Pension Protection Fund

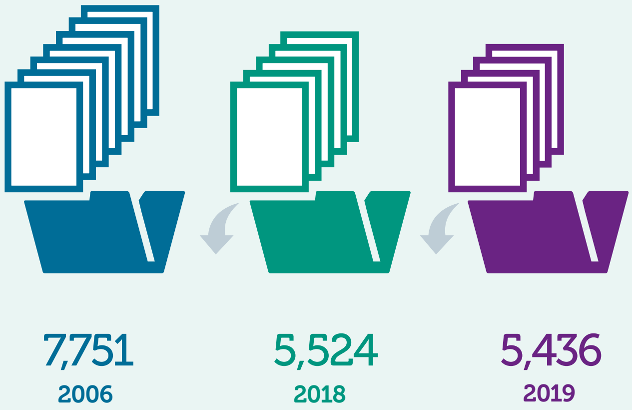
The Purple Book 2019

DB pensions universe risk profile

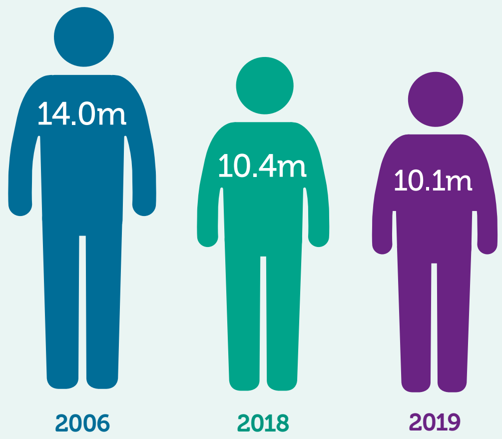
Contents

Overview

Number of eligible schemes

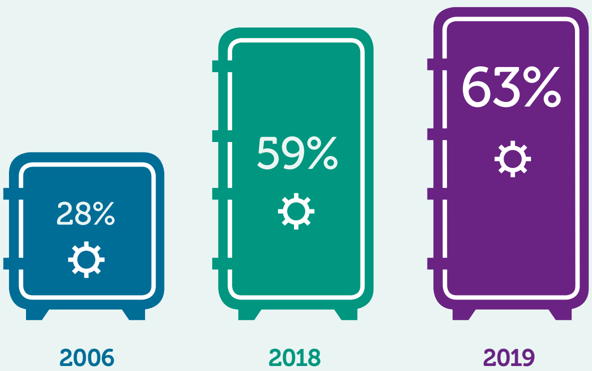


Number of members

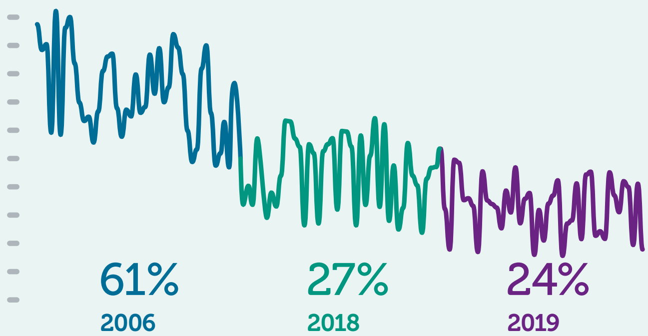


Deficit/surplus of schemes in deficit/surplus

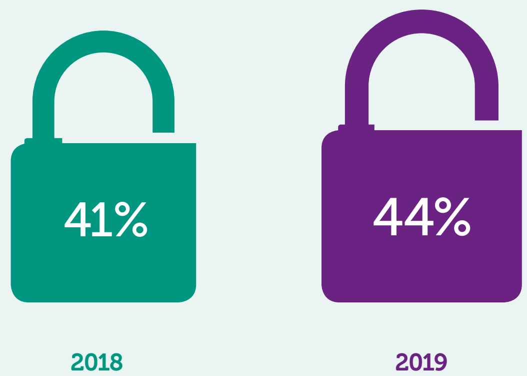
Bonds trend



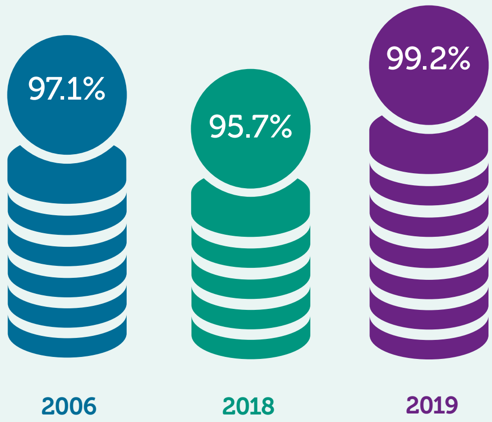
Equities trend



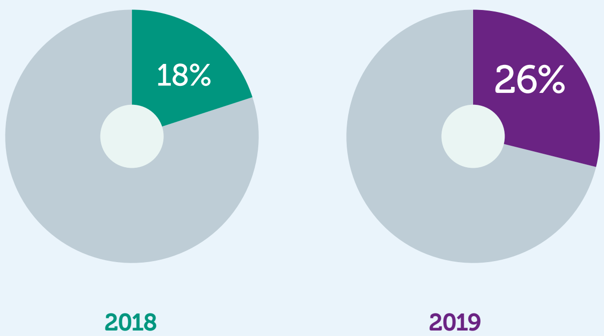
Proportion of schemes closed to all benefit accrual



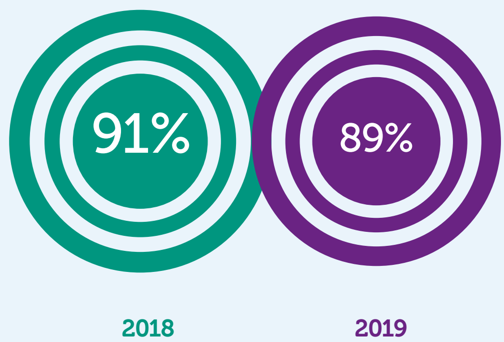
Scheme funding



Proportion paying no risk based levy



PPF probability of success



Number and liabilities of schemes in PPF assessment

1. Executive summary

Summary

This is the 14th 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 5,436 schemes in the Pension Protection Fund (PPF) eligible universe as at 31 March 2019, a reduction from 5,524 as at 31 March 2018. The declining universe reflects schemes winding up, scheme mergers, and schemes entering PPF assessment. This year, *The Purple Book* dataset covers 5,422 schemes – 99.7 per cent of the estimated 5,436 schemes eligible for PPF compensation.

Schemes with more than 5,000 members make up around 75 per cent of each of total assets, liabilities and members, while only forming 7 per cent of the total number of schemes in *The Purple Book 2019* 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.

Scheme demographics

The proportion of schemes open to new members decreased slightly to 11 per cent, from 12 per cent in *The Purple Book 2018*. 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 44 per cent from 41 per cent in 2018. The proportion of schemes closed to new benefit accrual is now the same as the proportion closed to new members.

There are 1.1 million active members in *The Purple Book 2019* dataset who are members of a scheme still open to new benefit accrual and who continue to accrue benefits. This is a reduction of 14 per cent over the year. The number of actives 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. 21 per cent of members were in open schemes with a further 52 per cent in schemes that are closed to new members but open to new benefit accrual.

The Purple Book 2019 dataset includes 10.1 million DB scheme members, down from 10.4 million last year. Of these:

- 42 per cent are pensioner members;
- 47 per cent are deferred members; and
- 11 per cent are active members.

Scheme funding

Universe scheme funding improved in the year to 31 March 2019. The net funding position on a section 179 (s179) basis as shown in the PPF 7800 index improved to a deficit of £12.7 billion compared to a deficit of £70.5 billion the year before, while the aggregate funding ratio increased to 99.2 per cent from 95.7 per cent. The increase in the aggregate funding ratio is the result of:

- The new s179 basis that came into force on 1 December 2018;
- Up-to-date valuations; and
- The latest eligible universe available by updating to the new *Purple Book 2019* dataset.

This was offset to some extent by market movements, primarily the result of lower gilt yields driving up liability values by more than the corresponding increase in asset values, although a rise in equity markets helped to increase asset values and dampen the overall impact of yield movements.

On an estimated full buy-out basis, the net funding position improved to a deficit of £475.6 billion from a deficit of £584.0 billion the year before, with the funding ratio improving from 72.9 per cent to 77.3 per cent.

1 The number of schemes in the PPF eligible universe as at 31 March 2019 could be different from 5,436 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 2019.

Asset allocation

Continuing the long-term trends, the aggregate proportion of schemes' assets invested in equities fell from 27.0 per cent to 24.0 per cent while the proportion in bonds rose from 59.0 per cent to 62.8 per cent.

Within bonds, the proportions held were broadly unchanged from last year with index linked bonds making up the biggest proportion at 46.2 per cent. Corporate bonds accounted for 28.4 per cent of the bonds held and Government fixed interest bonds contributed 25.4 per cent of the total.

Within equities, the UK-quoted proportion fell from 18.6 per cent to 16.6 per cent, while the proportions of overseas-quoted and unquoted/private equities both increased slightly to 69.7 per cent and 13.7 per cent respectively.

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 80 per cent over the next 10 years, from around £14.0 billion in 2019 to around £2.7 billion in 2029, 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's) latest Technical Provisions and recovery plan data shows that in Tranche 12[2], the length of the average recovery plan was 7.3 years, just under a year less than that of Tranche 9 (comparable given the three-year valuation cycle) and half a year shorter than Tranche 11. Assets as a percentage of Technical Provisions decreased from 89.4 per cent in Tranche 9 to 88.5 per cent in Tranche 12.

The total number of contingent assets submitted to the PPF for the 2019/20 levy year was 419 – 100 fewer than in 2018/19. This is largely because fewer Type A Contingent Assets (employer parent or group guarantees) were certified for PPF levy purposes.

There were £37 billion worth of risk transfer deals (buy-ins, buy-outs and longevity swaps) in the year to 30 June 2019, up from £22 billion the previous year and only slightly lower than the 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

A number of changes were made to the levy for the current Three Year Levy Cycle, of which 2018/19 is the first year. The main changes were the updates made to the insolvency risk model, the reduction in the risk-based levy cap and the changes to the asset and liability stress factors.

- In 2018/19, total levy totalled £564 million, up slightly from the previous year.
- The top 100 levy payers accounted for 50 per cent of the total levy, which is higher than the previous year.
- The levy was more evenly distributed by levy band in 2018/19 compared with the previous year.
- Around 26 per cent of schemes had no risk-based levy while 3.3 per cent of schemes saw the cap of 0.5 per cent of smoothed liabilities apply to their risk-based levy. Both of these proportions are higher than the previous year.
- Almost two thirds of the total levy came from schemes sponsored by employers in the two levy scorecards used for the largest employers.

2 Tranche 12 covers schemes with valuation dates between 22 September 2016 and 21 September 2017. https://www.thepensionsregulator.gov.uk/en/document-library/research-and-analysis/scheme-funding-analysis-2019/scheme-funding-analysis-2019-annex

1. Executive summary continued

In the year to 31 March 2019, 26 new schemes entered PPF assessment. This is the lowest level since the inception of the PPF and is around half of the number for the previous year to 31 March 2018. However, owing to a very large claim from the Kodak Pension Plan No. 2 (KPP2), the total value of the year's claims was £1.9 billion (as measured on an s179 basis), the highest (ending 31 March) in the PPF's history. This was the main reason for the PPF's funding ratio (as measured on the PPF's accounting basis, and including schemes in PPF assessment) falling from 122.8 per cent as at 31 March 2018 to 118.6 per cent as at 31 March 2019.

In the year to 31 March 2019, the PPF made compensation payments of £775 million compared with £725 million in the previous year. As at 31 March 2019, 148,005 members were in receipt of compensation, up from 135,377 a year earlier. The average annual payment to members receiving PPF compensation was £4,382, almost unchanged from £4,380 as at 31 March 2018.

PPF risk developments

The PPF uses the Long-Term Risk Model (LTRM) to monitor funding risk. As at 31 March 2019, there is an 89 per cent chance the PPF will achieve its funding objective (the Probability of Success (PoS)).

The PoS of 89 per cent assumes a neutral impact of specific uncertainties such as the Bauer case and Brexit. A preliminary opinion on the Bauer case was issued by the Advocate General earlier in 2019, which suggested that EU law requires a pension protection system that is reasonably expected to protect old-age benefits under an occupational pension scheme in full in the event of an employer's insolvency. However, the opinion is not legally binding and the Court of Justice of the European Union may not follow the Advocate General's opinion. Also the applicability of the Bauer judgment to the UK pension protection system is potentially affected by the ongoing Brexit negotiations.

Last year the PoS was 91 per cent. The most significant drivers of the fall are the PPF's expectations of what the future holds: a combination of updated economic, and other assumptions. Also the estimated levy collection was revised down in the projections, and we took additional liabilities related to the CJEU judgment. Finally, being one year closer to our expected funding horizon means there is less time to recover from any possible adverse development. These adverse effects were partially offset by an improvement in the PPF funding position[3].

Given the importance and the complexity of the LTRM, the model is tested for sensitivity to key modelling assumptions, and is also stress tested.

