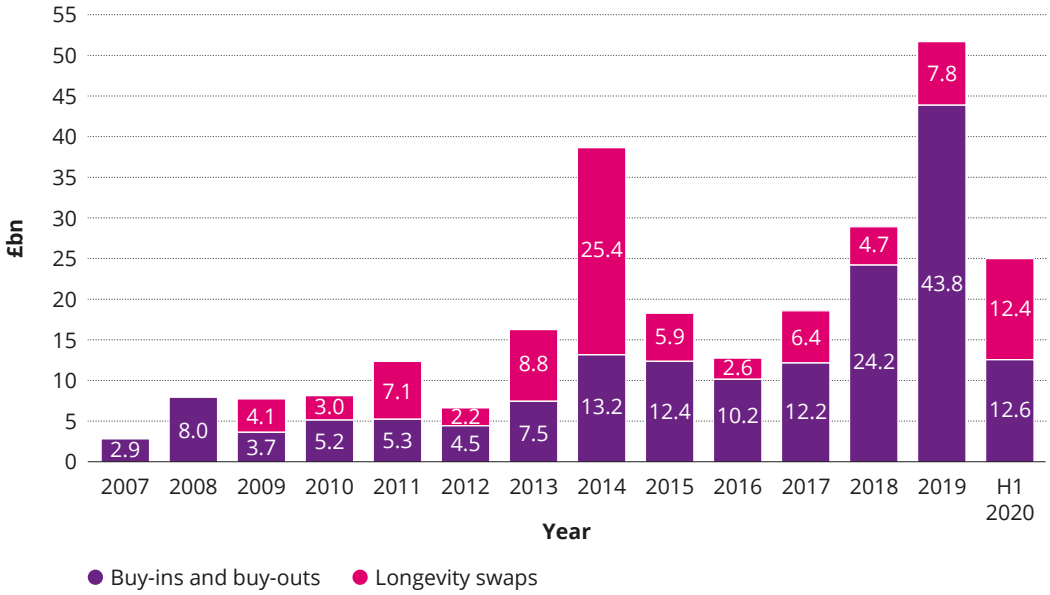


Figure 8.5 | Number of risk transfer deals since 2010

The number of risk transfer deals in 2019 was lower than in 2018, although this was more than offset by the larger average deal size in 2019 than in 2018.

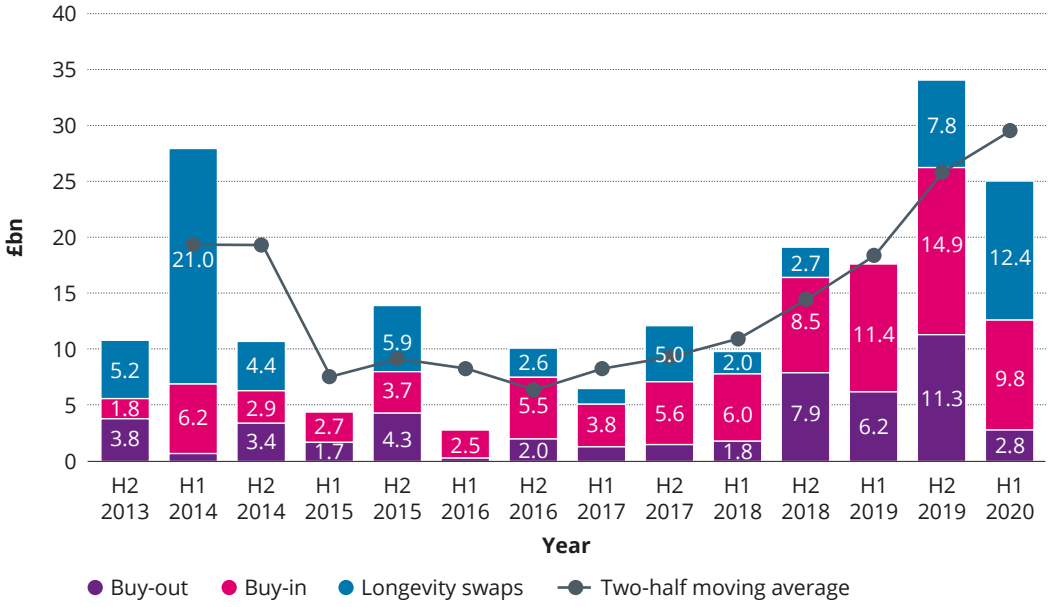
Source: Hymans Robertson, 'Buy-outs, buy-ins and longevity hedging'

Year	Number of buy-ins/buy-outs	Number of longevity swaps
2010	174	2
2011	171	4
2012	167	2
2013	219	10
2014	177	5
2015	176	4
2016	104	5
2017	132	5
2018	171	4
2019	157	2
H1 2020	76	5

Figure 8.6 | Value of risk transfer deals since H2 2013

The two-half moving average for risk transfer deals has continued its increasing trend since the second half of 2016.

Source: Hymans Robertson, 'Buy-outs, buy-ins and longevity hedging'



9. PPF levy 2019/20

Summary

- This chapter contains information on how much PPF levy was invoiced and how this was distributed between schemes and by employers.
- Since 2006/07, the PPF has collected a total of £8 billion through levies, determined mainly by the risk schemes pose to the PPF. This and other key statistics from this chapter are summarised in the following table:

	2019/20[13]	2018/19
Total levy since 2006/07	**£8.0bn**	£7.4bn
Total levy in year[14]	**£564m**	£564m
Proportion of total scheme assets	**0.04%**	0.04%
Number of schemes which contributed to this	**5,425**	5,531
Amount and proportion of total levy contributed by the top 100 levy payers (by size of levy)	**£290m**	£279m
	51%	50%
Proportion of schemes which paid no risk-based levy	**28%**	26%
Number of schemes with a capped risk-based levy	**161**	184
Proportion of total number of schemes	**3.0%**	3.3%
PPF levy band whose schemes made the largest contribution in the year	**3**	3
Levy contribution made by these schemes	**£114m**	£93m
Proportion of total levy contribution	**20%**	17%
Proportion of total liabilities accounted for by schemes in this category	**24%**	18%
Proportion of levy being paid by the three top Experian scorecards (as measured by levy paid)	**82%**	80%

Note: the percentages may not match those calculated using financial amounts in the table because of rounding.

Assets and liabilities, and therefore funding ratios, in this chapter are on a smoothed, stressed basis unless otherwise stated and exclude DRCs. For more information on these and other terms and definitions used in this chapter, see the 2019/20 Levy Determination, and its associated appendices, available on our website.

13 Year from 1 April 2019 to 31 March 2020.

14 Whereas this is the total amount of levy invoiced, the figure disclosed in the PPF's Annual Report and Accounts (ARA) is the amount collected, which includes levies collected in the year to 31 March 2020 in respect of the previous year. The ARA also makes an allowance for credit notes, accrued invoices, and bad debt provisions, which *The Purple Book* does not.

Total levy by year

In this section we compare total levy by levy year, from 2012/13 to 2019/20. We look at the distribution across schemes broken down by levy band, considering the risk-based levy and scheme-based levy separately.

Figure 9.1 | Total levy

The levy has varied between £540 million and £650 million and has fallen as a percentage of assets since 2012/13.

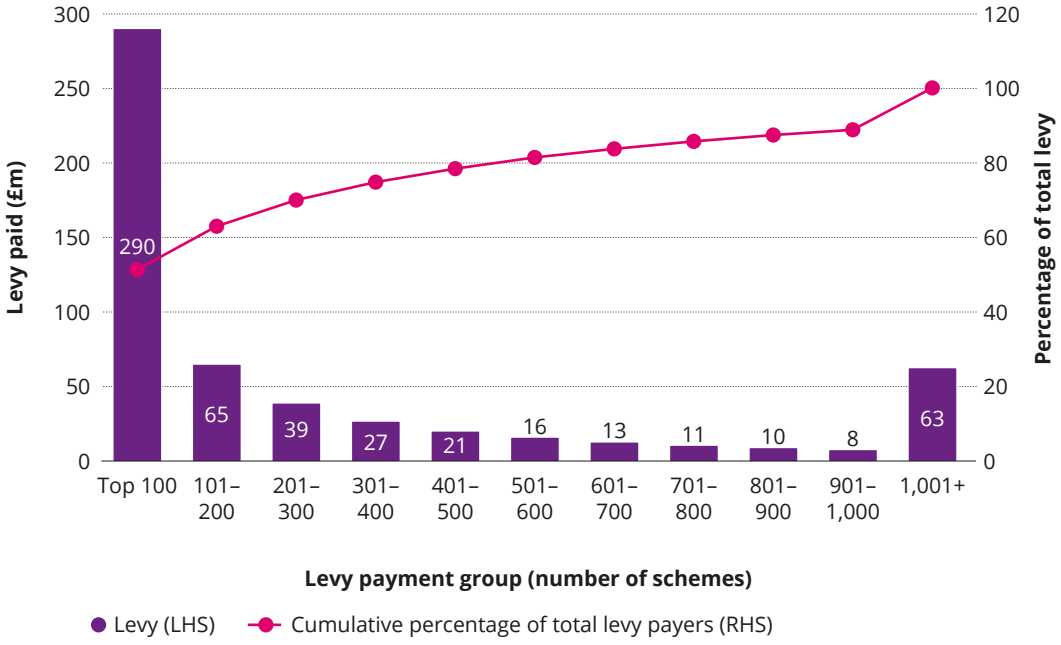
Levy year	Total levy (£m)[a]	Levy as a percentage of assets[b]	Number of capped schemes[c]
2012/13	648	0.08%	427
2013/14	577	0.06%	302
2014/15	579	0.06%	274
2015/16	560	0.05%	211
2016/17	563	0.05%	187
2017/18	541	0.04%	147
2018/19	564	0.04%	184
2019/20	564	0.04%	161

Source: PPF

Notes:
a) The figures quoted in this chapter are based on the total levy for the dataset of 5,425 schemes in 2019/20, or from prior years' *Purple Books*.
b) Total levy as a percentage of levy-paying schemes' total assets.
c) Refers to schemes to which the risk-based levy cap applied.

Figure 9.2 | Distribution of levy by largest levy payers in 2019/20

In 2019/20, the top 100 levy payers accounted for £290 million, or 51 per cent of the total levy.



Source: PPF

Note: the 1,001+ category accounts for a relatively large percentage of the total levy as it contains just over 4,500 schemes.

Note: the figures may not sum to the total levy due to rounding.

9. PPF levy 2019/20 continued

Figure 9.3 | Schemes with no risk-based levy by levy year

The proportion of schemes paying no risk-based levy is the highest since the introduction of the New Levy Framework in 2012/13.

Source: PPF

Levy year	Number of schemes	Percentage of total schemes	s179 liabilities[15] (£bn)	s179 liabilities as percentage of total
2012/13	1,191	19%	199	19%
2013/14	1,056	17%	171	15%
2014/15	1,113	18%	206	17%
2015/16	985	17%	195	14%
2016/17	961	17%	239	16%
2017/18	1,011	18%	405	25%
2018/19	1,457	26%	560	35%
2019/20	1,509	28%	562	33%

Figure 9.4 | Number of schemes with capped risk-based levies by levy band

The proportion of schemes with a capped risk-based levy was 3 per cent for 2019/20.

Source: PPF

Levy band	Levy rate	Total number of schemes	Number of capped schemes	Percentage of schemes in levy band which are capped
1	0.28%	759	–	0.0%
2	0.31%	388	–	0.0%
3	0.35%	588	–	0.0%
4	0.40%	671	–	0.0%
5	0.53%	736	–	0.0%
6	0.81%	789	–	0.0%
7	1.26%	667	3	0.4%
8	1.76%	286	19	6.6%
9	2.39%	335	63	18.8%
10	3.83%	206	76	36.9%
Total		**5,425**	**161**	**3.0%**

A scheme's risk-based levy is calculated by mapping the sponsoring employer's insolvency risk to one of the 10 levy rates above. Schemes with multiple employers have had their insolvency risk calculated as an average of the corresponding employers, mapped back to the nearest levy band. This is then multiplied by the amount of underfunding in the scheme and the levy scaling factor in order to give the risk-based levy. Further details of how the PPF levy is calculated can be found on the PPF website.[16]

15 Liabilities are stressed and smoothed.
16 For more information see: https://www.ppf.co.uk/levy-payers/what-levy-and-who-has-pay-it/introduction-levy

Figure 9.5 | Number of schemes with capped risk-based levies by funding ratio (on a stressed and smoothed basis)

Schemes with lower funding levels are more likely to pay a capped risk-based levy. Only one scheme with a funding level over 75 per cent had a cap applying in 2019/20.