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 2019
10-year fixed interest gilt yield	-0.36pp
15-year fixed interest gilt yield	-0.26pp
20-year fixed interest gilt yield	-0.20pp
5–15 year index-linked gilt yield	-0.51pp
FTSE All-Share Index (TR)	+6.36%
FTSE All-World Ex-UK Index (TR)	+10.94%

pp = percentage point(s)
TR = Total Return

3 Although the PPF's reported reserve levels have fallen during the year, the claim from KPP2 was already anticipated in the long-term projection at March 2018 even though it was not reflected on the accounting balance sheet until after that date.

2. The data

2.1 Summary

- This chapter contains information on the number and distribution of schemes in *The Purple Book 2019* dataset and the estimated universe of PPF-eligible schemes.
- The main analysis in *The Purple Book 2019* is based on the most recent scheme returns submitted to TPR by 31 March 2019. This covered a dataset of 5,422 DB schemes, covering 10.1 million members[4]. This represents virtually all PPF-eligible schemes and universe liabilities. At the time of writing, complete 2019 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 5,436 as at 31 March 2019, a reduction from 5,524 as at 31 March 2018. 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 2019*.
- 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 2019

***The Purple Book 2019* sample covers almost all of the estimated PPF-eligible schemes.**

Source: PPF

Number of members	2–99	100–999	1,000–4,999	5,000–9,999	10,000+	Total
Estimated 2019 universe (number of schemes)	1,967	2,383	728	162	196	5,436
The Purple Book 2019 dataset (number of schemes)	1,964	2,377	727	161	193	5,422
The Purple Book 2019 dataset as a percentage of 2019 PPF-eligible DB universe	99.8%	99.7%	99.9%	99.4%	98.5%	99.7%

Figure 2.2 | Distribution of assets, s179 liabilities and members in *The Purple Book 2019* dataset as at 31 March 2019

Large schemes with over 5,000 members make up 7 per cent of schemes in *The Purple Book 2019* dataset but just under 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)	16.8	147.6	259.9	194.6	996.5	1,615.3
s179 liabilities (£bn)	15.7	152.2	270.1	196.3	993.9	1,628.0
Number of members (000's)	85	837	1,659	1,122	6,351	10,055

4 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 declining universe reflects schemes winding up, scheme mergers and schemes transferring into the PPF.

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.

Year	Estimated universe	*The Purple Book* dataset	Number of members included in *The Purple Book* dataset (m)[5]
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

5 For 2006 and 2007, the numbers of members are based on the extended dataset.

3. Scheme demographics

3.1 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 number of schemes and total scheme membership are included, with breakdowns by scheme size, scheme status, and member status.

How schemes have been categorised 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 2019	31 March 2018
Number of schemes in *The Purple Book* dataset	5,422	5,450
Proportion of schemes that are:		
open to new members	11%	12%
closed to new members (but open to new benefit accrual)	44%	46%
closed to new benefit accrual	44%	41%
winding up	1%	1%
Number of members covered by schemes in *The Purple Book* dataset, of whom:	10.1m	10.4m
pensioner members	42%	41%
deferred members	47%	47%
active members (still accruing benefits)	11%	12%

- The number of active members is less than a third of those found in the first *The Purple Book* dataset in 2006 and has dropped 14 per cent in the last year.
- The percentage of schemes that are open to new members has decreased from 12 to 11 per cent in the last year. This continues the trend since 2012 where only small changes in the proportion of active members have been observed. These schemes tend to be larger than average and account for 21 per cent of *The Purple Book* dataset membership.
- 74 per cent of schemes have assets of less than £100 million.

3. Scheme demographics continued

3.2 Scheme status

Figure 3.1 | Distribution of schemes by scheme status

44 per cent of schemes are closed to new members, and another 44 per cent are also closed to new benefit accrual.

Source: PPF

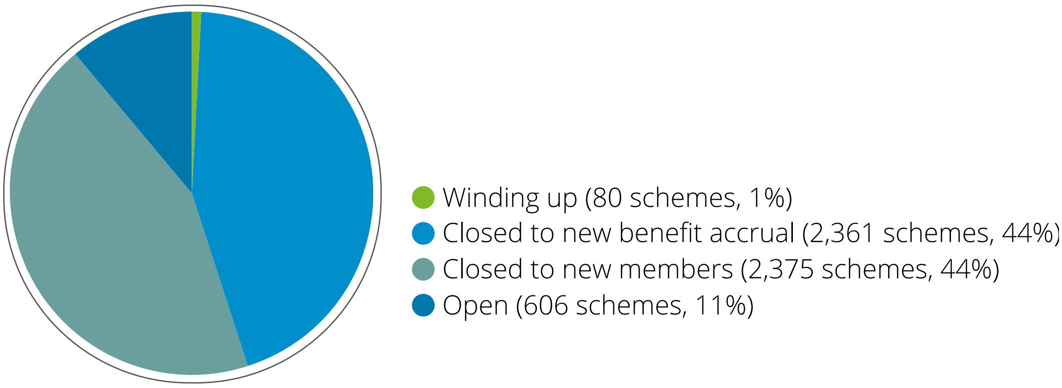


Figure 3.2 | Distribution of schemes by scheme status and member group

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.

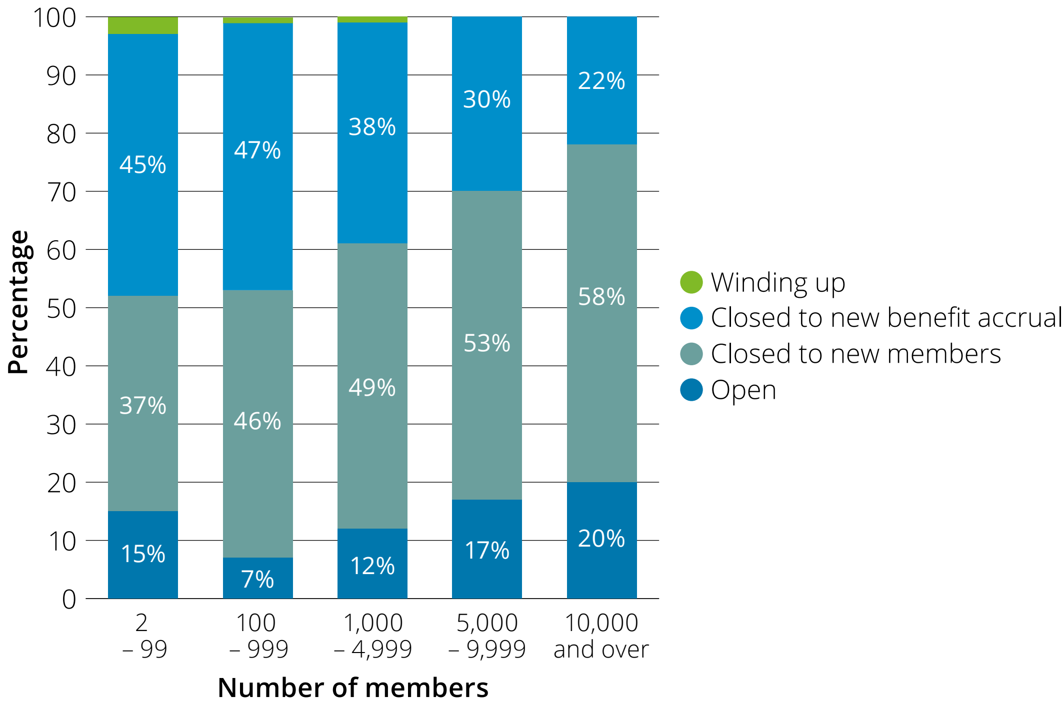


Figure 3.3 | Distribution of schemes by scheme status and year

The gradual trend of schemes already closed to new members also closing to accrual has continued, with each status now covering 44 per cent of schemes.

Source: PPF

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

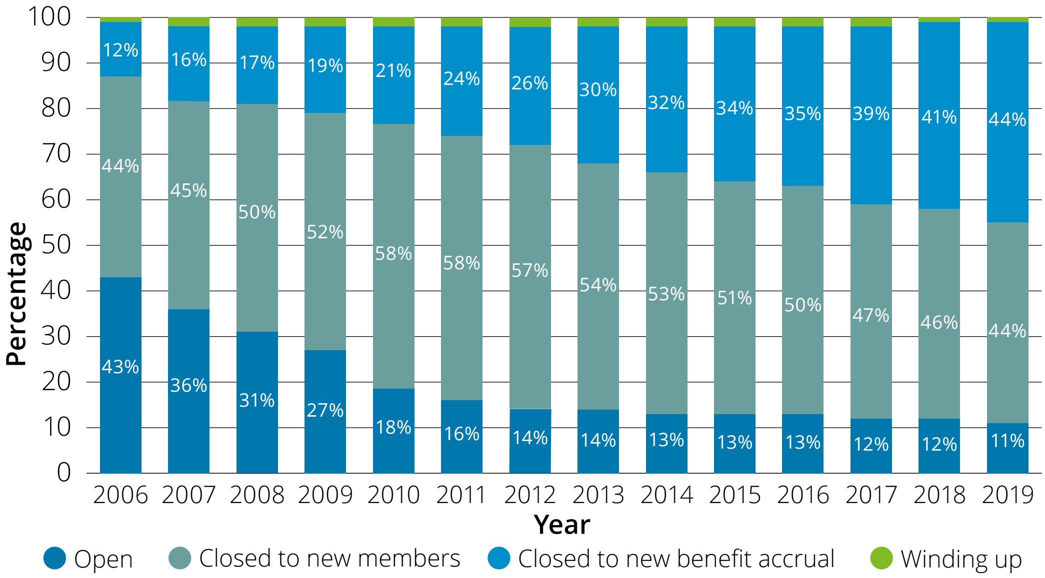
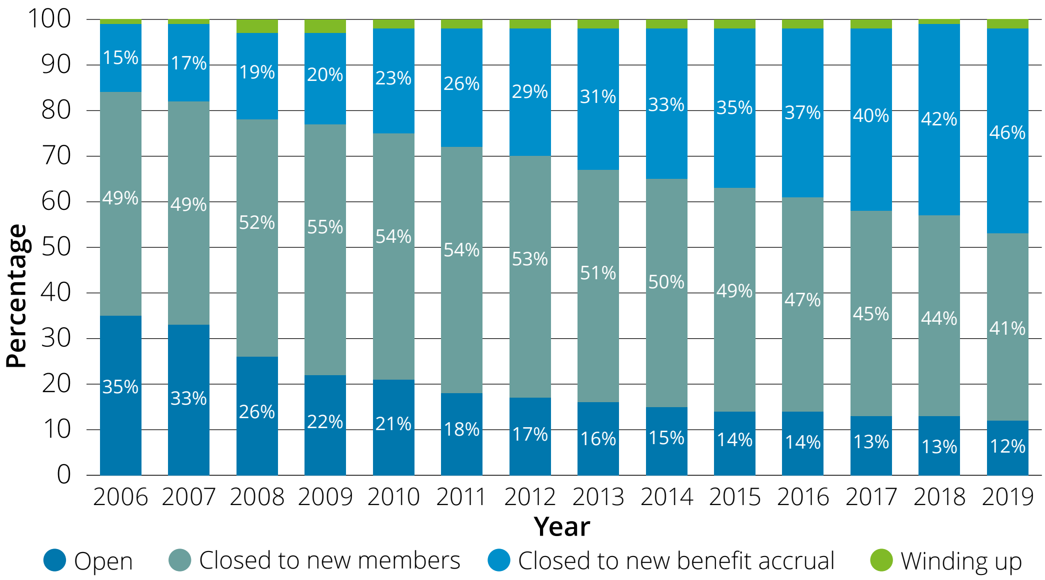


Figure 3.4 | Distribution of schemes by scheme status and year (excluding hybrid schemes[6])

The distribution of schemes by scheme status in *The Purple Book 2019* 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.



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 a scheme is defined as closed if the DB section is closed, even if the DC section remains open.

3. Scheme demographics continued

3.3 Scheme status and scheme members

Figure 3.5 | Distribution of members by scheme status

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

Source: PPF

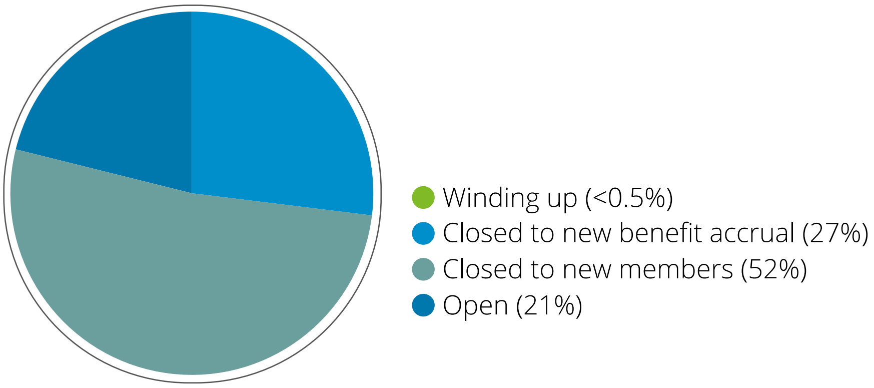


Figure 3.6 | Distribution of members by scheme status and year

The proportion of members in open schemes has stayed the same for the last three years.

Source: PPF

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

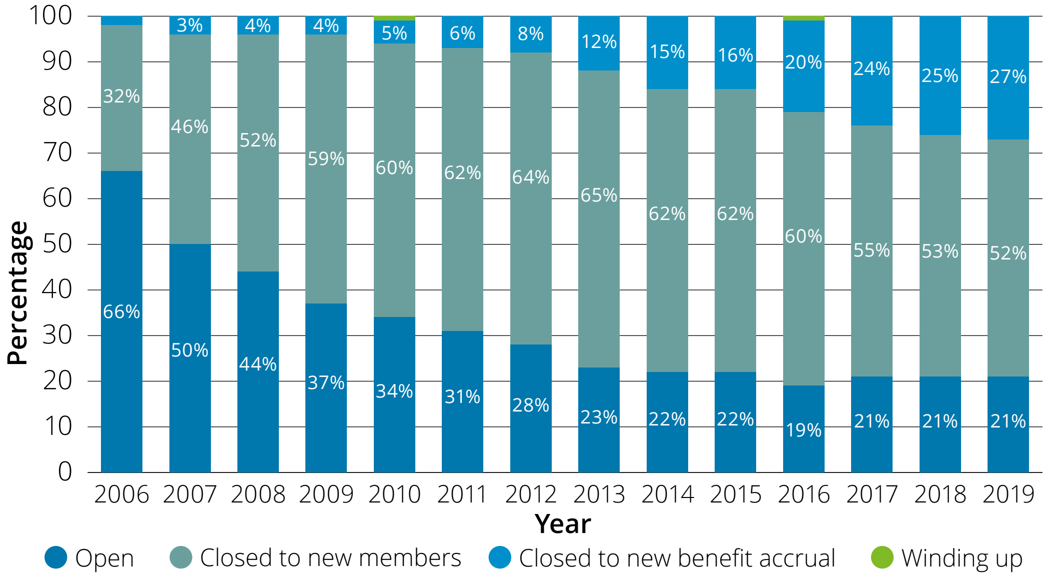
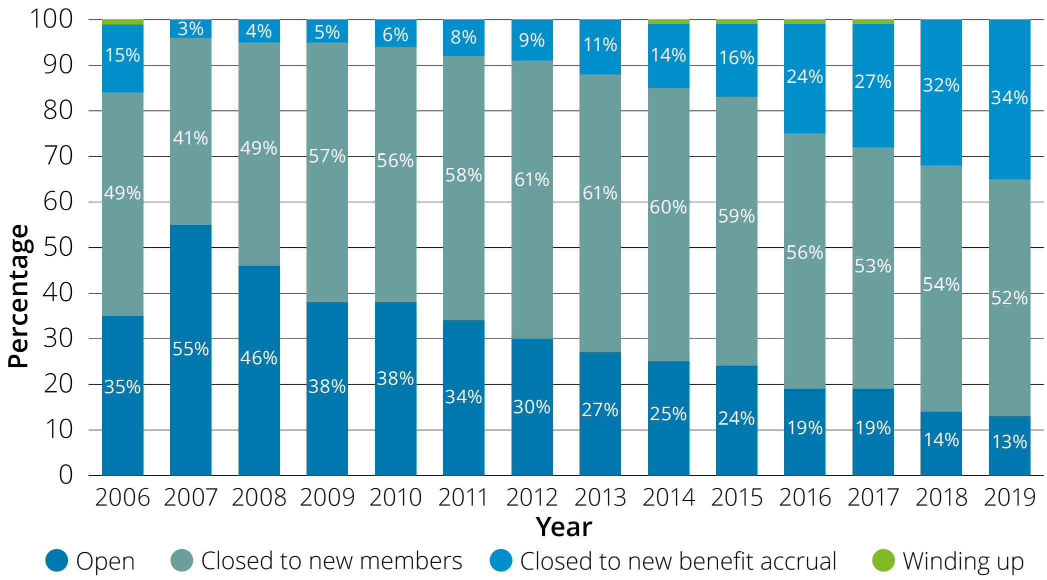


Figure 3.7 | Distribution of members by scheme status and year (excluding hybrid schemes)

Excluding hybrid schemes had a large effect on the distribution of members by scheme status in *The Purple Book 2019* dataset. This is due to one very large scheme having a hybrid status.

Source: PPF

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



3.4 Scheme membership

Figure 3.8 | Number and distribution of members by member type and scheme status as at 31 March 2019

Although over 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	595.8 6%	503.0 5%	– 0%	– 0%	**1,098.7** **11%**
Deferred members	800.5 8%	2,293.3 23%	1,620.0 16%	9.0 0%	**4,722.8** **47%**
Pensioner members	704.3 7%	2,387.0 24%	1,131.0 11%	11.0 0%	**4,233.3** **42%**
Total	**2,100.5** **21%**	**5,183.3** **52%**	**2,750.9** **27%**	**20.0** **0%**	**10,054.8** **100%**

3. Scheme demographics continued

Source: PPF

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

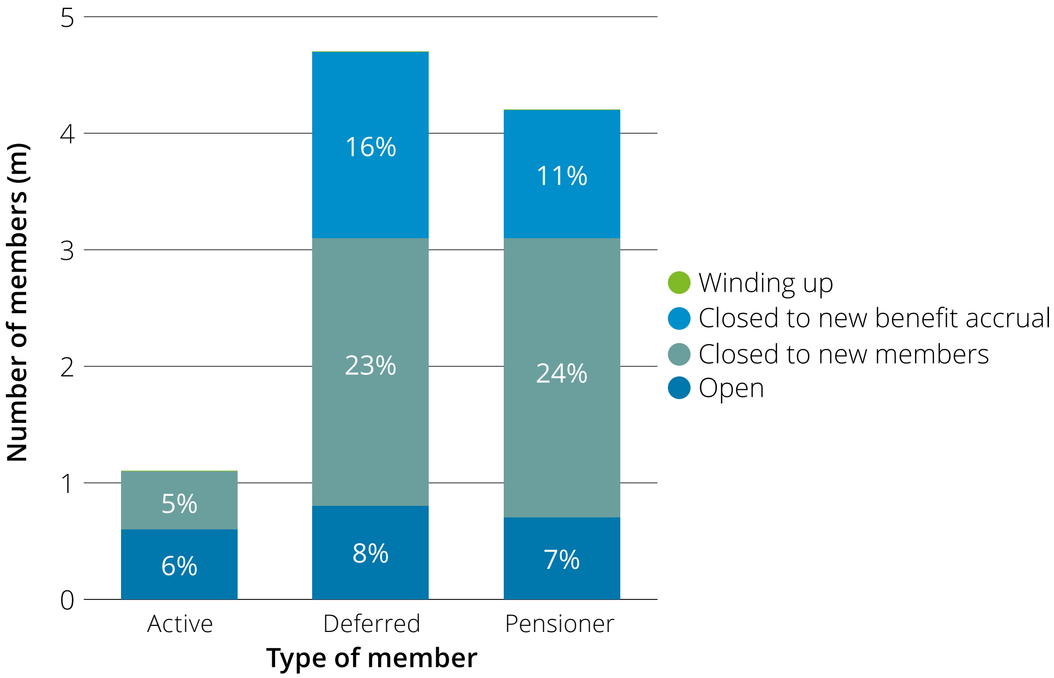


Figure 3.9 | Active members in *The Purple Book* datasets

The number of active members in *The Purple Book* dataset has fallen by 14 per cent over the year.

Source: PPF

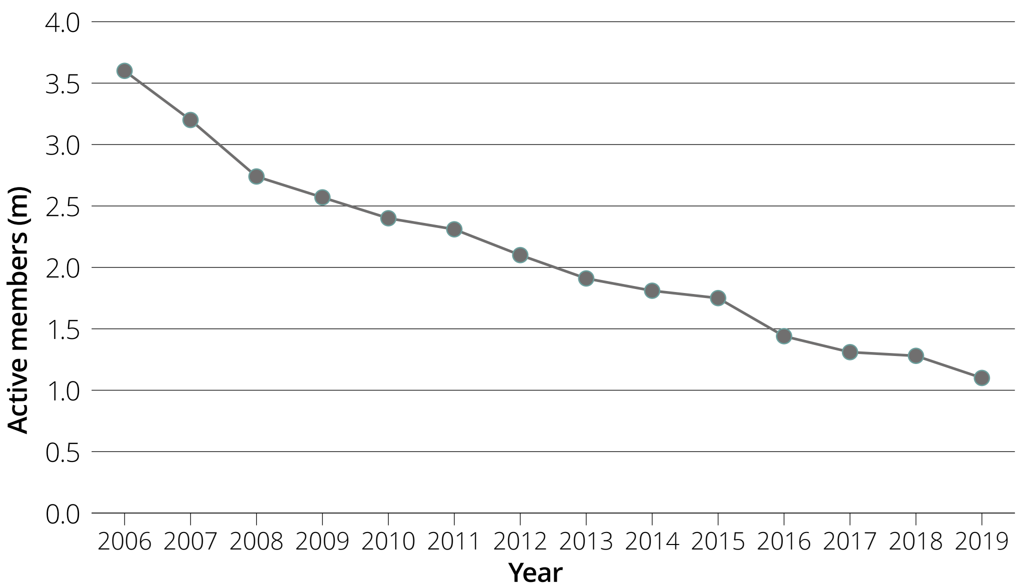


Figure 3.10 | Distribution of member type, by scheme membership size

Active members are more likely to belong to larger schemes.

Source: PPF

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

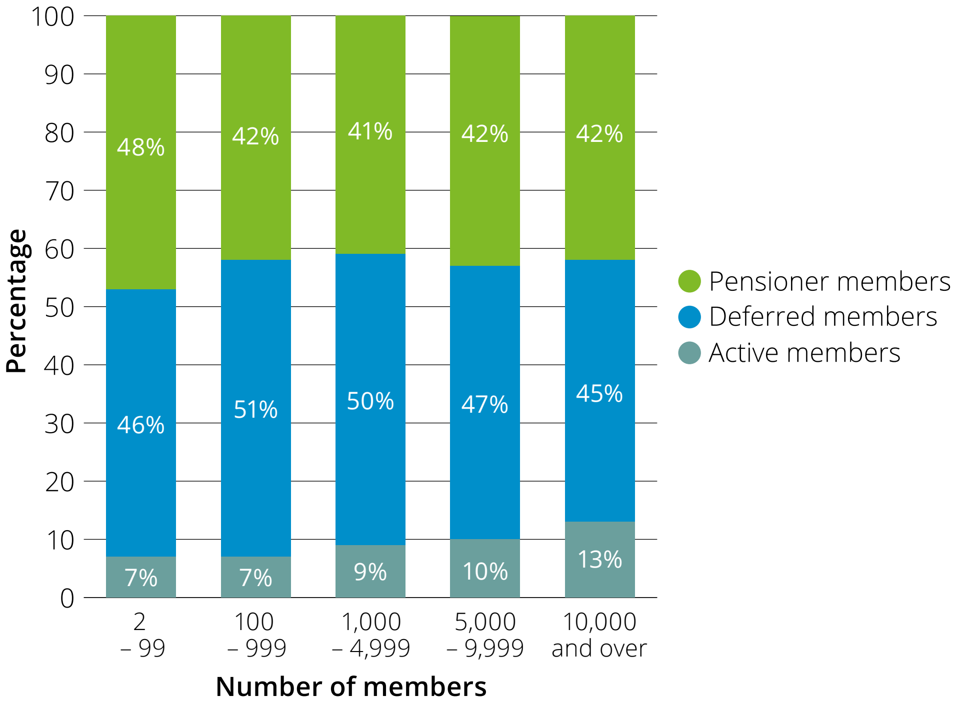
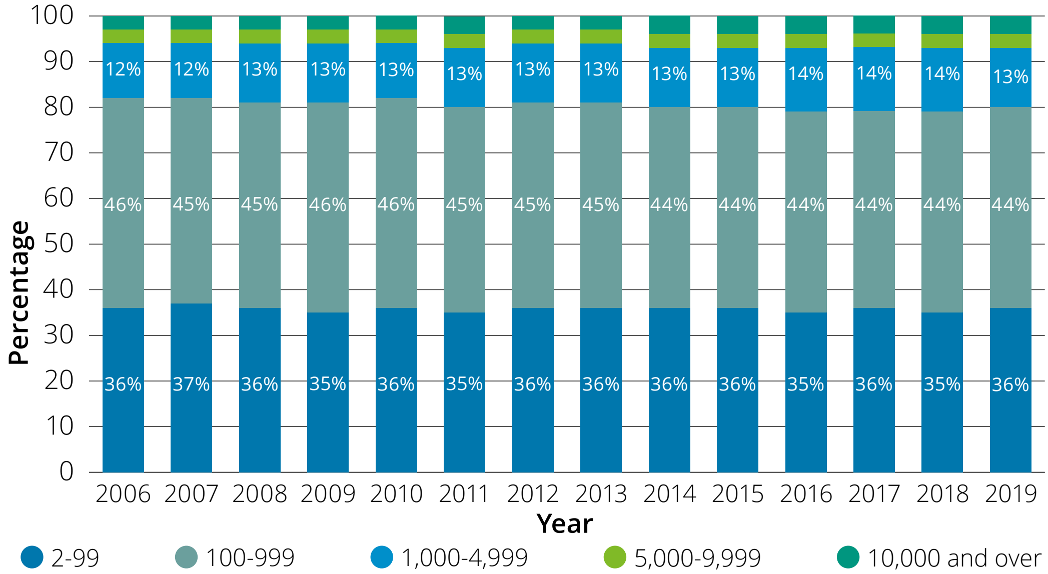


Figure 3.11 | Proportion of schemes by scheme membership size, by year

The distribution of schemes by scheme membership size has remained relatively stable over time.