Source: PPF

Funding ratio	Number of capped schemes	Percentage of schemes in funding band which are capped	Total number of schemes
Less than 50%	73	17.3%	423
50%–75%	87	4.5%	1,955
75%–100%	1	0.1%	1,740
Over 100%	–	0.0%	1,307
Total	**161**	**3.0%**	**5,425**

Figure 9.6 | Levy distribution by levy band

Schemes in levy band 3 made the largest contribution to the total levy in 2019/20, paying 20 per cent.

Source: PPF

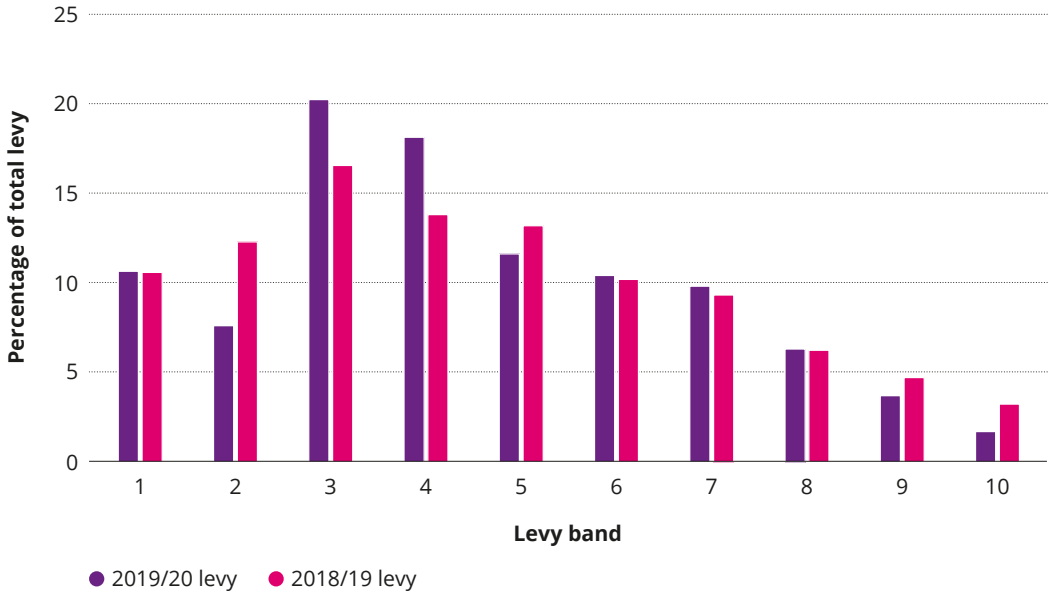
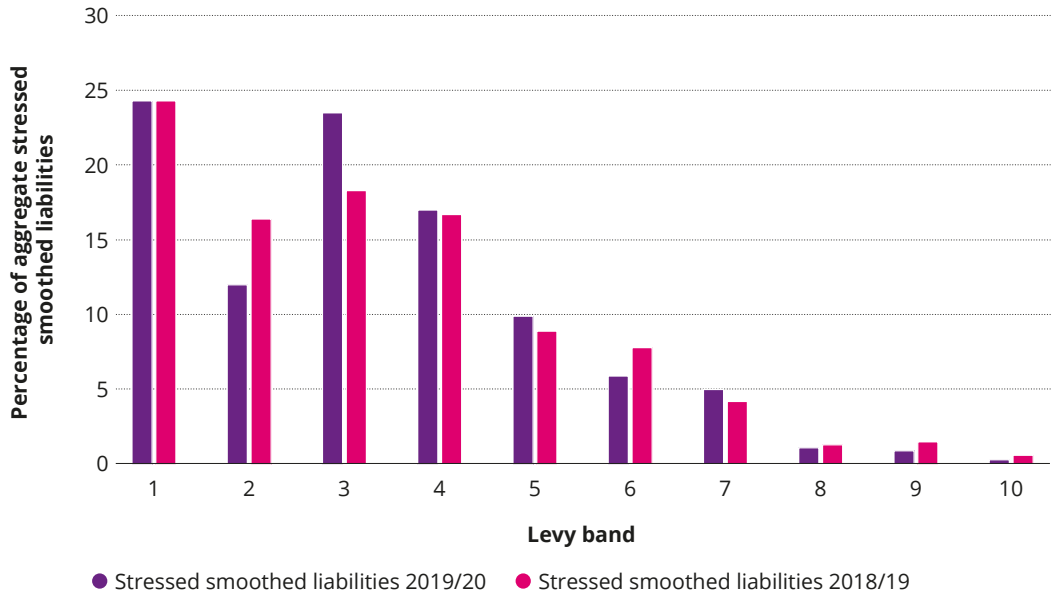


Figure 9.7 | s179 aggregate stressed smoothed liabilities by levy band

Schemes in levy band 1 account for 24 per cent of the total liabilities in 2019/20.

Source: PPF



9. PPF levy 2019/20 continued

Figure 9.8 | Levy as a proportion of assets by levy band

Schemes in the lowest levy bands paid a noticeably lower levy, expressed as a percentage of assets, than schemes in the highest three levy bands.

Source: PPF

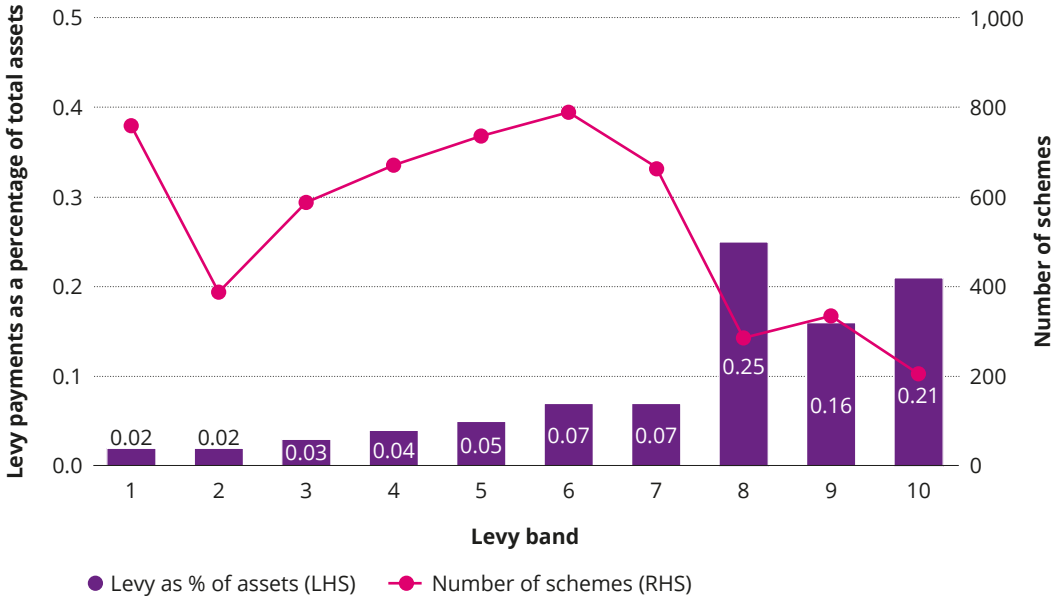
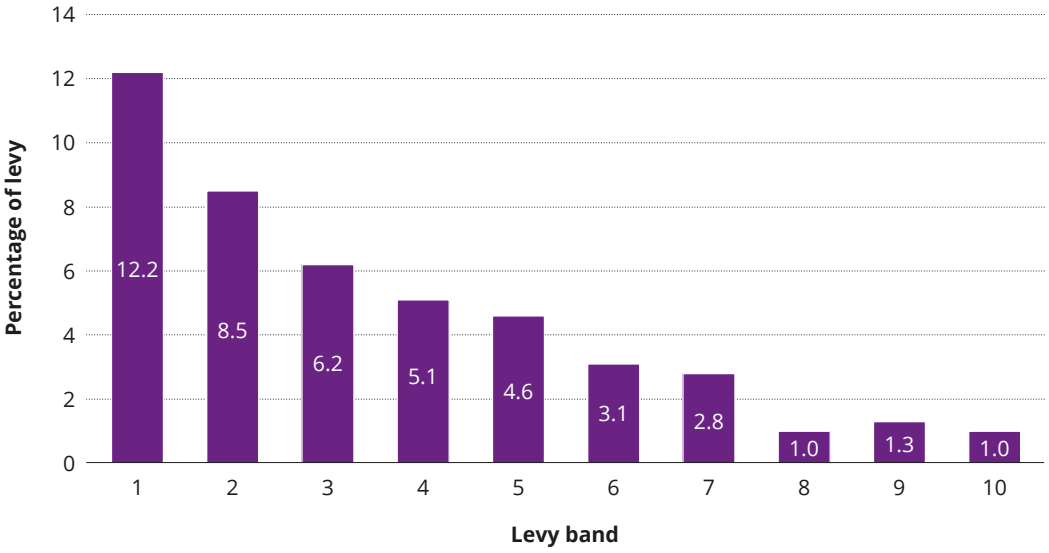


Figure 9.9 | Percentage of total levy that is scheme-based[17] by levy band

In general, the proportion of total levy that is scheme-based falls as the levy band increases.

Source: PPF



17 For the definition of scheme-based levy, please see the 2019/20 Levy Determination.

Figure 9.10 | Percentage of total levy that is scheme-based by funding ratio (on a stressed and smoothed basis)

For schemes that were over 100 per cent funded, the scheme-based levy constituted on average 95 per cent of their total levy.

Funding ratio	Less than 50%	50%–75%	75%–100%	Over 100%
Percentage of levy that is scheme-based	1.6%	3.0%	8.9%	95.0%

Source: PPF

Note: the risk-based levy is calculated using either the underfunding amount on an unstressed and smoothed basis or the underfunding amount on a stressed and smoothed basis, whichever is lower. A minority of schemes that are over 100 per cent funded on a stressed and smoothed basis pay a risk-based levy as they are underfunded on an unstressed and smoothed basis.

Experian scorecards

For the 2019/20 levy year, we used the PPF and Experian's bespoke model for assessing insolvency risk of schemes in the universe.

The charts in this section show how many sponsoring employers in the PPF universe are assigned to each scorecard, and how much of the total 2019/20 PPF levy was collected in respect of schemes sponsored by the employers in these categories.[18]

Figure 9.11 | Number of sponsoring employers in each Experian scorecard

'Not For Profit' organisations make up the greatest number of sponsoring employers in the PPF universe.

Source: PPF

18 For multi-employer schemes (with employers on different scorecards), the levy was split proportionately by membership numbers.

9. PPF levy 2019/20 continued

Figure 9.12 | Levy invoiced in respect of schemes with sponsoring employers in each Experian scorecard

Schemes on three of the 12 Experian scorecards paid 82 per cent of the total levy.

Source: PPF

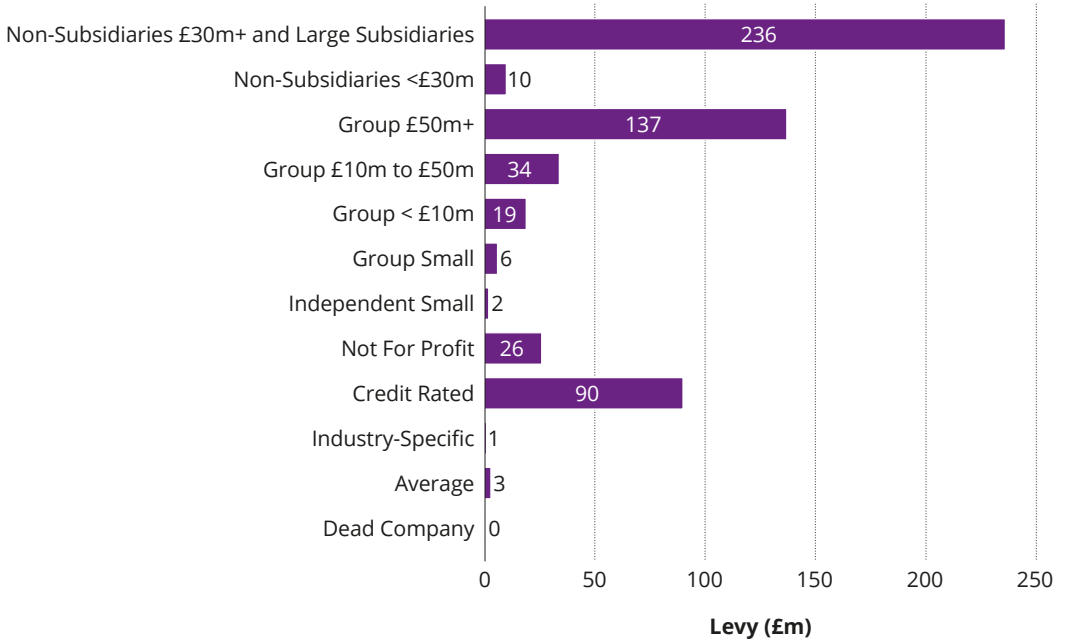


Figure 9.13 | Number of schemes with sponsoring employers in each Experian scorecard

43 per cent of schemes had sponsors categorised as 'Non-Subsidiaries £30 million+ and Large Subsidiaries' or 'Group £50 million+'.