Source: PPF

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



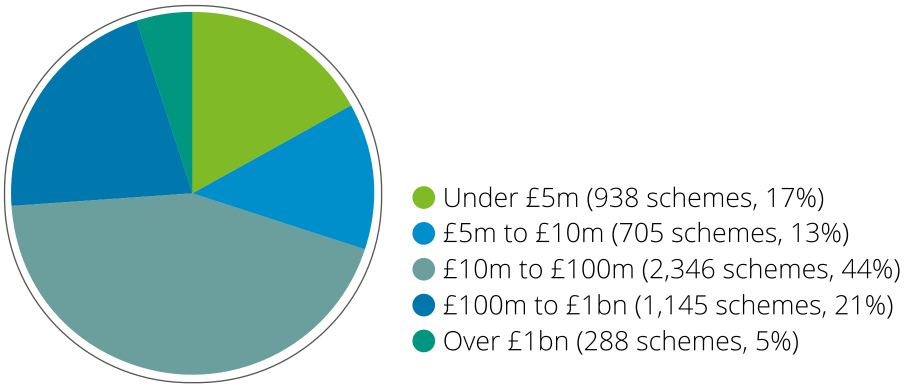
3. Scheme demographics continued

3.5 Asset size

Figure 3.12 | Distribution of schemes by asset size

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

Source: PPF



4. Scheme funding

4.1 Summary

This chapter covers funding on an s179 basis as at 31 March 2019[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 but includes an approximate allowance for the difference between the PPF level of compensation and full scheme benefits, although it should be noted this approximation has numerous limitations. Some of the statistics summarising these calculations are shown below:

	The Purple Book	
Item	**31 March 2019**	**31 March 2018**
Net s179 funding position (£bn)	**12.7 deficit**	70.5 deficit
s179 liabilities (£bn)	**1,628.0**	1,643.8
Assets (£bn)	**1,615.3**	1,573.3
Funding ratio:		
s179 basis	**99.2%**	95.7%
Estimated full buy-out basis	**77.3%**	72.9%

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 2019
10-year fixed interest gilt yield	-0.36pp
15-year fixed interest gilt yield	-0.26pp
20-year fixed interest gilt yield	-0.20pp
5–15 year index-linked gilt yield	-0.51pp
FTSE All-Share Index (TR)	+6.36%
FTSE All-World Ex-UK Index (TR)	+10.94%

pp = percentage point(s)
TR = Total Return

7 Latest effective s179 assumptions guidance is available on the PPF website.

4. Scheme funding continued

- The 3.5 percentage point increase in the s179 funding ratio over the year to 31 March 2019 can be broken down as follows:
  - The impact of market movements alone would have resulted in a decrease in the s179 funding ratio of 3.6 percentage points. This was due to lower gilt yields driving up liability values by more than the corresponding increase in asset values, offset by a rise in equity markets that helped to increase asset values.
  - The new s179 valuation assumptions for discount rates and future improvements in mortality that have been used from the end of November 2018 onwards had the opposite effect on the s179 funding ratio and increased it by 5.3 percentage points.
  - The remaining 1.8 percentage point increase in funding ratio is due to the more up-to-date scheme valuations and picture of the eligible universe available by updating to the new *Purple Book 2019* dataset.
- The s179 funding ratio is similar between 31 March 2006 and 31 March 2019. However, total assets and liability values have both more than doubled over this period, for the following reasons:
  - The significant increase in assets has arisen from increases in equity values (returns of over 100 per cent and 200 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 five 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 five per cent to 21 per cent.

4.2 Overall funding

Figure 4.1 | Key funding statistics as at 31 March 2019

The net s179 funding position of the schemes in *The Purple Book 2019* dataset at 31 March 2019 was a deficit of £12.7 billion, corresponding to a funding ratio of 99.2 per cent.

Source: PPF

	s179	Estimated full buy-out
Total number of schemes	5,422	5,422
Total assets (£bn)	1,615.3	1,615.3
Total liabilities (£bn)	1,628.0	2,090.9
Net funding position (£bn)	-12.7	-475.6
Aggregate funding ratio	99.2%	77.3%
Number of schemes in deficit	3,066	4,822
Number of schemes in surplus	2,356	600
Net funding position for schemes in deficit (£bn)	-159.8	-497.2
Net funding position for schemes in surplus (£bn)	147.1	21.6

Figure 4.2 | Reconciliation of aggregate s179 funding ratio between 31 March 2018 and 31 March 2019

The aggregate s179 funding ratio improved over the year to 31 March 2019 by 3.5 percentage points, which was mainly due to the new s179 valuation assumptions coming into force.

Source: PPF

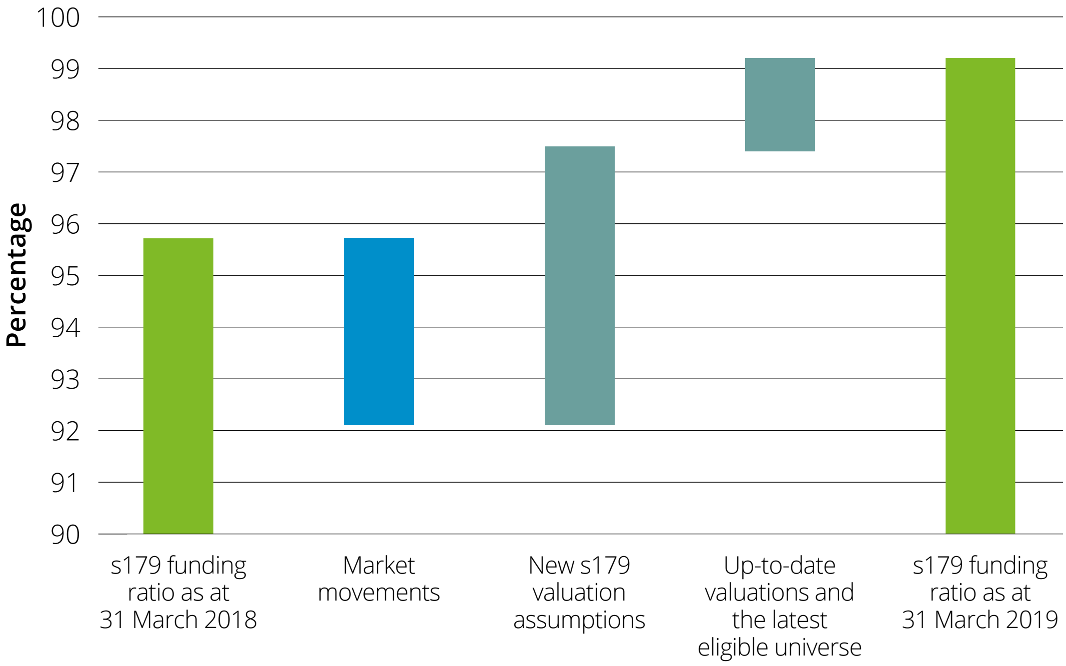


Figure 4.3 | Current and historical funding figures on an s179 basis

Funding improved over the year as total assets increased by 2.7 per cent and liabilities fell by 1.0 per cent. The deficit of schemes in deficit also improved from £188 billion to £160 billion.

			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

4. Scheme funding continued

While the aggregate s179 funding ratio at 31 March 2006 and 31 March 2019 is similar, both total assets and liability values have more than doubled over this period.

Source: PPF

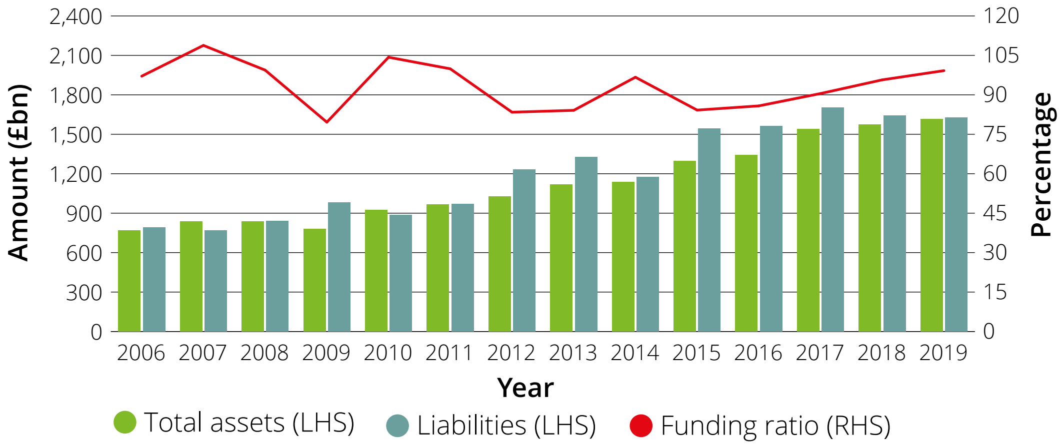


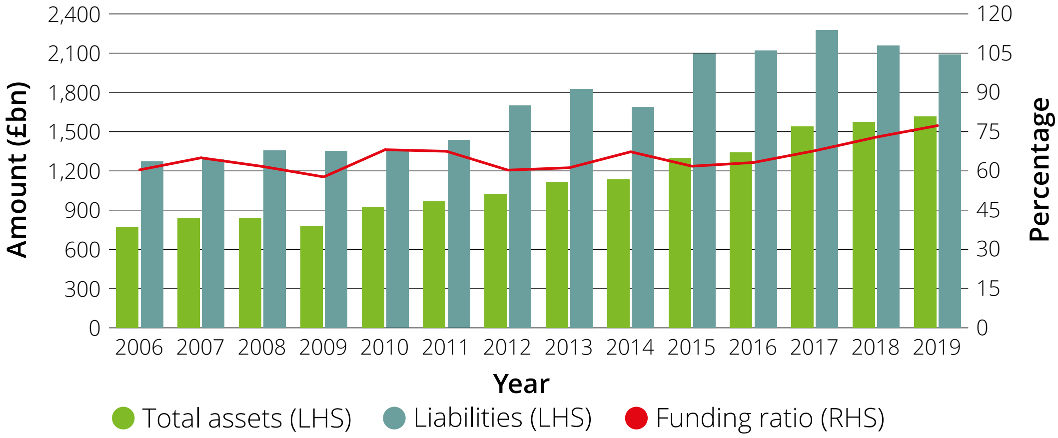
Figure 4.4 | Current and historical funding figures on an estimated full buy-out basis

The aggregate estimated full buy-out funding ratio increased from 72.9 per cent to 77.3 per cent over the year to 31 March 2019, and the net funding position improved from a deficit of £584 billion to a deficit of £476 billion.

	Estimated full buy-out					
Year	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	769.5	1,273.5	-504.0	60.4%	n/a	n/a
2007	837.7	1,289.3	-451.6	65.0%	n/a	n/a
2008	837.2	1,356.0	-518.6	61.7%	-520.4	1.6
2009	780.4	1,351.6	-571.2	57.7%	-572.3	1.1
2010	926.2	1,359.2	-433.0	68.1%	-436.5	3.5
2011	968.5	1,435.5	-467.0	67.5%	-470.7	3.7
2012	1,026.8	1,702.6	-675.8	60.3%	-677.3	1.5
2013	1,118.5	1,826.7	-708.2	61.2%	-709.9	1.7
2014	1,137.5	1,690.3	-552.8	67.3%	-558.2	5.4
2015	1,298.3	2,099.2	-800.9	61.8%	-804.9	4.0
2016	1,341.4	2,121.3	-779.9	63.2%	-784.0	4.1
2017	1,541.1	2,277.3	-736.2	67.7%	-741.6	5.4
2018	1,573.3	2,157.3	-584.0	72.9%	-594.3	10.3
2019	1,615.3	2,090.9	-475.6	77.3%	-497.2	21.6

Since 2006, there has been a significant increase in the aggregate estimated full buy-out funding ratio, from 60.4 per cent to 77.3 per cent at 31 March 2019.

Source: PPF



The s179 funding ratio has increased slightly over time, from 97.1 per cent at 31 March 2006 to 99.2 per cent at 31 March 2019. Over the same period, the estimated full buy-out funding ratio has increased by significantly more, from 60.4 per cent to 77.3 per cent. The s179 funding ratio is expected to improve less quickly than the estimated full buy-out funding ratio as all else being equal, s179 liabilities increase over time given members are no longer subject to the 90 per cent factor applied to deferred members or the compensation cap.

4.3 Analysis of funding by scheme membership size

Figure 4.5 | s179 funding ratios by size of scheme membership as at 31 March 2019

The best funded schemes were the smallest, with an aggregate s179 funding ratio of 107.0 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 – 99	1,964	16.8	15.7	1.1	107.0%	104.0%
100 – 999	2,377	147.6	152.2	-4.6	97.0%	94.2%
1,000 – 4,999	727	259.9	270.1	-10.1	96.2%	94.3%
5,000 – 9,999	161	194.6	196.3	-1.7	99.1%	97.6%
10,000 and over	193	996.5	993.9	2.6	100.3%	101.8%
Total	**5,422**	**1,615.3**	**1,628.0**	**-12.7**	**99.2%**	**98.1%**

*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 18 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 £0.3 billion.

4. Scheme funding continued

Figure 4.6 | Distribution of s179 funding ratios by size of scheme membership as at 31 March 2019

Schemes with 10,000 or more members are most likely to have an s179 funding ratio over 100 per cent.

Source: PPF

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

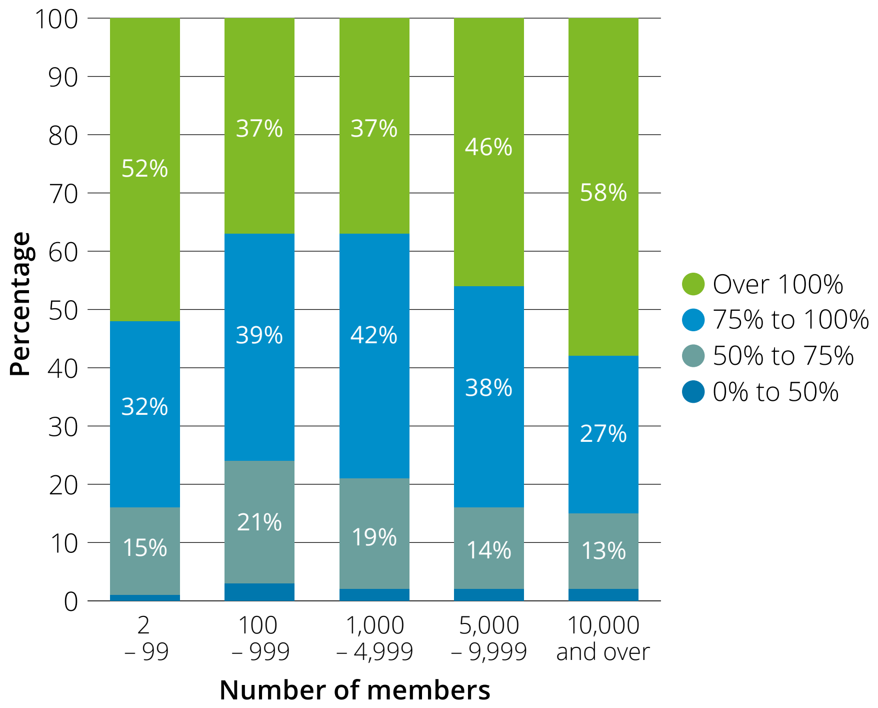


Figure 4.7 | Estimated full buy-out levels by size of scheme membership as at 31 March 2019

The best funded schemes were the smallest, with an aggregate buy-out funding ratio of 80.5 per cent for schemes with fewer than 100 members.

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 – 99	1,964	16.8	20.8	-4.0	80.5%	80.1%
100 – 999	2,377	147.6	197.9	-50.3	74.6%	72.7%
1,000 – 4,999	727	259.9	344.5	-84.6	75.4%	74.4%
5,000 – 9,999	161	194.6	250.2	-55.7	77.8%	74.2%
10,000 and over	193	996.5	1,277.4	-280.9	78.0%	79.1%
Total	**5,422**	**1,615.3**	**2,090.9**	**-475.6**	**77.3%**	**76.0%**

*18 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 £0.3 billion.

Figure 4.8 | Distribution of estimated full buy-out funding ratios by size of scheme membership as at 31 March 2019

Schemes with between 100 and 5,000 members are more likely to have an estimated full buy-out funding ratio under 75 per cent.

Source: PPF

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

4.4 Analysis of funding by scheme maturity

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

Figure 4.9 | Analysis of s179 funding ratios by scheme maturity as at 31 March 2019

More mature schemes tend to have higher funding ratios.

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	1,380	207.2	257.7	-50.5	80.4%	85.7%
Between 25% and 50%	2,666	964.0	975.8	-11.8	98.8%	95.1%
Between 50% and 75%	1,138	409.7	368.9	40.7	111.0%	113.7%
Between 75% and 100%	238	34.4	25.6	8.8	134.4%	130.4%
Total	**5,422**	**1,615.3**	**1,628.0**	**-12.7**	**99.2%**	**98.1%**

*18 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 £0.3 billion.

4. Scheme funding continued

Figure 4.10 | Distribution of funding ratios on an s179 basis by scheme maturity as at 31 March 2019

Funding ratios improve with scheme maturity. For the most mature group, 87 per cent of schemes are over 100 per cent funded.

Source: PPF

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

4.5 Analysis of funding by scheme status

Figure 4.11 | Analysis of s179 funding ratios by scheme status as at 31 March 2019

Schemes that were open to new members were the worst funded, with an aggregate funding ratio of 86.0 per cent.

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	606	290.8	338.0	-47.2	86.0%	91.9%
Closed to new members	2,375	973.1	930.6	42.5	104.6%	100.1%
Closed to new benefit accrual	2,361	348.6	357.1	-8.5	97.6%	97.2%
Winding up	80	2.8	2.4	0.5	118.9%	115.8%
Total	**5,422**	**1,615.3**	**1,628.0**	**-12.7**	**99.2%**	**98.1%**

*18 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 £0.3 billion.

Figure 4.12 | Distribution of schemes by s179 funding ratios within scheme status groups as at 31 March 2019

Open schemes are 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.

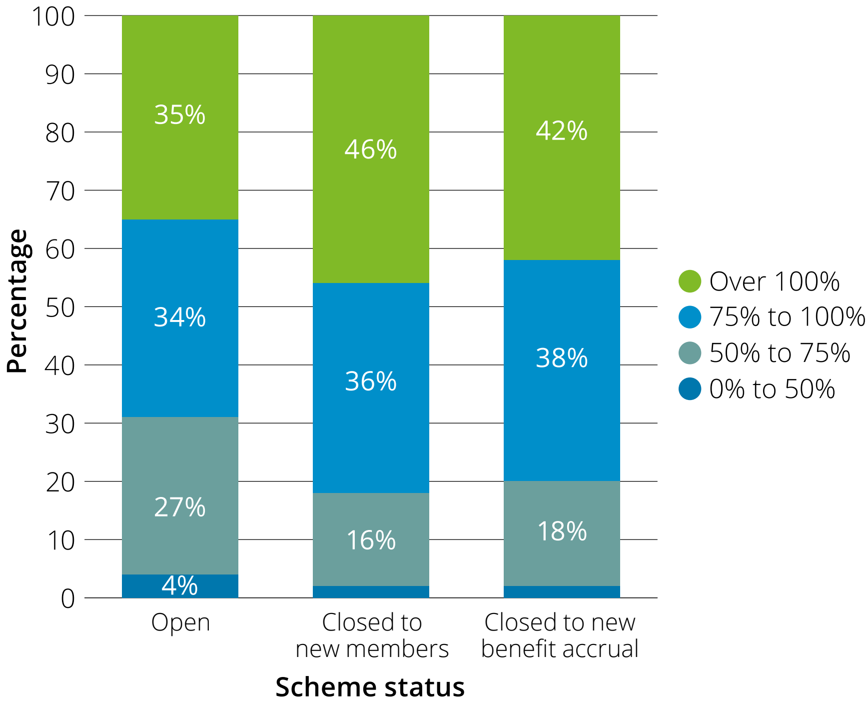


Figure 4.13 | Analysis of estimated full buy-out funding ratios by scheme status as at 31 March 2019

Open schemes tend to be worse funded than schemes that are closed to new members or new benefit accrual.

Source: PPF

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

Status	Number of schemes	Total assets (£bn)	Liabilities (£bn)	Net funding position (£bn)	Aggregate funding ratio	Simple average funding ratio*
Open	606	290.8	424.8	-134.0	68.4%	74.9%
Closed to new members	2,375	973.1	1,202.7	-229.6	80.9%	77.2%
Closed to new benefit accrual	2,361	348.6	460.4	-111.8	75.7%	74.5%
Winding-up	80	2.8	3.0	-0.2	94.0%	91.3%
Total	**5,422**	**1,615.3**	**2,090.9**	**-475.6**	**77.3%**	**76.0%**

*18 schemes with funding ratios over 200 per cent (on a full buy-out measure) were excluded from the simple averages to avoid distortions. Almost all of these schemes were small, with total assets of £0.3 billion.

4. Scheme funding continued

Figure 4.14 | Distribution of schemes by estimated full buy-out funding ratios within scheme status groups as at 31 March 2019

The distribution of funding ratio on a buy-out basis is broadly similar across scheme status groups.

Source: PPF

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

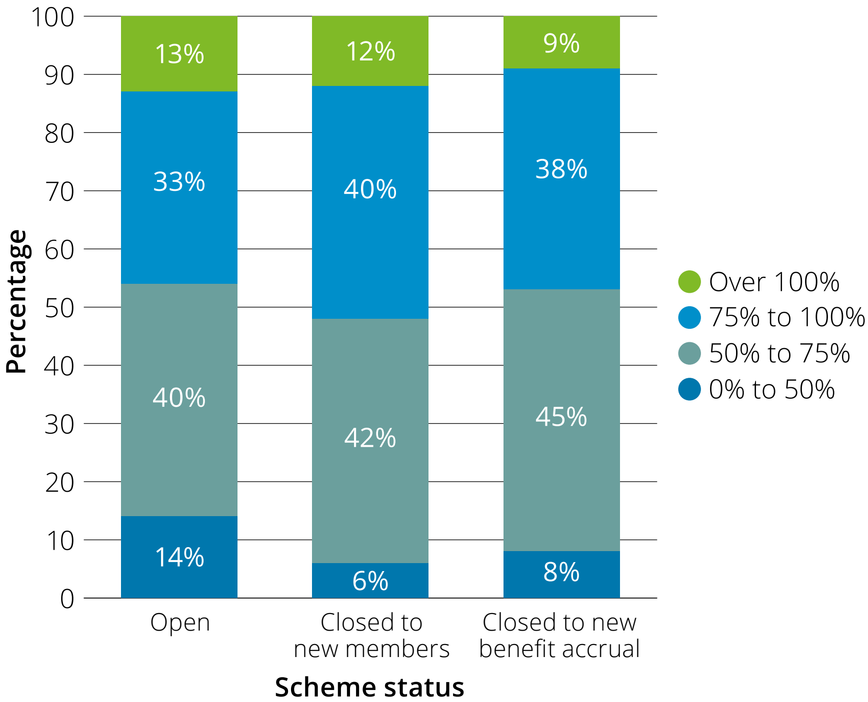
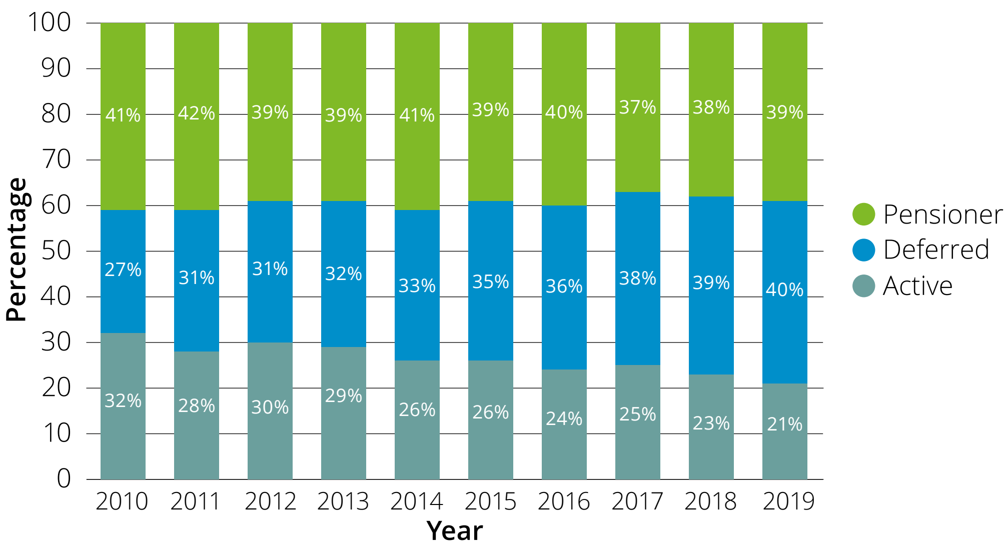


Figure 4.15 | s179 liabilities by member status in current and historical *The Purple Book* datasets

The proportion of liabilities that relates to actives has reduced by 5 per cent over the last five years.

Source: PPF

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



5. Funding sensitivities

5.1 Summary

- This chapter shows how the funding of DB schemes and markets have changed since 2006, and how the funding of DB schemes at 31 March 2019 would change as a result of plausible changes in markets and longevity.
- Section 5.2 of Chapter 5 gives 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' *The Purple Books*.
- The estimated funding position (total assets less total liabilities) 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.
- Section 5.3 gives various funding sensitivities. All of these are on an s179 basis, taking the funding position as at 31 March 2019[8] as the base and using *The Purple Book 2019* 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. By March 2019 this trend has reversed and both measures have recovered to their 2006 levels.
- The proportion of schemes in deficit on an s179 basis was 57 per cent in March 2019, which is lower than the average (since March 2006) of 72 per cent.