Source: PPF

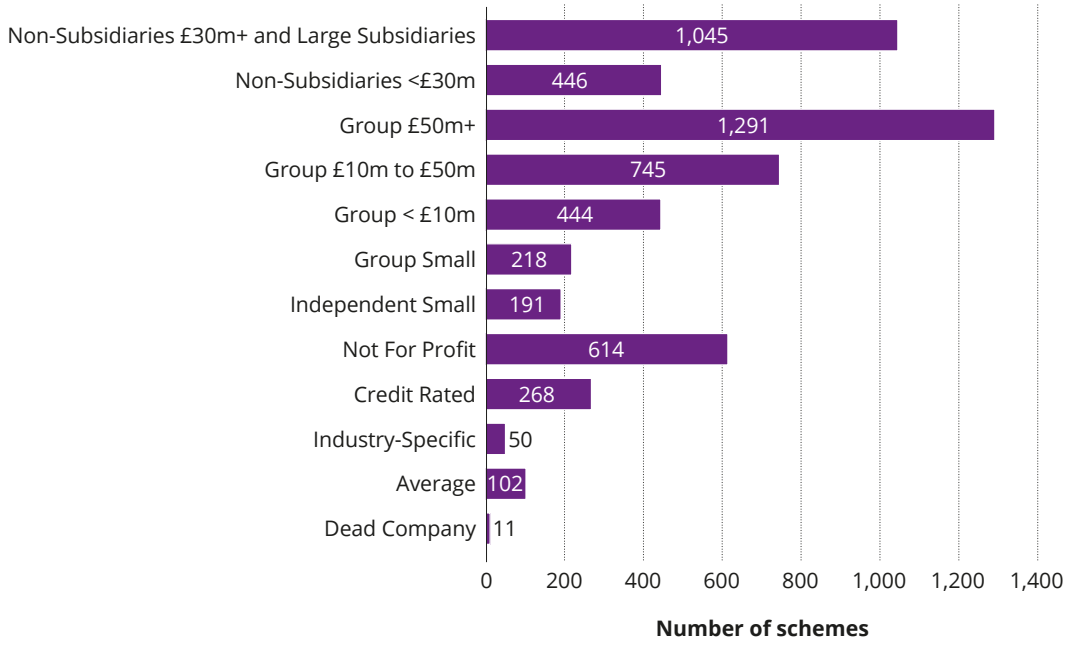
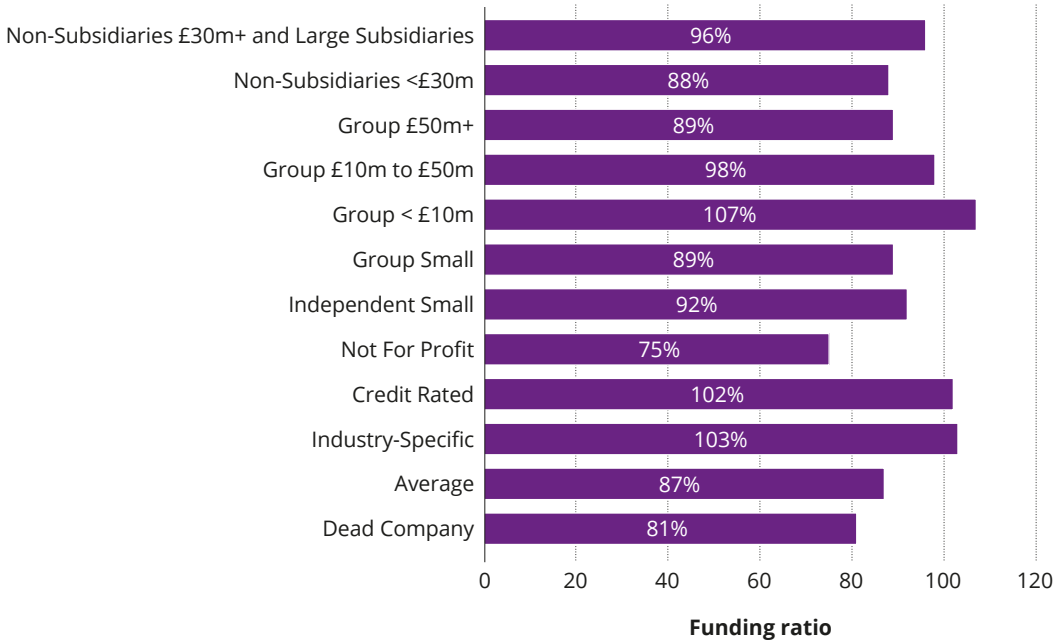


Figure 9.14 | Aggregate funding ratio (unstressed and unsmoothed) of schemes with sponsoring employers in each Experian scorecard

Schemes with sponsoring employers categorised as 'Not For Profit' have the lowest aggregate funding ratios.

Source: PPF



10. Claims and schemes in assessment

Summary

- This chapter shows information on the schemes[19] that were in a PPF assessment period as at 31 March 2020. Once they have made a claim, all schemes go through an assessment period to determine their ability to pay PPF levels of compensation before they are able to enter the PPF. The changes over the year since 31 March 2019 reflect new schemes entering and remaining in assessment, schemes transferring into the PPF and schemes being rescued, rejected or withdrawn.
- The following table sets out some of the statistics about schemes in PPF assessment as at 31 March 2020, including comparisons with both the previous year and schemes in the universe.

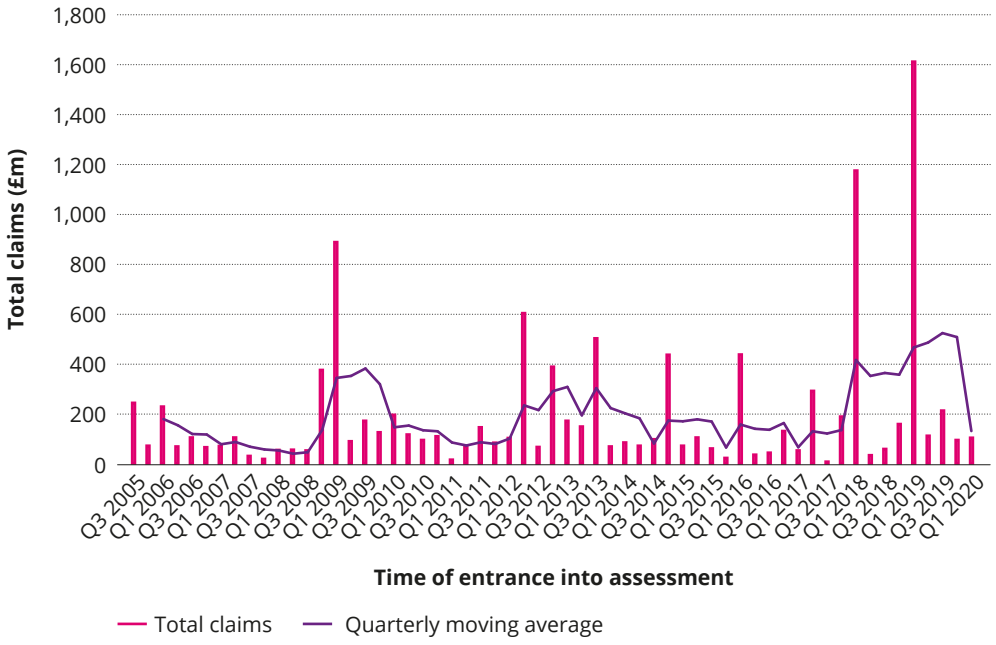
		31 March 2020	31 March 2019
Schemes in assessment[20]	Number of schemes	80	73
	Number of records in respect of all members[21]	159,000	113,000
	Total assets	£10.3bn	£7.7bn
	Total PPF liabilities	£13.6bn	£11.2bn
	Funding ratio	76%	69%
Schemes in universe	Funding ratio	95%	99%

Schemes entering assessment

Figure 10.1 | Total s179 claims for schemes entering an assessment period

The total s179 deficit of schemes entering assessment in the year to 31 March 2020 was £519 million.

Source: PPF



19 For the purpose of this chapter we treat separate sections and segregated parts of the same scheme as one single scheme. We also include overfunded schemes. This is different from the approach in the PPF's Annual Report and Accounts which treats all segregated parts of schemes as separate schemes, and generally excludes overfunded schemes.

20 These figures differ from those in the Annual Report and Accounts because of the exclusion of expected reapplications in *The Purple Book* and the use of a different set of actuarial assumptions.

21 Some members have more than one record in the data.

Figure 10.2 | Number of schemes in assessment each year as at 31 March

80 schemes were in PPF assessment at 31 March 2020, up from 73 last year.

Source: PPF

Note: the figures in the chart exclude those schemes that came into assessment and were subsequently rescued, rejected or withdrawn in the same year.

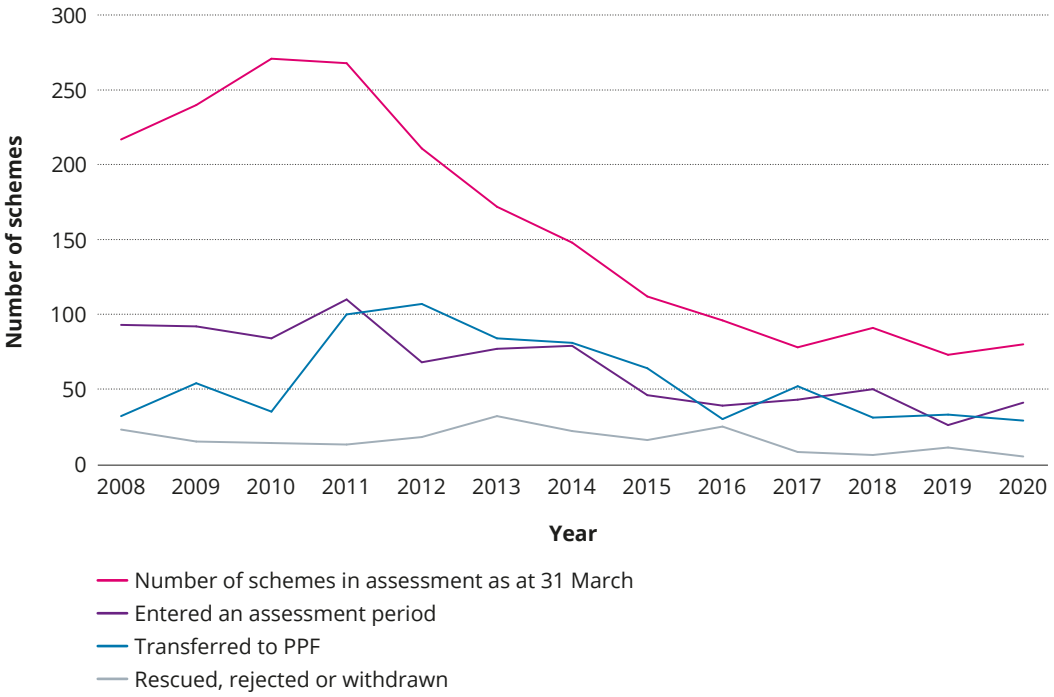


Figure 10.3 | Funding statistics for schemes in assessment each year as at 31 March

The funding ratio of schemes in assessment at 31 March 2020 increased to 76 per cent from last year's 69 per cent. Conversely, the funding ratio of all PPF-eligible schemes fell to 95 per cent from 99 per cent over the same period.

Source: PPF

Year	Assets (£bn)	Liabilities (£bn)	(Deficit)/surplus (£bn)	Funding ratio	Universe funding ratio
2007	4.0	4.7	-0.7	85%	109%
2008	4.2	5.4	-1.2	78%	99%
2009	6.7	9.4	-2.8	71%	80%
2010	8.9	10.0	-1.1	89%	104%
2011	9.5	10.9	-1.4	87%	100%
2012	6.2	8.4	-2.2	74%	83%
2013	5.8	7.6	-1.8	77%	84%
2014	5.8	7.6	-1.7	77%	97%
2015	5.3	7.5	-2.3	70%	84%
2016	5.0	7.4	-2.4	68%	86%
2017	5.6	6.6	-1.0	85%	91%
2018	6.9	9.3	-2.4	74%	96%
2019	7.7	11.2	-3.5	69%	99%
2020	10.3	13.6	-3.3	76%	95%

Scheme demographics

Figure 10.4 | Percentage of schemes and percentage of s179 liabilities grouped by size of liabilities for schemes in assessment as at 31 March 2020

Schemes in PPF assessment that have liabilities of over £250 million represent around 11 per cent of schemes and 78 per cent of liabilities.

Source: PPF

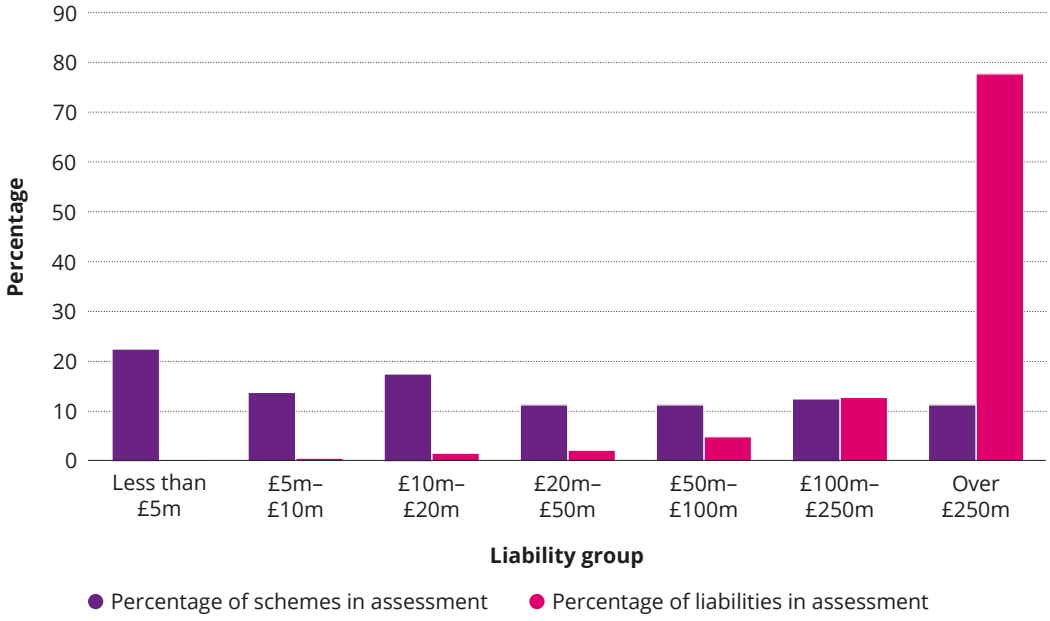


Figure 10.5 | Proportion of schemes in assessment by membership size

75 per cent of schemes in assessment have fewer than 1,000 members.

Source: PPF

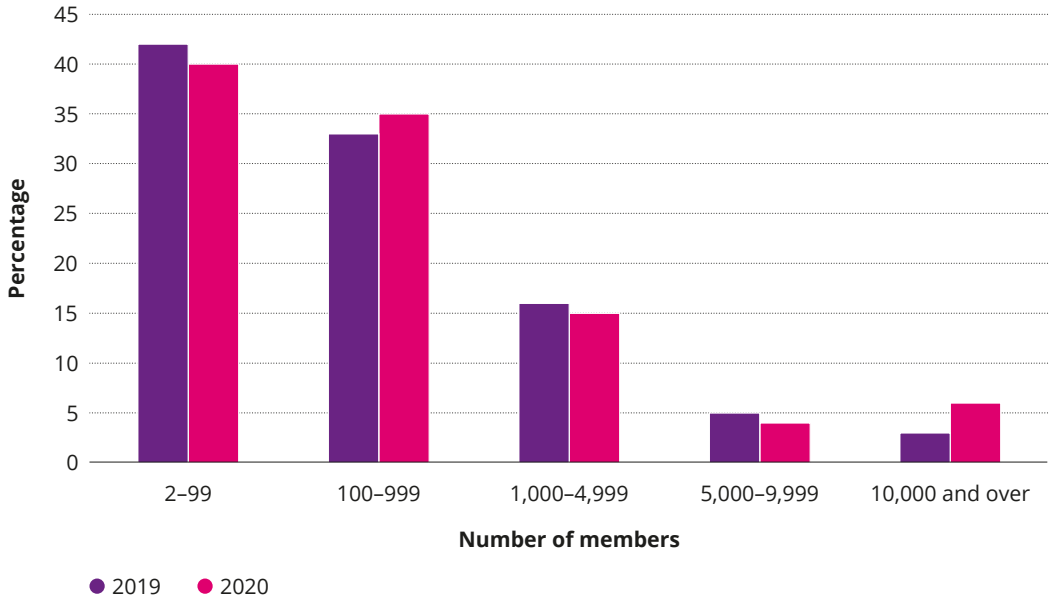


Figure 10.6 | Maturity of schemes in assessment by membership size

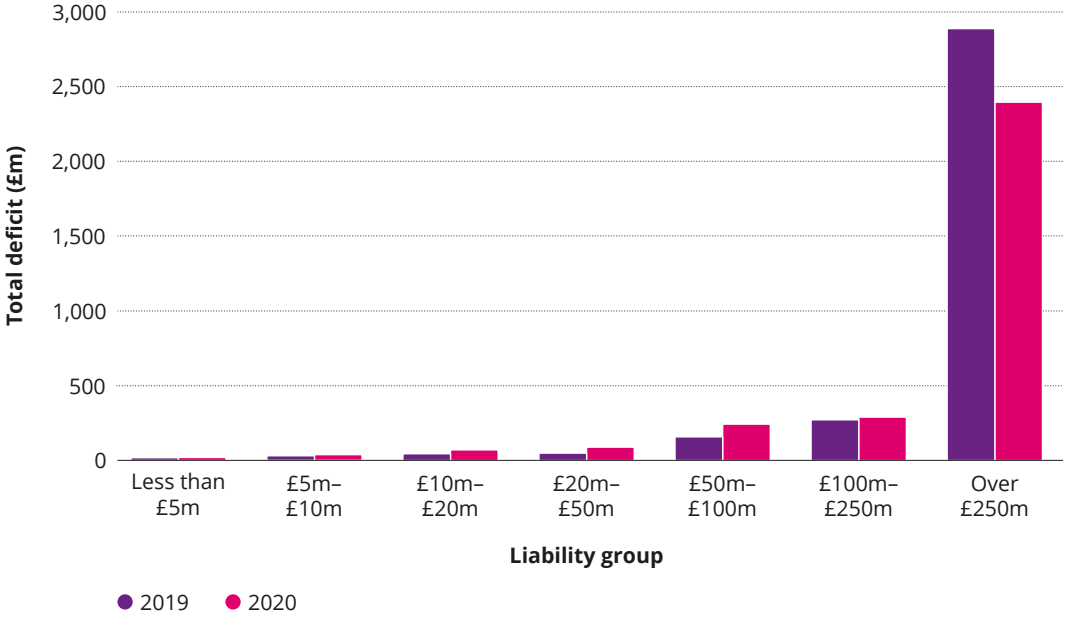
Broadly half of members in schemes in assessment are pensioners and half are deferred members.

Source: PPF

Figure 10.7 | Total s179 deficit of schemes in assessment by liability size

86 per cent of the deficit from schemes in assessment relates to schemes with liabilities of over £100 million, down from 92 per cent last year.

Source: PPF



11. PPF compensation 2019/20

Summary

This chapter shows information on the compensation that we paid to PPF members in 2019/20.

When a scheme transfers into the PPF, we generally pay compensation of 90 per cent of the scheme pension (subject to a compensation cap[22]) to members who have not reached their Normal Pension Age (NPA) at the date the scheme entered assessment. We will generally pay a starting level of compensation equivalent to 100 per cent of the scheme pension to those members who are over their NPA at the start of the assessment period.

Here are some of the key statistics featured in this chapter:

	31 March 2020	31 March 2019
PPF compensation paid in the year	£860m	£775m
Number of records in respect of members receiving compensation[23]	169,861	148,005
Average annual amount paid to members and dependants	£4,588	£4,382
Number of records in respect of deferred members[23]*	116,461	109,567
Average annual compensation accrued by deferred members (ignoring any impact of the compensation cap)	£3,333	£3,296

*Members with compensation not yet in payment.

Total compensation and other member statistics

Figure 11.1 | Total compensation and number of members' records

Total compensation paid in the year to 31 March 2020 was £859.7 million, 11 per cent above the amount paid in the year to 31 March 2019.

Source: PPF

		Number of members' records[23]		
Year ended 31 March	Total compensation paid (£m)	Members' receiving compensation	Deferred members	Total
2007	1.4	1,457	5,621	7,078
2008	17.3	3,596	8,577	12,173
2009	37.6	12,723	18,009	30,732
2010	81.6	20,775	26,058	46,833
2011	119.5	33,069	42,063	75,132
2012	203.3	57,506	70,608	128,114
2013	331.8	80,665	91,353	172,018
2014	445.1	95,599	100,070	195,669
2015	564.0	114,028	110,681	224,709
2016	616.0	121,059	109,143	230,202
2017	661.3	129,661	110,478	240,139
2018	724.5	135,377	107,759	243,136
2019	775.1	148,005	109,567	257,572
2020	859.7	169,861	116,461	286,322

22 In June 2020 the Administrative Court ruled in the case of *Hughes v Board of the Pension Protection Fund [2020] EWHC 1598* that this cap is unlawful. These figures predate that ruling and have not been adjusted to dis-apply the compensation cap.

23 Some members have more than one record in the data.

Figure 11.2 | Gender of members in the PPF

64 per cent of our members are male.

Source: PPF

11. PPF compensation 2019/20 continued

Figure 11.3 | Distribution of members receiving compensation by annualised compensation level

Around 90 per cent of members receiving compensation are paid less than £10,000 a year. However, this compensation makes up around 60 per cent of the total paid out.

Source: PPF

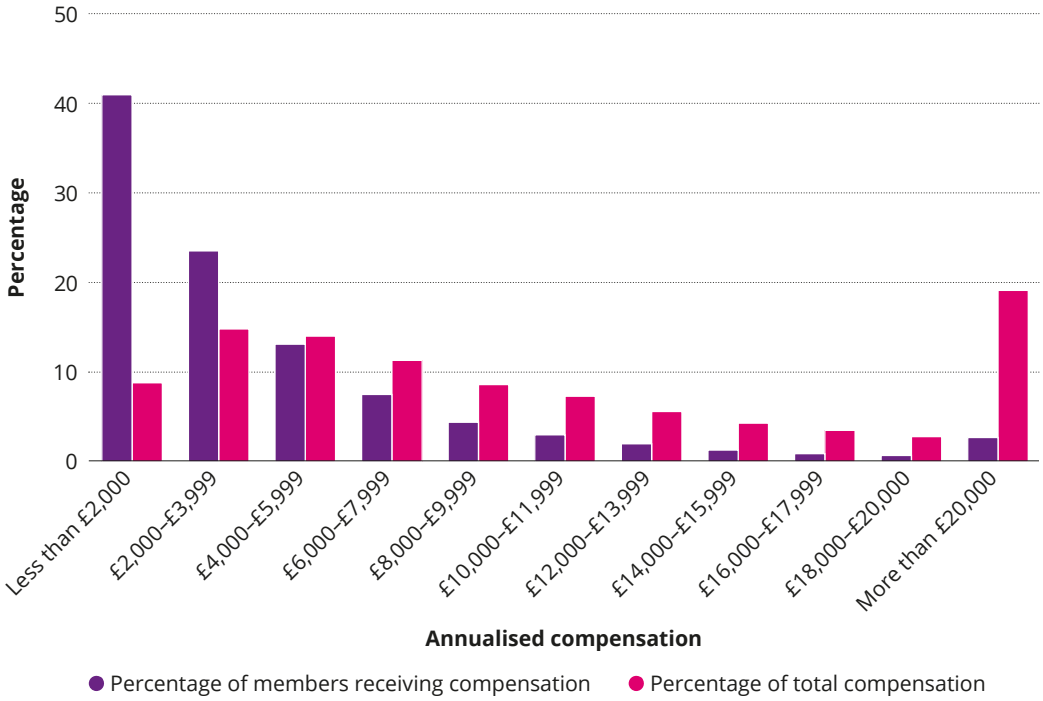


Figure 11.4 | Distribution of deferred members by annualised compensation level

Around 95 per cent of deferred members have annualised compensation of less than £10,000. This compensation makes up around 75 per cent of the total annual deferred compensation.