Funding sensitivities as at 31 March 2019

- A 0.1 percentage point (10 basis points) rise in both nominal and real gilt yields increases the 31 March 2019 net funding position by £18.6 billion from £12.7 billion to £5.9 billion. A five per cent rise in equity prices would improve the net funding position by £20.0 billion.
- A 0.1 percentage point (10 basis points) reduction in both nominal and real gilt yields raises aggregate scheme liabilities by 1.9 per cent and raises aggregate scheme assets by 0.8 per cent. A five per cent increase in equity markets increases scheme assets by 1.2 per cent.
- If individuals live two years longer than expected, s179 liabilities would increase by 7.6 per cent, or £124.2 billion.

5.2 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 *The 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.

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

5. Funding sensitivities continued

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

The aggregate s179 funding ratio and net funding position have recovered to their March 2006 levels.

Source: PPF

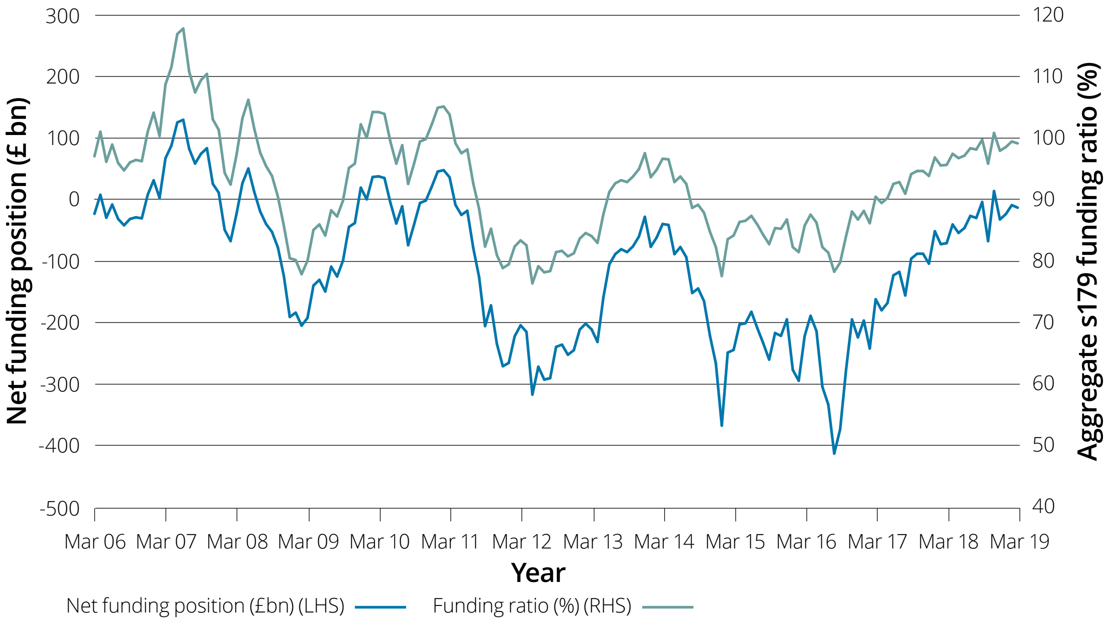


Figure 5.2 | Historical movements in assets and s179 liabilities of schemes in *The Purple Book* datasets

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

Source: PPF

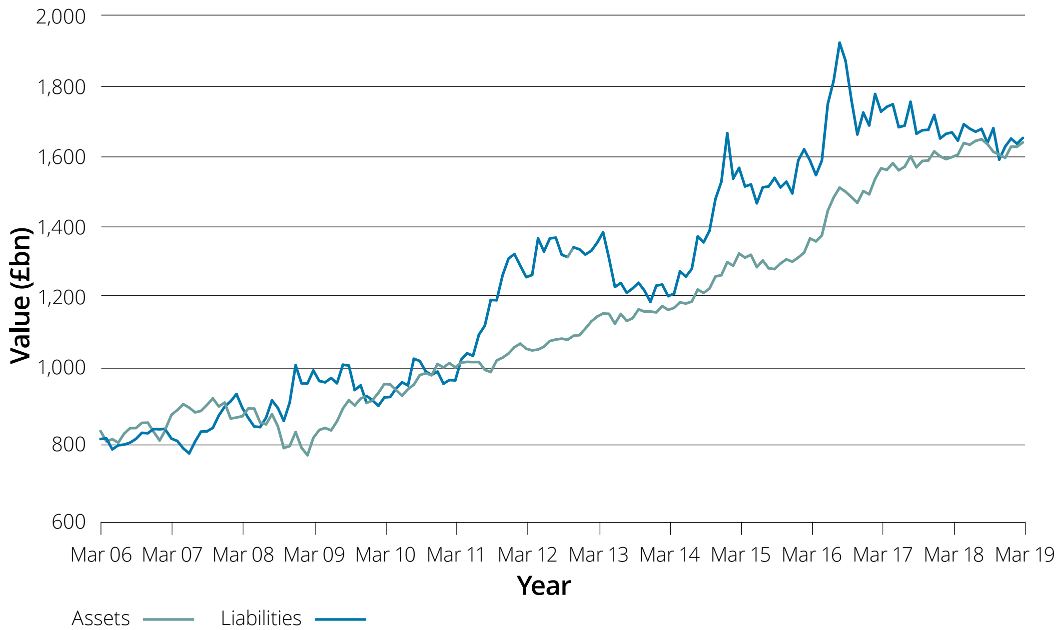
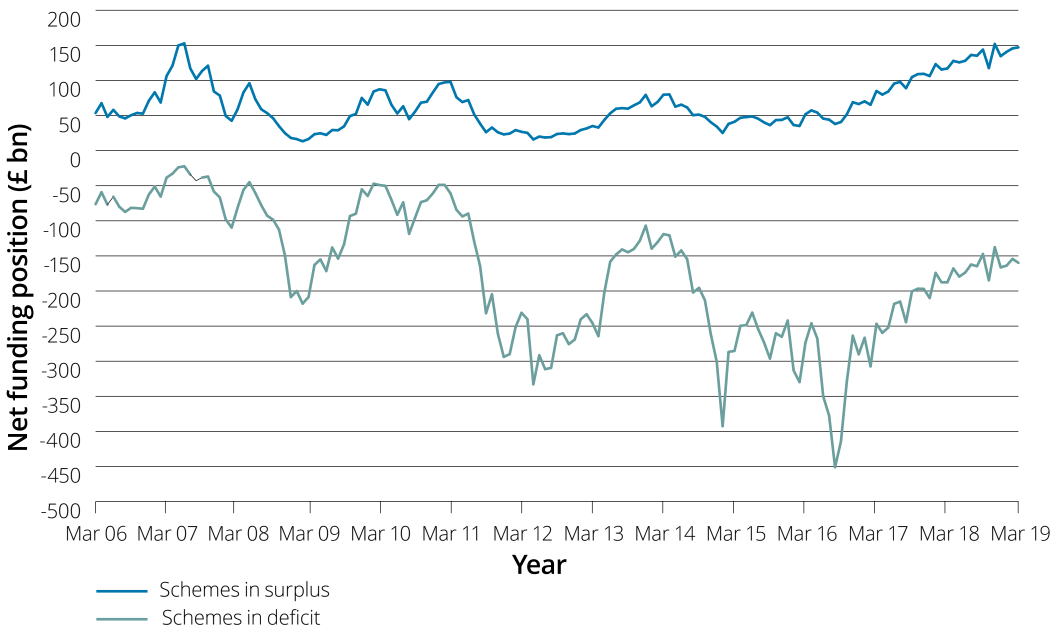


Figure 5.3 | Historical aggregate funding position for schemes in deficit and surplus

The deficit of schemes in deficit was at its largest in August 2016 at £451 billion. At 31 March 2019 this deficit had fallen to around £160 billion.

Source: PPF

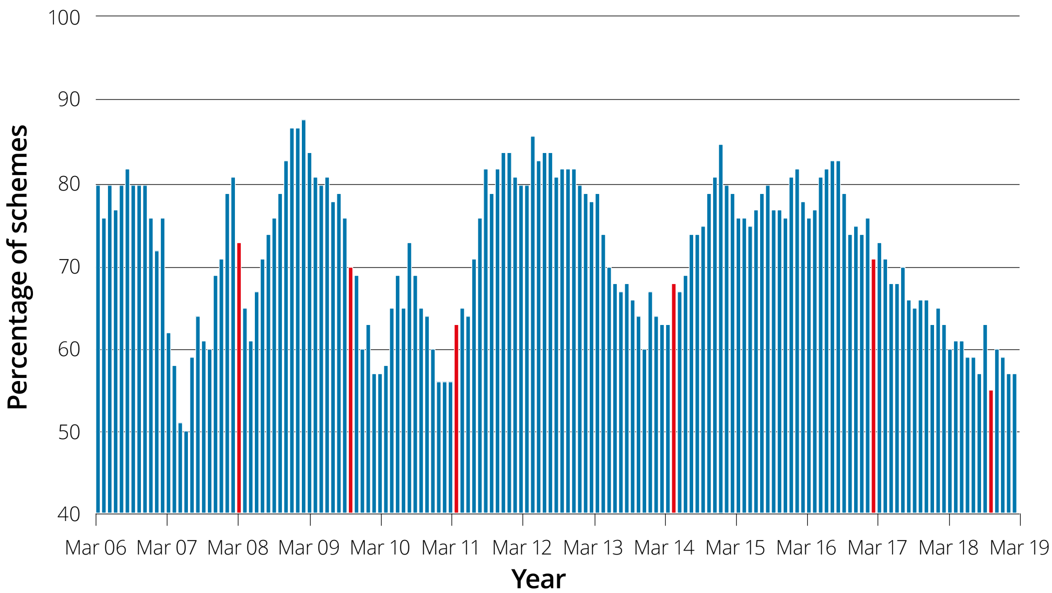


The funding position of schemes in surplus has been more stable over time than the funding position of schemes in deficit.

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

In March 2019 57 per cent of schemes were in deficit.

Source: PPF



The red 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.

5. Funding sensitivities continued

Figure 5.5 | Movements in gilt yields

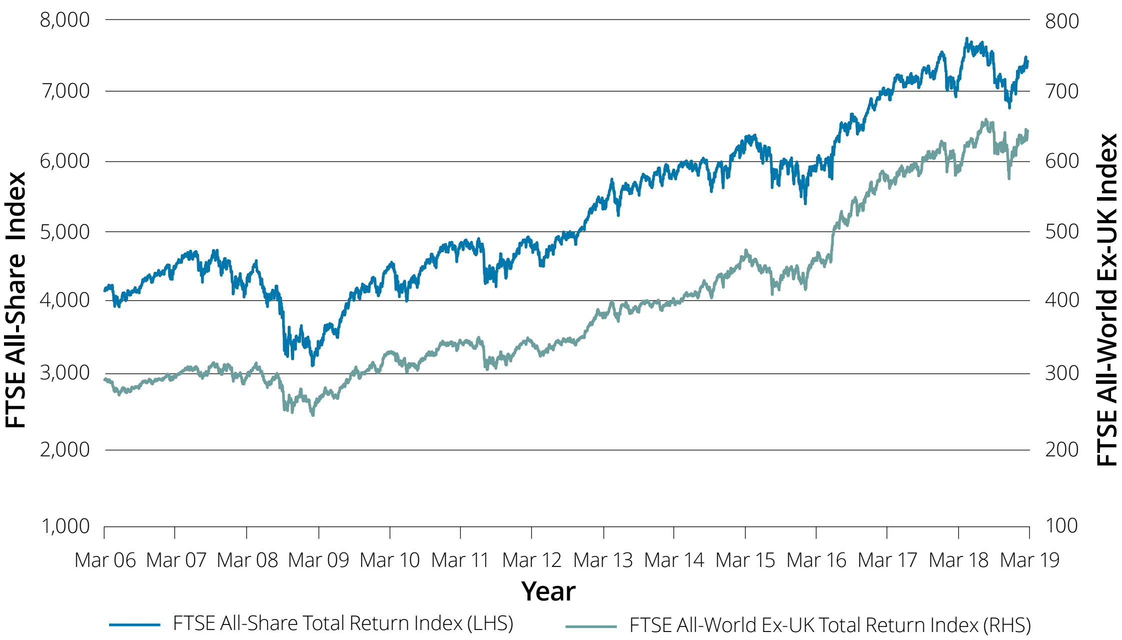
Gilt yields reached their all-time low in August 2016, but had recovered a little at 31 March 2019.

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 in 2018, but had reduced slightly by 31 March 2019.