Source: PPF

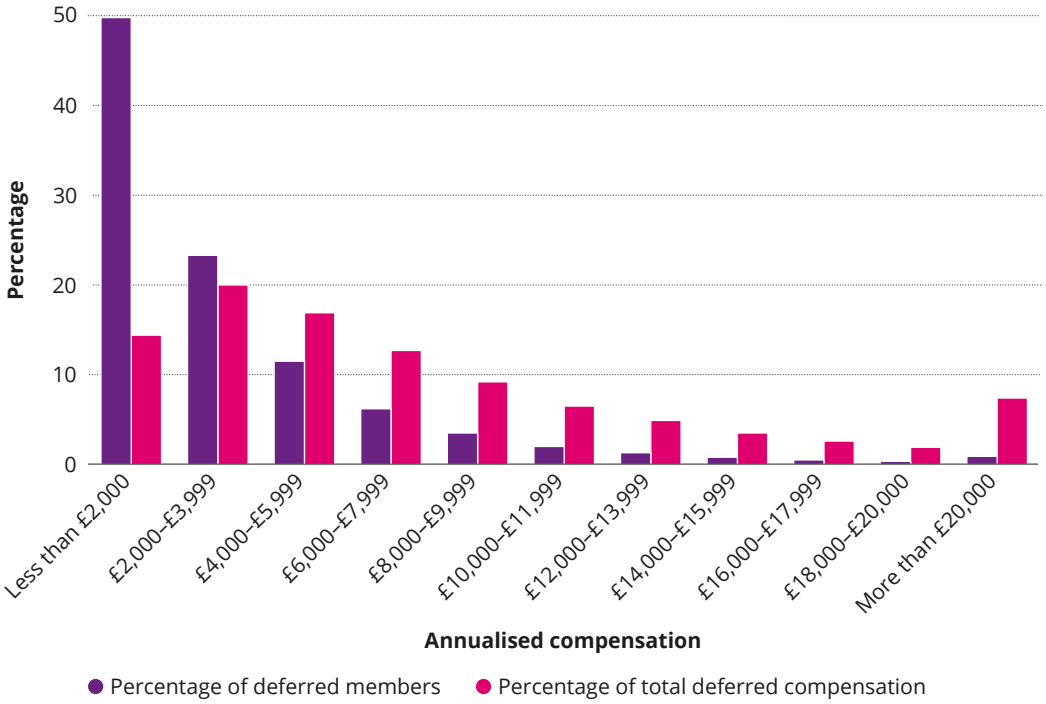


Figure 11.5 | Status of members receiving compensation

	Number of records in respect of members receiving compensation	Percentage of total population	Annualised compensation (£m)	Percentage of total annualised compensation
Members[24]	142,366	84%	694	89%
Dependants	27,495	16%	86	11%
Total	**169,861**	**100%**	**779**	**100%**

Source: PPF

Note: annualised compensation is less than compensation paid in the year to 31 March 2020 as the latter includes cash sums taken upon retirement, and takes account of member movements (e.g. deaths or retirements) over the year.

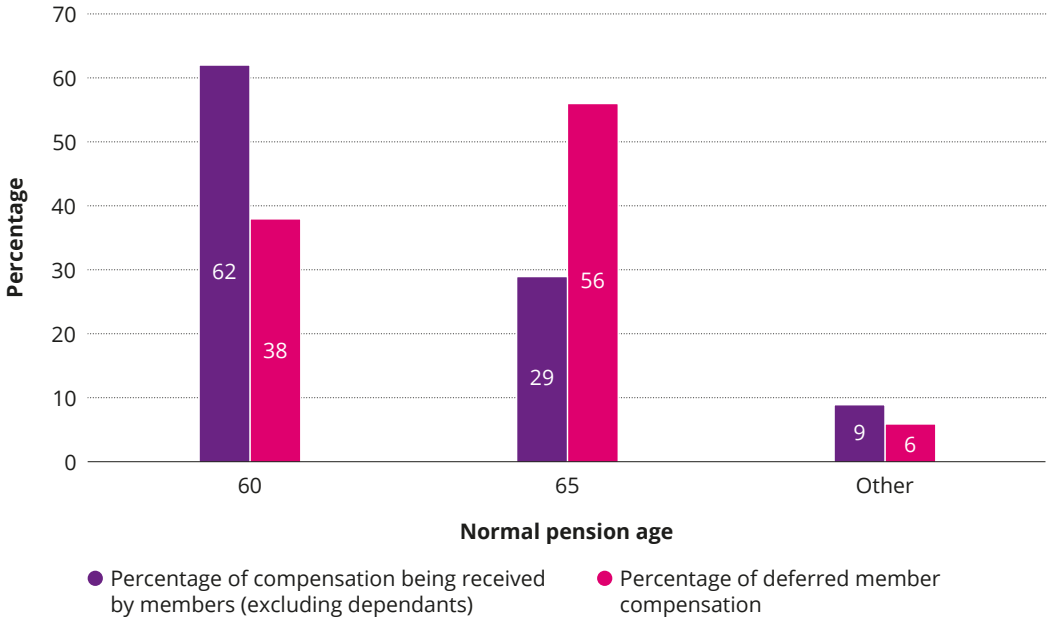
Note: the components may not sum to the totals because of rounding.

Figure 11.6 | Distribution of members receiving compensation (excluding dependants) and deferred member compensation by NPA

For members receiving compensation, the majority of compensation was payable from an NPA of 60, whereas for deferred members the majority is payable from age 65.

Source: PPF

Note: the component figures may not sum to 100 per cent because of rounding.



24 These are members who had accrued pensions in their pension schemes when they transferred to the PPF and who are now receiving compensation.

11. PPF compensation 2019/20 continued

Figure 11.7 | Annualised compensation by UK region

The largest share of compensation goes to members in the North East and West Midlands.

Source: PPF

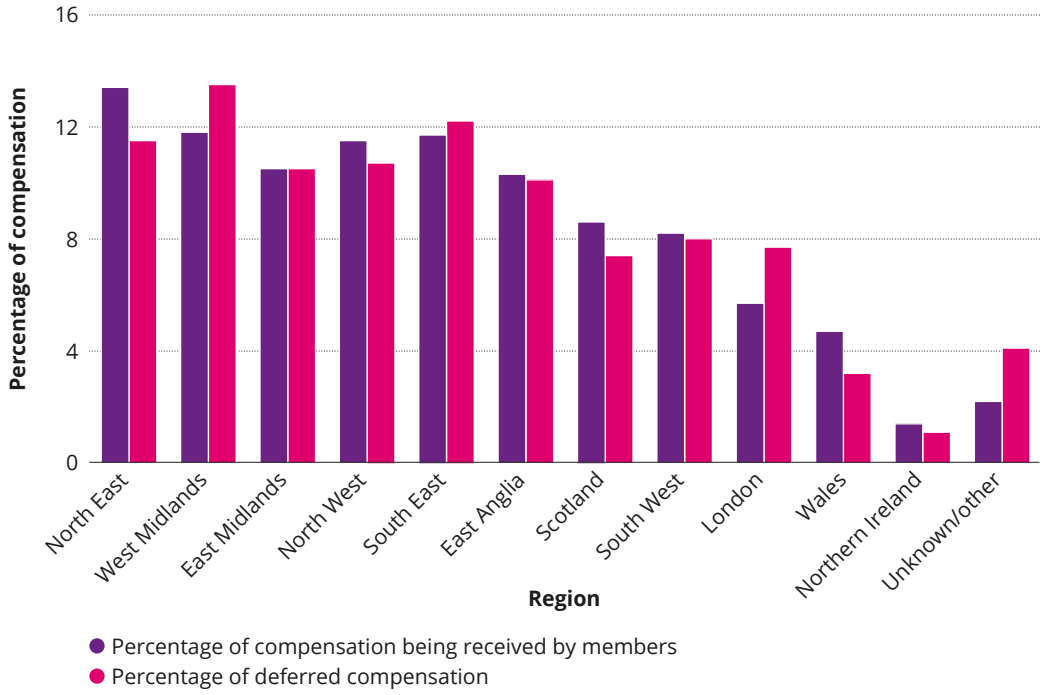


Figure 11.8 | Annualised compensation for members receiving compensation and deferred members before 6 April 1997 and after 5 April 1997

Around 70 per cent of compensation being received by members was accrued before 6 April 1997.

Source: PPF

	Members receiving compensation		Deferred members	
	Annualised compensation (£m)	Percentage	Annualised compensation (£m)	Percentage
Before 6 April 1997	542	70%	162	42%
After 5 April 1997	237	30%	226	58%
Total	**779**	**100%**	**388**	**100%**

12. PPF risk developments

Summary

- This chapter contains information on how the PPF manages its risks and on how the risks to which we are exposed, outlined in the previous chapters, might impact our future funding levels.
- We operate a comprehensive enterprise risk management framework which enables us to understand and measure the potential impact of risks on the PPF.
- We operate a stochastic model which enables us to assess the likelihood of us meeting our funding objectives, and which also enables us to consider the impact of possible future stresses and scenarios on those plans.
- The environment in which operate has changed substantially over the year, with a number of court cases and the COVID-19 pandemic continuing to affect our outlook.

The table below highlights some of the key findings from this section:

Key metric	Result
Probability of Success (PoS)	83%, down from 89% last year as a result of the COVID-19 pandemic hitting financial markets in March 2020
Downside risk	£5 billion
Funding horizon and target funding margin	2030 and 10%, unchanged since last year
Key stress	Lower returns on growth assets: PoS -9pp

Our approach to risk management

Like other financial institutions, we assess all of our risks using a comprehensive enterprise risk management framework so that we can ensure our focus is on the most important risks to our balance sheet. We seek to understand our risks using modelling, including stress testing and sensitivity testing, to help us understand the potential impact of those risks for the future.

In making decision about our risk management processes the aim is to be proportionate. This means that we always consider the cost of any risk management activities being undertaken and the benefit it will provide to members and levy payers.

We consider our risk under three broad headings – external environment, strategic and funding, and operational. In *The Purple Book* we focus our attention on the components of those risk types with material financial implications for us, and so do not cover operational risk or the many non-financial external environment risks to which we are exposed.

External environment: Risk from the universe

This is the risk that we exist to protect – it is the credit risk that a scheme sponsor fails, possibly resulting in a claim. It is the biggest risk that we face. We are unable to manage the risks in the scheme universe, but must accept them. Therefore we monitor these risks to understand any implications this may have for us both financially and operationally.

We are protected by TPR, which monitors and sets guidance for DB pension schemes to ensure strong funding levels. This helps reduces the size of any claim we receive. We liaise with TPR regularly, in order to gain a shared understanding of developments that may change the risk of claims on the PPF.

In order to understand the possible implications of claims on the PPF, consideration is given both to the potential size of a claim and the likelihood of it occurring. An allowance for these risks is also included within our financial modelling as detailed in the summary of modelling section below.

The data in Chapter 4 shows how the size of the aggregate deficit of schemes in deficit (the theoretical maximum risk that we are exposed to) had been falling in the few years up to 2019. There were several contributors to this trend, including deficit reduction contributions and investment returns.

12. PPF risk developments continued

However, market movements between 31 March 2019 and 31 March 2020, culminating in the large-scale disruption caused by the COVID-19 pandemic, reversed this trend.

In order to monitor the likelihood of a claim, we monitor key information about employers who sponsor the schemes in the universe. This includes any public credit ratings. Chapter 6 provides information about the historical levels of insolvencies that we have seen. The COVID-19 pandemic has materially impacted the UK economy, and so over the next year we currently expect both higher numbers of claims because sponsors are less robust and higher claim amounts as the market disruption has increased the size of scheme deficits.

The timing of any increase is highly uncertain. The UK Government's ongoing support measures will have the effect of delaying the insolvency process for some employers which may otherwise have collapsed.

There are specific schemes whose deficits are large enough to wipe out our reserves if they claimed. This has always been the case. We monitor the position of the relevant schemes and their sponsors particularly closely.

Strategic and funding risks: Risk from our existing assets and liabilities

These risks are similar to those that all financial institutions with their own balance sheets face, including pension funds and insurance companies. They include the risks of managing our own investment portfolio and the demographic risks we face.

We will accept risk where it adds value to do so or where the costs of hedging are disproportionate. We manage our investment risk by hedging our liabilities closely and by investing using a bespoke investment strategy which seeks to avoid concentration in the UK economy that we protect. This strategy takes a conservative level of investment risk to target an investment return that exceeds the growth of liabilities over the long term. We accept short-term volatility of our funding level and have no immediate external constraints on our funding level, so if it changes significantly in the short term we will ensure that our response is consistent with our long-term funding strategy.

We are willing to accept longevity and other demographic risks, however we are prepared to transfer this risk to a third party if the risk is significant and hedging costs are reasonable. We actively monitor the level of demographic risk we are exposed to, using granular estimates of longevity based on socio-economic and geographical factors, and use these estimates to ensure that our liability hedging strategy is effectively implemented.

Both investment and demographic risks are potentially impacted in the long term by climate change. We have a comprehensive Responsible Investment strategy which helps mitigate this risk, and are developing approaches to understand the potential impact of climate change on our demographic risk exposure.

Summary of modelling

Members of DB pension schemes rely on the continued financial resilience of the PPF to provide them with a safety net if the sponsors of their schemes become insolvent. The data in *The Purple Book* demonstrates that there is still significant risk in the universe of schemes that we protect.

We use the Long Term Risk Model (LTRM), a Monte Carlo simulation model, to inform our understanding of the funding risks we face, and to protect our finances in a range of possible versions of the future.

Like any complex modelling exercise, the projections are subject to significant uncertainty and our success ultimately depends on some factors outside of our control. In particular, the model run for the base case makes the simplifying assumption that our investment strategy and broad approach to levy will not change before the horizon. Schemes are assumed to transition gradually to a low-risk investment strategy, and to keep paying DRCs to remove underfunding.

During 2020 we have reprogrammed the LTRM onto a new modelling platform, which is providing more flexibility and responsiveness. We continue to develop the model to provide improved functionality in preparation for our review of our funding strategy in the next financial year.

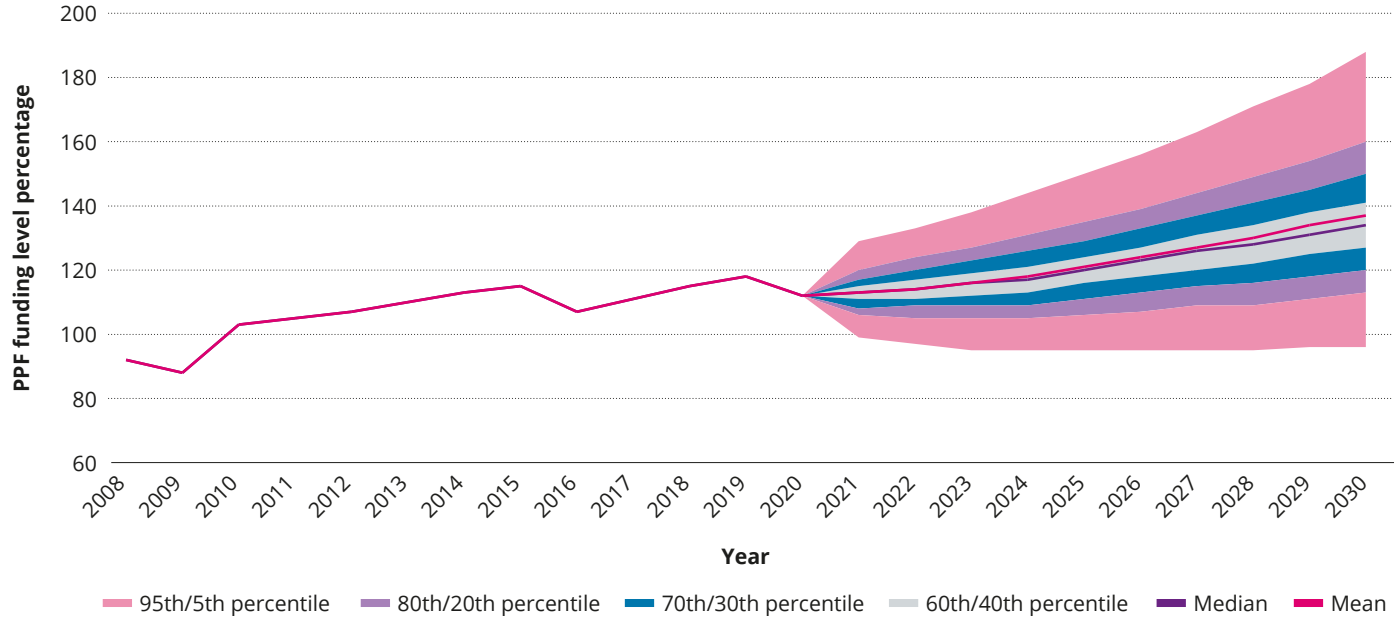
Monitoring our funding objective

Our current long-term funding objective is to be financially self-sufficient by the target funding horizon, currently estimated as 2030 – this is the point at which we expect claims to be low. Self-sufficiency means that we will have accumulated sufficient reserves by the funding horizon to protect against reasonably adverse experience, and will have little reliance on levy or return-seeking assets. We currently estimate that we need to be 110 per cent funded to ensure self-sufficiency.

We use the PoS[25] and downside risk[26] statistics to monitor progress against our funding objective. As at 31 March 2020, the PoS was 83 per cent, and the downside risk was £5 billion.

This year we have needed to make additional assumptions in response to the COVID-19 pandemic to reflect both the short and longer-term impacts – see the section below entitled changes over the year for further information. Following the Court of Justice of the European Union (CJEU) judgments on the *Hampshire* and *Bauer* cases we have also assumed that an additional liability will arise from resultant increases to member compensation we are required to provide.

Figure 12.1 | Projections of PPF funding level



Source: PPF

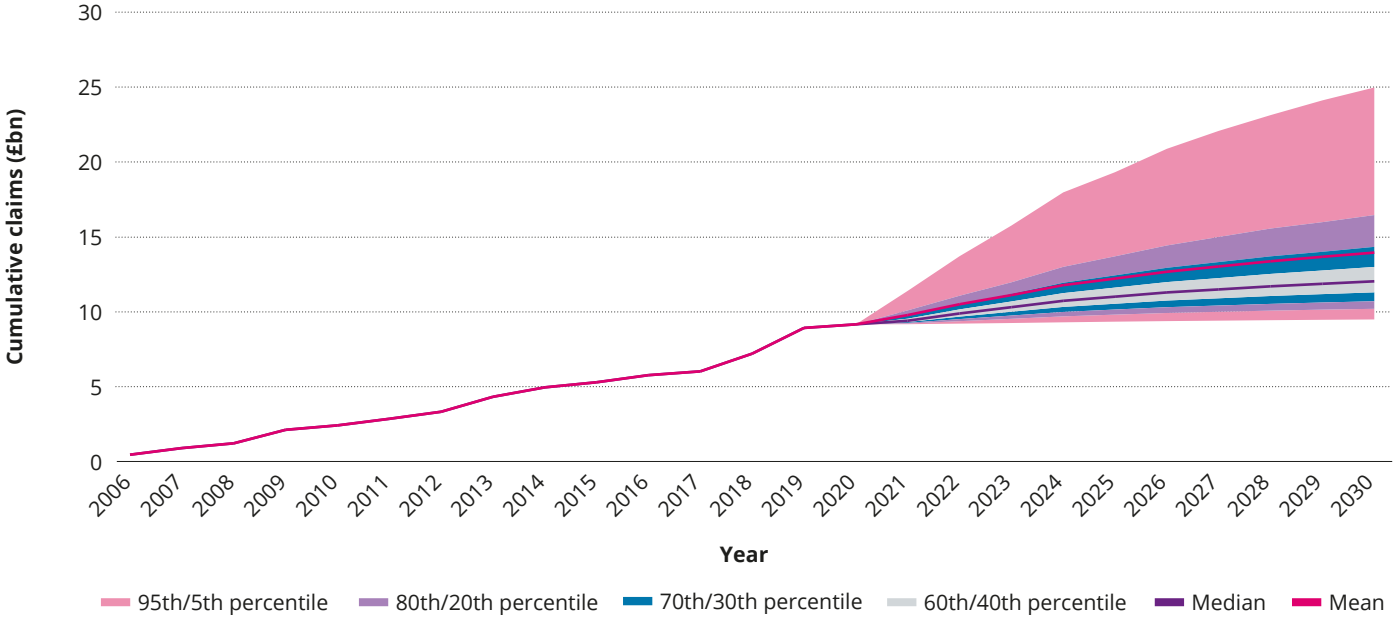
The fan chart in figure 12.1 shows the history of the PPF funding level as well as the base case projection beyond 2020. It shows that our central projection is for funding levels to remain reasonably static over the next few years as higher claims levels offset investment return and income from levy. Thereafter the central projection is for funding levels to increase.

During 2021/22 we will be reviewing our funding strategy, and this is likely to result in the future in different central paths for our projections.

25 The PoS measures the chance of the PPF being self-sufficient at the funding horizon if it continues on its current course with no change to the investment strategy or to the levy formula.

26 Downside risk is calculated as the deficit that is reached or exceeded in 10 per cent of modelled scenarios at some point before reaching the funding horizon.

Figure 12.2 | Projections of cumulative claims on the PPF



Source: PPF

The fan chart in figure 12.2 shows modelled claim levels. As discussed in the section above on the risk management approach at the PPF, the level of claims being made on the PPF in future years is the biggest risk we face and is one we cannot control. It is also one of the areas of greatest uncertainty. The most uncertainty is around exactly which schemes might claim, and when those claims might occur. There are favourable scenarios in which we receive fairly small claim volumes, but there is a substantial risk that we could face some very large claims.

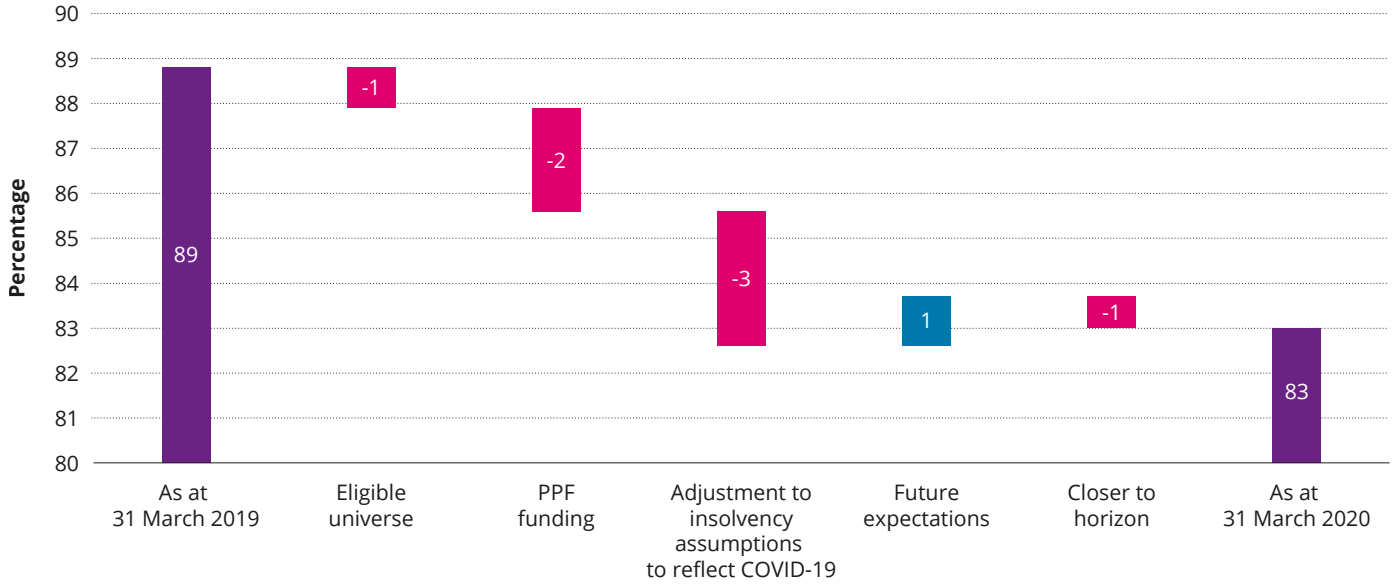
Changes over the year

The largest change to the environment impacting the schemes we protect during the year has been the COVID-19 pandemic. Economic conditions have worsened considerably, while the UK economy has been protected temporarily by government support measures. The economic scenarios underlying our projections reflect the expected impact on major asset classes in the short term before returning to levels in the long term that are broadly unchanged from pre-COVID-19 expectations. The modelling also includes a specific adjustment to reflect the expected impact from COVID-19 on insolvencies. As claim experience continues to emerge we will update our assumptions.