Source: Bloomberg



5.3 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 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 -£12.7 billion as at 31 March 2019

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%	-37.8	-19.6	-1.3	17.2	35.9	54.6	73.5
5.0%	-47.8	-29.6	-11.2	7.3	25.9	44.6	63.5
2.5%	-57.8	-39.6	-21.2	-2.7	15.9	34.7	53.5
0.0%	-67.8	-49.6	-31.2	**-12.7**	5.9	24.7	43.6
-2.5%	-77.8	-59.5	-41.2	-22.7	-4.1	14.7	33.6
-5.0%	-87.7	-69.5	-51.2	-32.7	-14.1	4.7	23.6
-7.5%	-97.7	-79.5	-61.2	-42.7	-24.1	-5.3	13.6

A 0.1 point rise in both nominal and real gilt yields would have improved the end-March 2019 s179 net funding position by £18.6 billion from -£12.7 billion (bold) to £5.9 billion (shaded). That's slightly less than the impact of a 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 2019

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

Source: PPF

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%	104.2	103.4	102.6	101.9	101.1	100.3	99.5
5.0%	103.6	102.8	102.0	101.2	100.5	99.7	98.9
2.5%	103.0	102.2	101.4	100.6	99.8	99.1	98.3
0.0%	102.4	101.6	100.8	**100.0**	99.2	98.5	97.7
-2.5%	101.8	101.0	100.2	99.4	98.6	97.8	97.1
-5.0%	101.1	100.3	99.5	98.8	98.0	97.2	96.5
-7.5%	100.5	99.7	98.9	98.1	97.4	96.6	95.8

A five per cent increase in equity prices would raise scheme assets by 1.2 per cent (shaded). A 0.1 point decrease in gilt yields would increase scheme assets by 0.8 per cent (shaded).

5. Funding sensitivities continued

Figure 5.9 | Impact of changes in gilt yields on s179 liabilities as at 31 March 2019

A 0.1 percentage point movement in gilt yields would impact s179 liabilities by 1.9 per cent.

Source: PPF

	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	5.7%	3.8%	1.9%	-1.9%	-3.8%	-5.7%

Figure 5.10 | Impact of changes in nominal or real gilt yields on s179 liabilities as at 31 March 2019 (base = £1,628.0 billion)

As at 31 March 2019, the s179 liabilities were over twice as sensitive to changes in nominal yields as to changes in real yields.

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.

	Impact on s179 liabilities			
	Change in nominal yields		Change in real yields	
	-0.1pp	0.1pp	-0.1pp	0.1pp
£ billions	1,651.1	1,605.0	1,637.2	1,618.9
Percentage change	1.4%	-1.4%	0.6%	-0.6%

Figure 5.11 | Impact of changes in life expectancy assumptions on s179 liabilities as at 31 March 2019 (base = £1,628.0 billion)

If individuals live two years longer than expected, s179 liabilities would increase by £124.2 billion, or 7.6 per cent.

Source: PPF

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

	s179 liabilities (£bn)	% change from base
Age rating +2 years	1,506.2	-7.5%
Age rating -2 years	1,752.2	7.6%

6. Insolvency risk

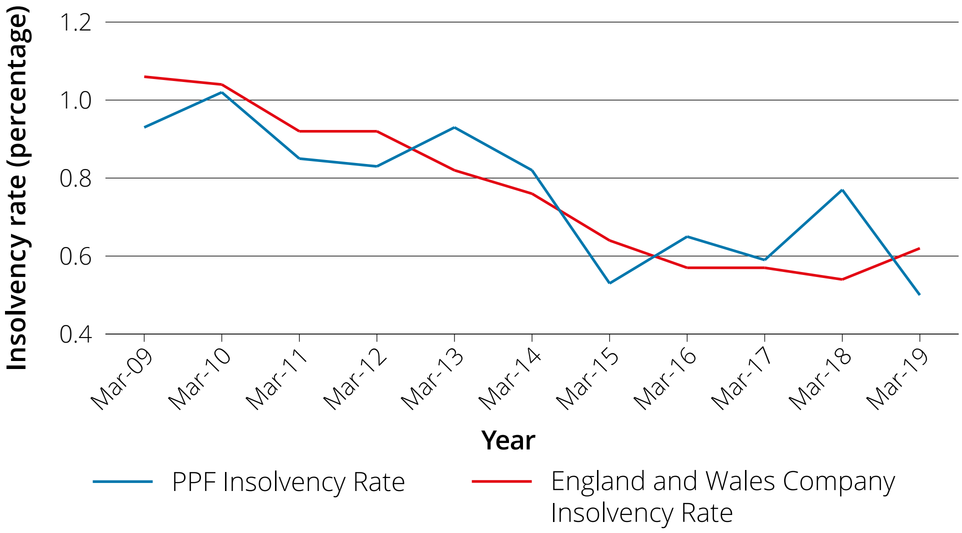
Summary

- 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.
- Different sources of insolvency data have been reflected in this chapter compared with the corresponding chapter in last year's *The Purple Book*. This has been done to reflect latest views on the insolvency data that is most appropriate for showing trends in insolvencies in the PPF universe.
- The average insolvency rate in the PPF universe has decreased by 0.3 percentage points to 0.5 per cent at 31 March 2019.
- Conversely, the average annual insolvency rate of companies in England and Wales increased by around 0.1pp at 31 March 2019. This was driven by an increase of over 10 per cent in the number of annual England and Wales company insolvencies.
- UK real GDP growth was 1.8 per cent in Q1 2019, up from 1.2 per cent in Q1 2018.
- 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 decreased over the last year by 0.3 percentage points to 0.5 per cent and is now at its lowest level since 31 March 2009.

Source: PPF, Office for National Statistics (ONS)



* Around 2.7 million UK companies are VAT/PAYE registered with HMRC. The England and Wales Company Insolvency Rate has been calculated by the ONS based on these companies, where insolvencies in England and Wales account for around 95 per cent of UK insolvencies. In comparison, there are around 14,000 companies in the PPF universe, or around 12,500 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 over 10 per cent in the last year despite the increase in UK real GDP, contrary to the overall trend between these two measures.

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.

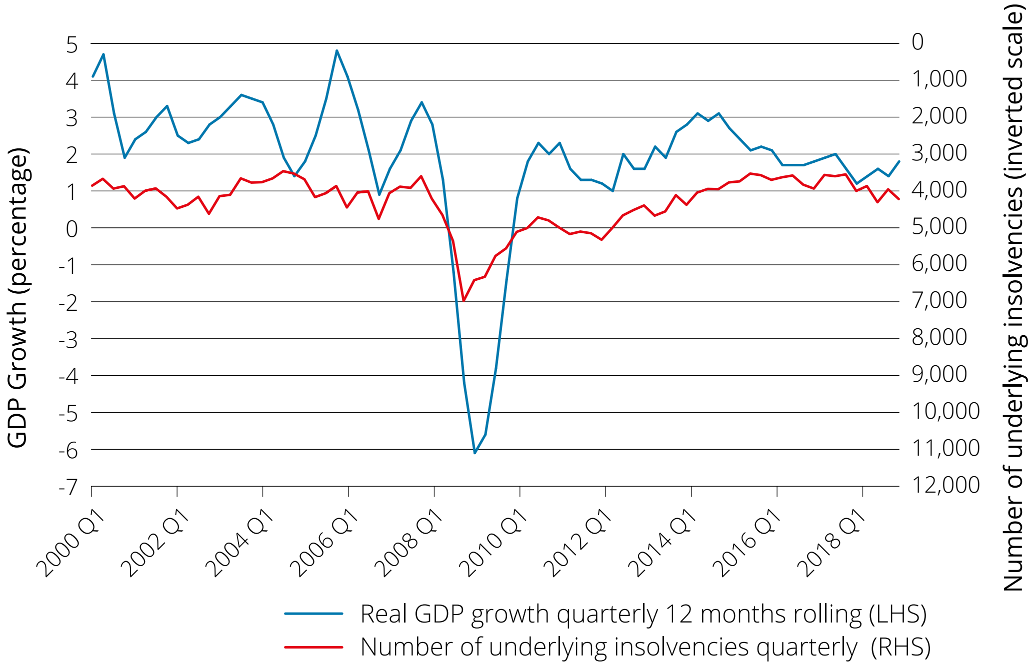
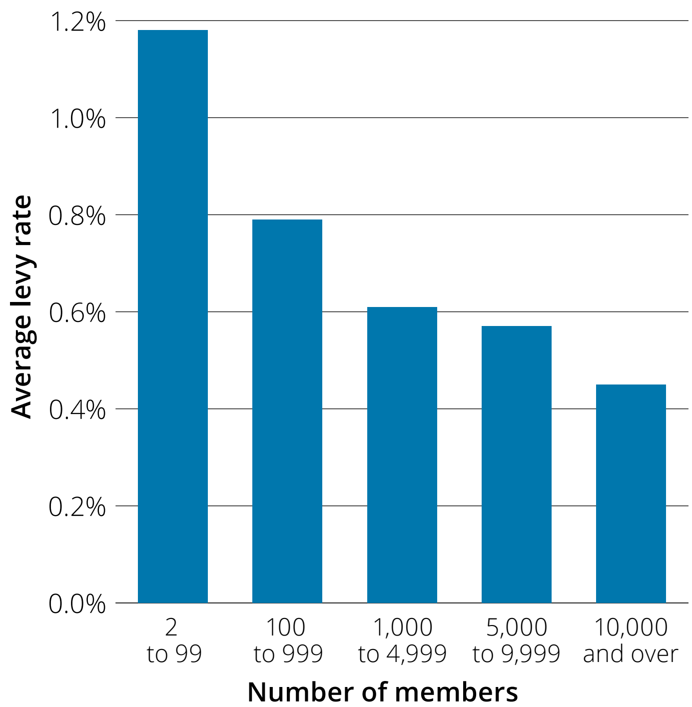


Figure 6.3 | Average levy rates of sponsoring companies by scheme membership size, as at 31 March 2019*

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

7.1 Summary

- This chapter contains information on how DB schemes have invested scheme assets since 2006 and how asset allocations in *The Purple Book 2019* dataset vary according to different scheme characteristics, such as scheme size.
- Around 99 per cent of schemes' asset allocations in *The Purple Book 2019* dataset were at a date in 2017 or 2018.
- Continuing the long-term trends, the aggregate proportion of schemes' assets invested in equities fell from 27.0 per cent to 24.0 per cent while the proportion in bonds rose from 59.0 per cent to 62.8 per cent.
- Within bonds, the proportions held were broadly unchanged from last year with index-linked bonds making up the biggest proportion at 46.2 per cent. Corporate bonds accounted for 28.4 per cent of the bonds held and Government fixed interest bonds contributed 25.4 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 18.6 per cent to 16.6 per cent, while the proportions of overseas-quoted and unquoted/private equities both increased slightly to 69.7 per cent and 13.7 per cent respectively.
- Smaller schemes tend to hold higher proportions in UK equities with smaller proportions in 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 bonds rises and the proportion of equities falls.

7.2 Asset data[9]

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 2017 or 2018.

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 2019* dataset
2006 – 2012	4	0.0%
2013	1	0.0%
2014	3	0.1%
2015	13	0.2%
2016	21	0.4%
2017	1,825	33.7%
2018	3,542	65.3%
2019	13	0.2%
Total	**5,422**	**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.

9 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 2019* dataset, the proportion invested in bonds rose while the proportion in equities fell, continuing the long-term trend.

Year/ *The Purple Book* dataset	Asset class			*Breakdown of other investments*					
	Equities	Bonds	Other investments	*Property*	*Cash and deposits*	*Insurance policies*	*Hedge funds**	*Annuities**	*Miscellaneous*
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%

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.

*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.

Source: PPF

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

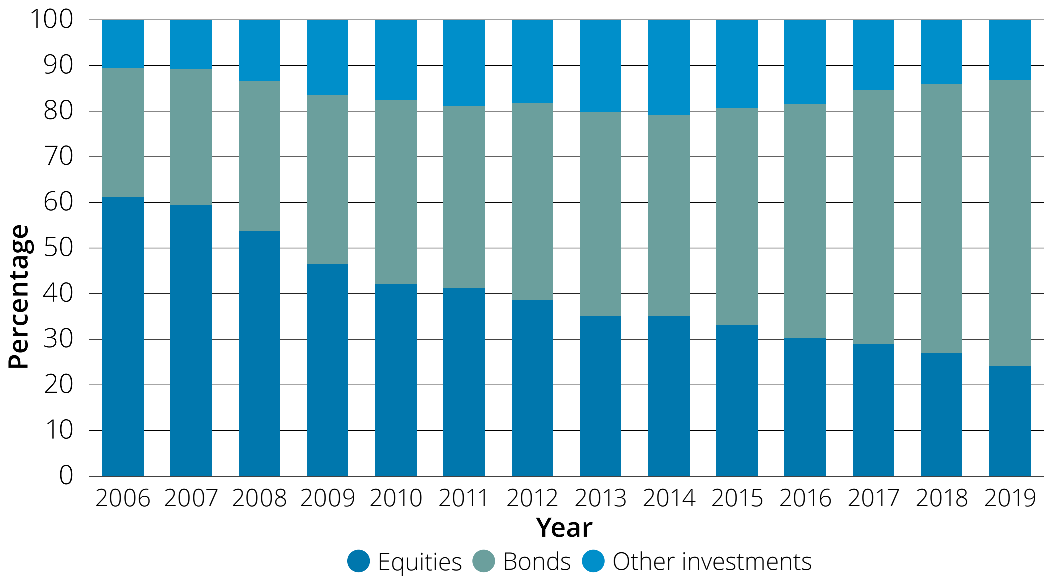


Figure 7.3 | Asset allocation: simple averages

A comparison of simple and weighted averages in 2019 shows there is a greater weighted allocation to bonds and smaller allocations to equities and other investments.