We disclosed in our ARA a number of court judgments in the cases of *Hampshire, Bauer* and *Hughes*. These have the effect of increasing the central estimate of future benefit outgoings.

From a modelling perspective the outcome of these rulings is an increase to the compensation the PPF is required to provide, and thus an increase to our liabilities. The rulings also increase the value placed on liabilities for schemes in assessment, increasing the likelihood of a scheme being underfunded on assessment and thus increasing both the likelihood of it entering the PPF and the deficit associated with the scheme when it does. Combined these impacts reduce the PoS a little.

Figure 12.3 | Probability of success attribution over year to 31 March 2020



Source: PPF

Note: All figures have been rounded to the nearest whole number.

The chart above shows the main changes to the PoS over the past year. The projections are as at 31 March 2020, a time when financial markets had fallen significantly due to the COVID-19 crisis. This combined with falling gilt yields has meant that the funding position of the schemes in the PPF universe has deteriorated leading to a worsening in the PoS.

Our own funding position fell by around five percentage points due to the fall in financial markets impacting our growth assets, although our hedging programme effectively protected us from movements in gilt yields. This contributed to a fall in the PoS.

For a number of large schemes, sponsor credit ratings were downgraded as an early response to the COVID-19 pandemic. This has the effect of increasing the claim risk in the modelling. In addition, a specific adjustment to reflect a plausible future impact from COVID-19 on the likelihood of claims has been made.

There are also small impacts on the PoS as a result of us being a year closer to the funding horizon and as a result of the modelling assumptions made as we generate expected future returns.

Possible future changes

Like all financial services institutions, including the schemes we protect, the PPF is exposed to other possible circumstances over which we have no or limited influence. The following is a list of some of the most material which we are monitoring at the moment.

COVID-19 pandemic: There is the potential for further impact on the value of schemes' assets, the value of our own assets, and the rate of insolvencies among DB scheme sponsors. Since year end, asset values have recovered somewhat, with a positive impact on the PPF's funding position, although our estimate is that this recovery is not yet reflected in scheme funding levels. At this point both the size of the financial impacts and the length of time they will continue for are very uncertain. The longer-term impacts of the pandemic on life expectancy remain uncertain, although we have seen an increase in mortality during 2020 – this is financially immaterial in the context of the PPF's whole liabilities.

***Hampshire, Bauer* and *Hughes*:** We continue to work through the implications of these judgments which are operationally complex. We do not expect that the outcome will be have a material impact on our finances.

12. PPF risk developments continued

Brexit: At the date of compiling *The Purple Book* there is still political uncertainty over the final outcome of the negotiations of a future trade deal with the European Union. Any outcome which results in weaker economic conditions in the UK could have an adverse impact on the sponsors of the schemes that we protect, and therefore could affect future claims. Depending on the exact terms of any trade deal, certain sectors could see structural changes that have a particularly large impact.

Phasing out RPI as a measure of inflation: The Government has reiterated its intention to gradually move to the Consumer Prices Index including owner occupiers' housing costs (CPIH) as the main measure of inflation, which is similar to the Consumer Price Index (CPI) so it tends to be lower than RPI. Although we hedge our inflation risk, we currently do so via RPI-linked assets and so are exposed to the basis risk between CPI and RPI. Convergence between the two measures would reduce the PPF's basis risk, but the proposed change is likely to have an impact on our balance sheet. It may also impact the funding levels of some of the schemes we protect which hedge in the same way. The potential maximum level of this impact is reasonably foreseeable and it is not expected to make a material difference to our ability to meet our funding targets.

Commercial consolidators and superfunds: Interest in consolidator vehicles continues to advance. However, the shape and size of the market is relatively unclear so at this stage we have made no specific adjustments in our financial modelling. TPR set out guidance for superfunds in June[27], which indicates that the risk these new models pose to our ability to meet our funding objectives will be limited.

TPR's consultation on a new DB funding framework: The aim of the new framework is to increase the security of the benefits that have been promised to members of DB schemes, which also has the impact of reducing the likelihood and scale of claims on the PPF.

Climate change: Climate change could, over the medium to long term, have a significant impact on the level of claims we receive. This is due to both impacts on the value of scheme asset portfolios and on sponsoring employer business models. Increased requirements on pension schemes for disclosure are likely to drive changes in approach to investment.

Sensitivities

The LTRM output has been tested for sensitivity to a range of modelling assumptions. A selection of the more significant sensitivity tests is shown in figure 12.4. The sensitivity tests aim to provide an insight into how the PoS and the downside risk might be affected if future experience is not as expected relative to the base case, best-estimate assumptions.

As the PoS has fallen between 31 March 2019 and 31 March 2020, the PoS result has become more sensitive to the assumptions used. So the sensitivities presented in figure 12.4 are larger than the comparable sensitivity from previous years.

27 For more information see: https://www.thepensionsregulator.gov.uk/en/document-library/regulatory-guidance/db-superfunds

Figure 12.4 | Sensitivities

Base case at March 2020	PoS; 83%	Downside risk: £5bn
Assumption	Change in PoS	Change in downside risk
Higher nominal yields *Nominal yields are assumed to increase by 0.5% p.a.*	+5pp	-£3bn
Higher inflation *Inflation is assumed to increase by 0.5% p.a.*	-3pp	+£2bn
Lower life expectancy *Modelled mortality is adjusted so that a male aged 63 lives on average one year less*	+6pp	-£3bn
Lower returns on growth assets *Growth asset returns are 1 percentage point p.a. lower*	-9pp	+£2bn
There is a large one-off claim on the PPF *A simulated £1.5bn claim, where PPF starting assets increased by £5bn and PPF starting liabilities increased by £6.5bn*	-4pp	+£2bn
Reduction in DRCs *DRCs are reduced so recovery plans are extended to 10 years*	0pp	+£0.2bn
Lower PPF levies *The PPF levy collected is lower by 10%*	-1pp	+0.4bn

Source: PPF

Scenario analysis

By applying stresses simultaneously to a number of assumptions in the LTRM on asset returns, bond yields and insolvency experience, we can explore how our finances respond to stress scenarios in which future financial market conditions depart significantly from current central estimates. This kind of analysis helps to assess how resilient our funding objective is to different types of macroeconomic shocks, whether our current funding strategy could be maintained in such conditions, and how best to respond to and plan for such a scenario.

For this year we have examined two stress scenarios. One is the annual cyclical scenario (ACS), released by the Prudential Regulation Authority (PRA) which is designed to test resilience to a deep recession followed by a recovery. The other has been designed as a reverse stress test, which allows us to explore what economic conditions could cause the PoS to drop below 50 per cent.

The stress scenarios described below are not modelled deterministically as a single realisation of future events, but are rather the 'central projections' upon which stochastic simulations of future financial conditions, known as scenarios, are modelled in the LTRM. The one million scenarios that the LTRM projects can therefore show considerable variation around these central projections. The scenarios start from the baseline figures calculated as at March 2020, and so model an additional stress scenario on top of the existing stress of the COVID-19 pandemic.

Potential impacts of demographic stress scenarios, particularly for longevity, are explored as part of the work considering the estimated funding reserve required at the funding horizon.

We are fully reviewing our approach to stress testing and sensitivity testing during 2020.

PRA ACS

The PRA's 2019 ACS was designed to test the resilience of the UK financial system to deep simultaneous recessions in the UK and global economies, a financial market stress, and an independent stress of misconduct costs. This latter cost is not applicable to the PPF.

This stress scenario contains a severe short-term shock to growth assets, offset by sharp declines in scheme liabilities due to the spike in UK bond yields. The strong recovery in growth assets in the medium term, and return to baseline levels of bond yields and asset returns thereafter, mean that this scenario amounts to a mild stress to the PPF's long-term funding objective.

The outcome – of a small increase in PoS – is consistent with previous explorations of similar short-term stresses. These have consistently shown that we are resilient to short-term stress provided that is followed by a strong recovery. Whereas commercial financial services organisations need to ensure adequate capitalisation at all points of the economic cycle, we are able to focus on long-term measures alone.

Figure 12.5 | PRA ACS

Stress scenario	Change in PoS	Change in downside risk
PRA 2019 ACS (adapted)	+3pp	-5bn

Source: PPF

Reverse Stress Test

The Reverse Stress Test (RST) stress scenario was developed within the PPF as no published scenario showed economic conditions that could cause the PoS to drop below 50 per cent. We identified stochastic scenarios produced by the LTRM which would lead to us not hitting the funding target at the funding horizon – these are already fairly extreme scenarios. Then by looking at the average economic impacts of these scenarios, we developed a central path for a new set of stochastic simulations.

This new set of scenarios being used in the LTRM helps us to gain a great understanding of the following areas:

- The type of economic conditions that could lead to us not having a sufficient funding reserve at the funding horizon.
- The type of economic scenarios where there are severe economic impacts, but our funding level recovers sufficiently to meet the funding target at the funding horizon.
- If there are severe economic conditions how much impact it would make on our current funding target.
- How the model operates in severe economic conditions and ensure it is robust and performs well even under extreme economic conditions.

The following table defines the RST. It outlines how the key economic variables differ in the RST compared with the baseline 31 March position outlined above.

Figure 12.6 | RST – definition

Variable	Average annual change on return before the funding horizon
UK equity	-6pp
World equities	-7pp
UK RPI	0.2pp

Source: PPF

The table below illustrates the impact of the RST on our funding metrics

Figure 12.7 | RST – impact on funding

Stress scenario	Change in PoS	Change in downside risk
RST	-45pp	+18bn

Source: PPF

The RST is a deliberately extreme exercise. It shows us that equity market performance is the key economic variable driving the most extreme scenarios we model. This is due to two key factors:

- A significant proportion of the assets of schemes in the universe are held in equities. When the value of equity assets drop, scheme assets fall in value, the size of claims increases and more schemes enter with a deficit so make a claim.
- The strength of the UK economy is modelled as being positively correlated with the value of UK equity assets. This means that we can expect that when equity values fall, there will be a greater number of employers who are modelled as insolvent.

It also shows that in the unlikely event of such a severe stress our current funding strategy would be inadequate to respond and we would need to alter our approach. The possible measures we could take are:

- to extend the horizon so that we are taking more investment risk for longer;
- to change the investment strategy;
- to change our approach to levy; or
- in extreme circumstances, to reduce benefits to the extent permitted by law.

Our funding strategy review will help us decide how best to prioritise these measures in the event of severe financial stress, and will enable us to design an approach to funding for the next period of the PPF's existence.

Appendix

Sources of data

The information used in Chapters 3 to 7 and Chapter 12 of this publication comes from three primary sources, as described below.

1. Scheme returns provided to TPR
   Most of the analysis in this year's publication is based on new scheme returns issued in December 2019 and January 2020 and returned by 31 March 2020.

2. Voluntary form reporting
   Electronic forms are available on TPR's website so pension schemes can provide data regarding contingent assets (CA), valuation results on an s179 basis, DRCs and the s179 valuation results following block transfers. More information on DRCs and CA is given in Chapter 8 (Risk reduction).

3. Sponsor failure scores
   From the levy year 2015/16, Experian has given us scores for calculating the PPF levy using the PPF-specific model. This is a statistical model, developed using observed insolvencies among employers and guarantors of DB pension schemes. From the levy year 2018/19, the PPF-specific model was updated. This included the creation of five new scorecards (which replaced the previous scorecards) to categorise companies and assess insolvency probabilities, and the use of credit ratings to inform insolvency probabilities where they exist. More detail on the model can be found on our website[28].

   The starting point in establishing the insolvency risk element of the risk-based levy is normally the annual average of a scheme's Experian monthly scores. The average monthly score is then matched to one of 10 levy bands and the corresponding levy rate is used.

The data used in Chapters 9 (PPF levy 2019/20), 10 (Claims and schemes in assessment) and 11 (PPF compensation 2019/20) are derived from the PPF's business operations. The data from Chapter 8 is mostly taken from a variety of public sources, as noted underneath each figure.

The PPF-eligible DB universe and *The Purple Book 2020* dataset

The PPF covers certain DB occupational schemes and DB elements of hybrid schemes. Some DB schemes will be exempt from the PPF, including[29]:

- unfunded public sector schemes;
- some funded public sector schemes, for example, those providing pensions to local government employees;
- schemes to which a Minister of the Crown has given a guarantee;
- schemes with fewer than two members; and
- schemes which began to wind up, or were completely wound up, before 6 April 2005.

Scheme funding

As in previous *The Purple Books*, the bulk of our analysis uses funding estimates on an s179 basis. This is, broadly speaking, what would have to be paid to an insurance company to take on PPF levels of compensation, and estimates of this are what we use in the calculation of scheme-based levies. The analysis in Chapter 4 (Scheme funding) uses data that, as far as possible, reflects the position at 31 March 2020 with the s179 assumptions that came into effect on 1 November 2018. This data includes the use of DRCs that have been submitted by schemes for levy purposes[30], which have been added to the asset values submitted in s179 valuations. These DRCs represent the contributions made by the sponsoring employer between the s179 valuation date and 31 March 2020 after allowing for deductions for items such as additional benefit accrual and benefit augmentations.

28 For more information see: https://www.ppf.co.uk/levy-payers
29 For a more comprehensive list see 'eligible schemes' on our website.
30 For more information see the 2019/20 DRC appendix and guidance on our website.

As in previous years, PPF actuaries have also produced full buy-out estimates (i.e. based on original scheme levels of compensation) of the funding position for *The Purple Book 2020* dataset.

Historical datasets

A dataset is collated for each edition of *The Purple Book*, including all appropriate schemes where scheme return information has been processed and cleaned. In subsequent months, more scheme returns are processed and cleaned and in 2006 and 2007 these were incorporated into the existing dataset to produce an 'extended' dataset. For 2006 and 2007, the increased coverage produced significantly different results to the original datasets. However, since then, datasets have been much larger and the increased coverage made only a small difference. Accordingly, comparisons are made with previous publications as follows:

- *The Purple Books 2006 and 2007* – extended dataset.
- *The Purple Books 2008 to 2019* – original dataset.

Scheme status

Scheme status in this *The Purple Book* is split between:

- open schemes, where new members can join the DB section of the scheme and accrue benefits;
- schemes closed to new members, in which existing members continue to accrue benefits;
- schemes closed to new benefit accrual, where existing members can no longer accrue new years of service; and
- schemes that are winding up.

Because many larger employers have adopted the strategy of migrating their pension provision towards DC by opening a DC section in an existing DB scheme, many hybrid schemes may accept new members but no longer allow new (or existing) members to accrue defined benefits.

This has been handled differently across different editions of *The Purple Book*. In *The Purple Book 2006*, 40 per cent of members were in the open category and 25 per cent were categorised as 'part open'. The 'part open' category included a significant number of hybrids for which the DB element was closed. In *The Purple Book 2007*, the 'part open' category was removed and the percentage of schemes classified as open increased compared to *The Purple Book 2006*. Many hybrid schemes which had previously identified themselves as 'part open' now identified themselves as 'open'. In *The Purple Books 2008* and *2009*, we analysed the largest 100 schemes (by membership) in the hybrid category separately, so we could adjust the information provided in the scheme returns and remove potential misinterpretation caused by hybrid schemes with closed DB sections declaring themselves as open.

Improved levels of information on hybrid schemes are now available from the scheme returns and since *The Purple Book 2010* we have been able to adjust hybrid statuses to 'closed' where DB provision is not available to new members. Since 2013, those hybrids which no longer admit new DB accruing members are categorised as 'closed to new members'. In addition, where those schemes have no active DB membership it is assumed that the scheme is closed to new benefit accrual. The changes to the information available and consequent developing approach across the various editions of *The Purple Book* should be taken into account when comparing figures from different editions.

Glossary

Active member
In relation to an occupational pension scheme, a person who is in pensionable service under the scheme.

Annuity
Contract through which payments of a portion of a scheme's liabilities are met by a third-party insurance company.

Assessment period
The time when a scheme is being assessed to see if the PPF can assume responsibility for it.

Brexit
The process of the United Kingdom leaving the European Union and the impact on financial markets as well as employers operations and financial strength.

Buy-out basis
The level of coverage the current assets will provide if all benefits were to be bought out in the name of the individual member with an insurance company. See also: full buy-out.

Claims
When an employer of a DB pension scheme becomes insolvent and the pension does not have sufficient assets to buy out the liabilities. The DB Scheme members then become members of the PPF.

Closed (to new members)
The scheme does not admit new members. Existing members can continue to accrue pensionable service/benefits.

Closed (to new benefit accrual)
The scheme does not admit new members. Existing members no longer accrue pensionable service/benefits.

Commercial consolidators and superfunds
These are pension vehicles established to consolidate the DB assets and liabilities of unconnected employers, with no link to the original employer. In some commercial cases the intention is to provide returns to investors.

COVID-19 pandemic
The spread of COVID-19 viral infections across the globe. When discussing this we are referring to the wide ranging impacts, particularly including the impact of restrictions imposed due to the pandemic on financial markets as well as employers operations and financial strength.

Dead company
A company that is dissolved.

Deferred member
In relation to an occupational pension scheme, a person (other than an active or pensioner member) who has accrued rights under the scheme but is not currently accruing or being paid benefits under the scheme.

Deficit
A shortfall between what is assessed as needed to pay a scheme's benefits as they fall due (this is the scheme's 'liabilities') and the actual level of assets held by the scheme.

Deficit-Reduction Contribution (DRC)
A one-off (or irregular) contribution made by a scheme sponsor to a pension scheme to reduce the level of deficit.

Defined Benefit (DB)
Benefits are worked out using a formula that is usually related to the members' pensionable earnings and/or length of service. These schemes are also referred to as final salary or salary related pension schemes.

Defined Contribution (DC)
Benefits are based on the amount of contributions paid, the investment returns earned and the amount of pension this money will buy when a member retires. These schemes are also referred to as money purchase pension schemes.

Demographic risks
This is a financial risk to the PPF that members on average have different population based factors than expected, for example the proportion married or age difference between members and their spouse.

Downside risk
This is calculated as the deficit that is reached or exceeded in 10 per cent of modelled scenarios at some point before reaching the funding horizon.

Enterprise risk management framework
The process of identifying and documenting particular events or circumstances relevant to the organisation's objectives (threats and opportunities), assessing them in terms of likelihood and magnitude of impact, determining a response strategy, and monitoring process.

Experian
A provider of insolvency scores used by the PPF for PPF levy calculations.

Full buy-out
The cost of insuring a pension scheme in the private market. The discount rate applied to liabilities would generally be more prudent than the discount rate applied to s179 valuations. The benefit assumed in private insurance is usually non-capped and thus could be greater than PPF coverage.

Funding horizon
The date at which the PPF is aiming to be financially self-sufficient as this is the point at which we expect claims to be low. Self-sufficiency means that the PPF will have accumulated sufficient reserves by the funding horizon to protect itself against reasonably adverse financial experience.

Gilt yield
The yield, if held to maturity, of a government (non-indexed) bond.

Growth assets
Assets that are expected to give a return in excess of the gilt yields, but have more risk of underperformance, for example equities or property.

Hedging
An investment that is made with the intention of reducing the risk of deterioration in a scheme's funding level.

Hybrid scheme or partial DB scheme
A scheme that can provide DB and DC benefits. An example of a hybrid scheme would be a scheme providing benefits on a DC basis but that is or was contracted out of the state scheme on either a guaranteed minimum pension or reference scheme test basis.

Glossary continued

Insolvency risk
The risk that a borrower will have to close business due to its inability to service either the principal or interest of its debt.

Insurance company
Insurance companies provide a range of services to pension schemes, including:
- asset investment;
- asset management;
- buy-in and buy-out;
- investment advice and expertise;
- custodian facilities; and
- scheme administration services.

Insurance policy
Investment class: a pooled fund provided by or a deposit administration contract purchased from an insurance company.

Investment portfolio
The group of financial assets that the PPF owns.

Investment strategy
The set of rules, behaviours and procedures, designed to guide the PPF's selection of an investment portfolio after considering our goals, risk tolerance, and future needs for capital.

Longevity risk
This is a financial risk to the PPF that members on average live for longer than the PPF expects, and therefore more funds are required to pay pensions for longer.

LTRM
Long Term Risk Model

Net funding position
Sum of assets less sum of liabilities, or sum of scheme funding positions. In a pool of schemes where schemes in deficit outweigh schemes in surplus, there is an aggregate deficit.

ONS
Office for National Statistics

Open scheme
The scheme continues to accept new members and benefits continue to accrue.

Operational risk
The risk of loss resulting from inadequate or failed internal processes, people and systems or the impact of external events on these.

Pensioner member
A person who is currently receiving a pension from the scheme or from an annuity bought in the trustee's name.

Pension Protection Fund (PPF)
A statutory corporation run by the Board of the Pension Protection Fund, established under the Pensions Act 2004.

The Pensions Regulator (TPR)
The UK regulator of work-based pension schemes; an executive non-departmental public body established under the Pensions Act 2004.

PPF levy
This is the annual amount that a pension scheme is charged by the PPF. It is composed of a scheme-based levy and a risk-based levy. It is similar to an insurance premium.

PoS
Probability of Success.

Repurchase agreement (repo)
The sale of a security combined with an agreement to repurchase the same security at a higher price at a future date.

Risk-based levy
See PPF levy. Calculated on the basis of a pension scheme's deficit and insolvency risk of the sponsoring employer.

Scheme-based levy
See PPF levy. Calculated on the basis of s179 liabilities and the number of members in the pension scheme.

Scheme funding position
The difference between the assets and liabilities of a pension scheme (scheme deficit if negative, scheme surplus if positive).

Scheme member
In relation to an occupational pension scheme, a scheme member is any person who:
- is an active member;
- is a deferred member;
- is a pensioner member;
- has rights due to transfer credits under the scheme; or
- has pension credit rights under the scheme.

This includes scheme members whose only entitlements are equivalent pension benefits (EPBs), as those rights were earned through pensionable employment. Members (for occupational and personal schemes) do not include dependants of members. Those whose only entitlements are lump sum benefits payable upon death are also not included.

Section 179 (s179) valuation
To calculate the risk-based pension protection levy the Board of the PPF must take account of scheme underfunding. To achieve consistency in determining underfunding, schemes can complete a PPF valuation (s179). This valuation will be based on the level of the scheme's assets and liabilities. The liabilities will be based on the scheme benefits taking into account key features of the levels of compensation paid by the Board of the PPF as set out in Schedule 7 of the Pensions Act 2004.

Stress scenario
Changes simultaneously applied to a number of assumptions in the LTRM on asset returns, bond yields and insolvency experience.

Stochastic Model
Distributions of potential outcomes are derived from a large number of simulations (stochastic projections) which reflect the random variation in the inputs.

Swap
Investment: a contract calling for the exchange of payments over time. Often one payment is fixed in advance and the other is floating, based on the realisation of a price or interest rate.

Target funding margin
The percentage of assets over the liability value that we are aiming to achieve at the funding horizon.

Glossary continued

Technical Provisions (TPs)

The TPs are a calculation made by the actuary of the assets needed for the scheme to meet the statutory funding objective. These include pensions in payment (including those payable to survivors of former members) and benefits accrued by other members and beneficiaries, which will become payable in the future.

Trustee

A person or company, acting separately from a scheme's employer, who holds assets in trust for the beneficiaries of the scheme. Trustees are responsible for making sure that the pension scheme is run properly and that members' benefits are secure.

Winding up/wound up

After the wind-up is complete (the scheme is wound up), there will be no assets or liabilities left in the scheme, and the scheme will cease to exist as a legal entity. Winding up describes the process of reaching wind-up from the normal ongoing status. To make sure that members will still receive benefits, there are several options:

- transferring pension values to another pension arrangement;
- buying immediate or deferred annuities; or
- transferring the assets and liabilities of the scheme to another pension scheme.

The scheme must be wound up in accordance with the scheme rules and any relevant legislation.

Charts and tables

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