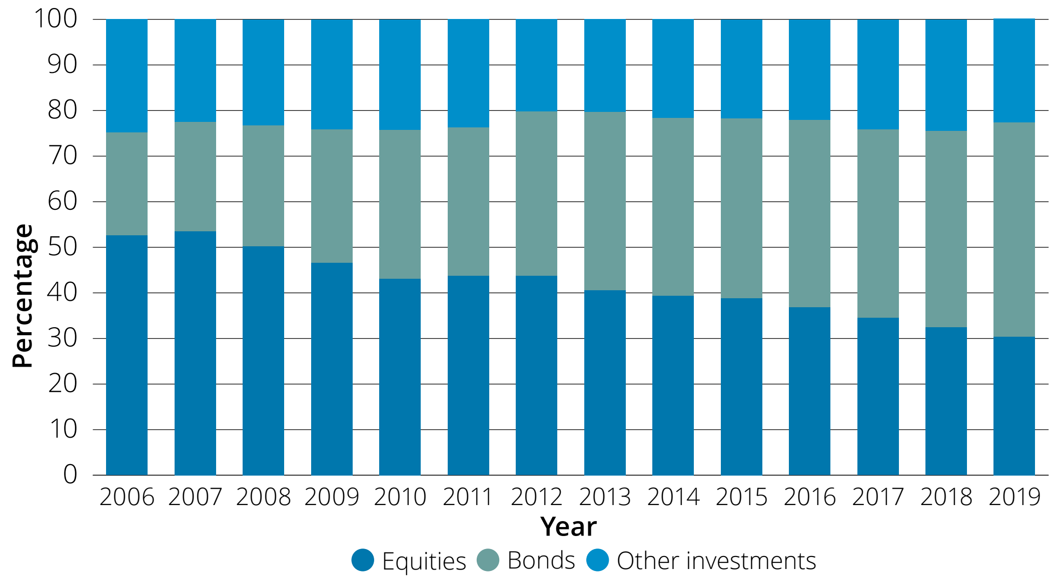
Year/ *The Purple Book* dataset	Asset class			Breakdown of other investments					
	Equities	Bonds	Other investments	*Property*	*Cash and deposits*	*Insurance policies*	*Hedge funds**	*Annuities**	*Miscellaneous*
2006	52.6%	22.6%	24.8%	2.1%	3.9%	14.9%	n/a	n/a	3.6%
2007	53.5%	24.0%	22.5%	2.5%	3.7%	13.7%	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%

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.

*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.

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 this year.

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%

Source: PPF

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

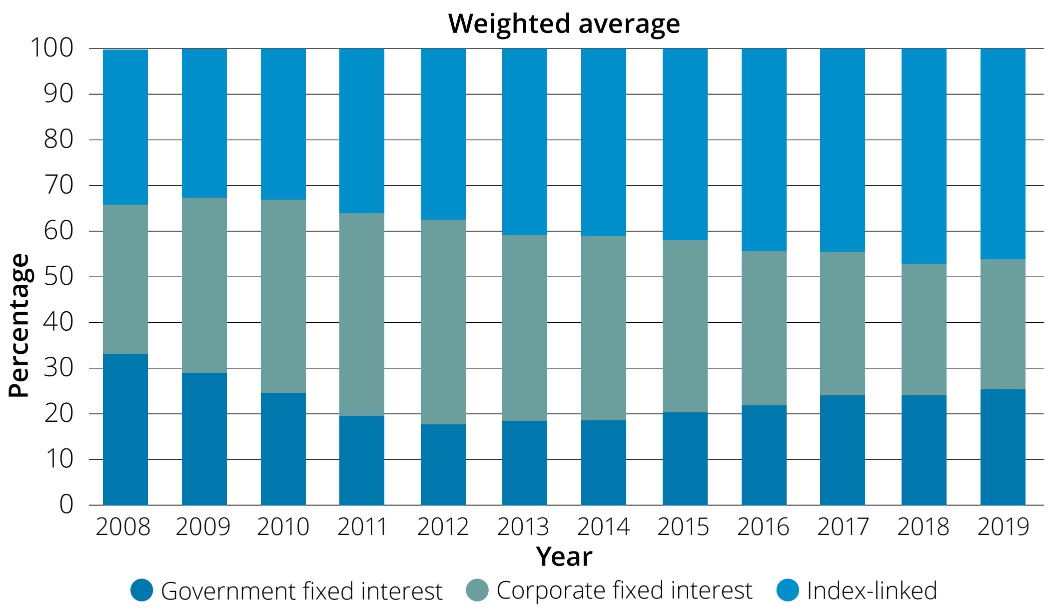


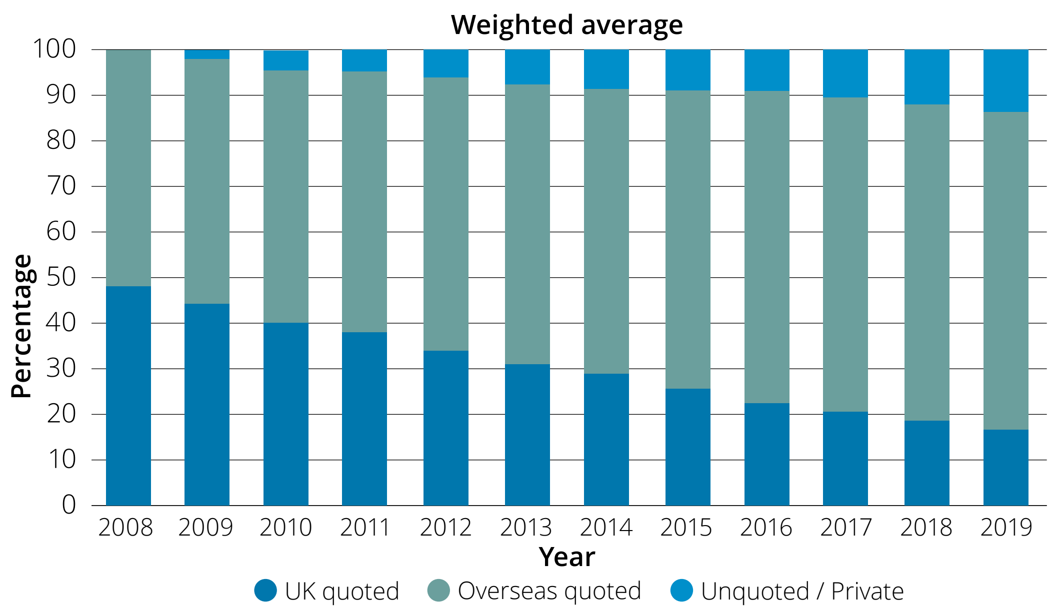
Figure 7.5 | Equity splits

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%

Source: PPF

Note: the rows 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 and annuities display the opposite relationship.

Source: PPF

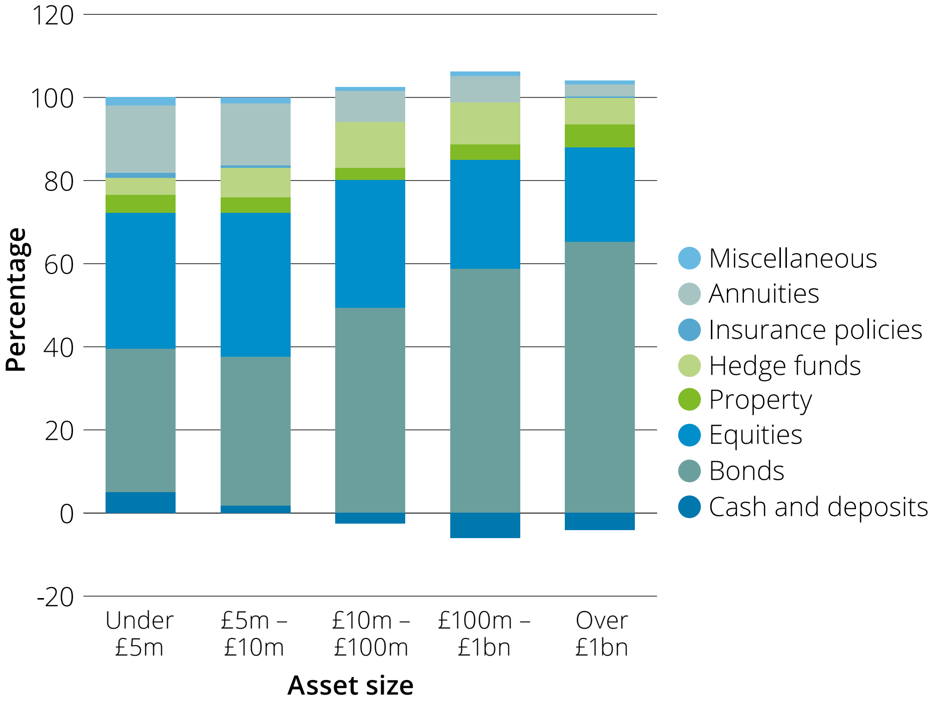


Figure 7.7 | Weighted averages of equity and bond holdings split by asset size

Larger schemes tend to hold more in overseas equities than in UK equities and more in index-linked securities than in conventional government bonds and corporate bonds.

Source: PPF

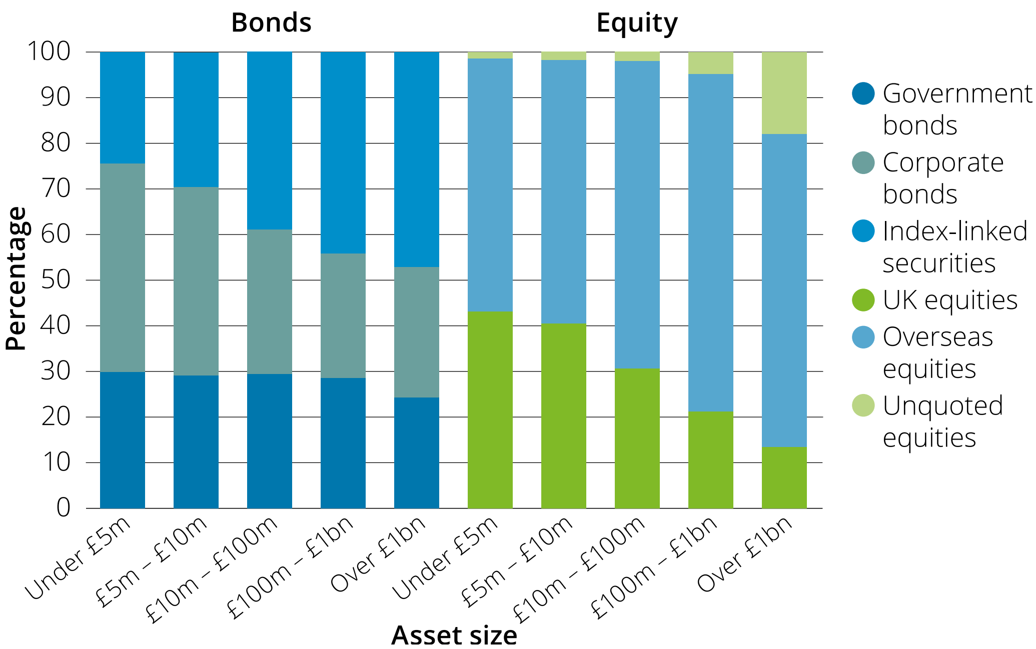
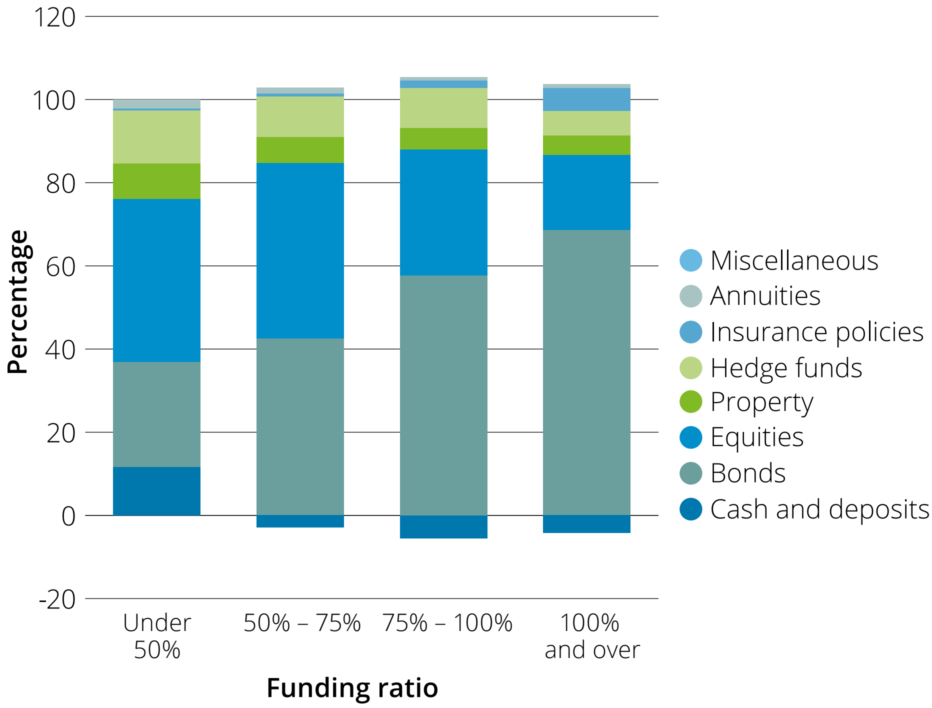


Figure 7.8 | Weighted average asset allocation by s179 funding ratio

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

Source: PPF



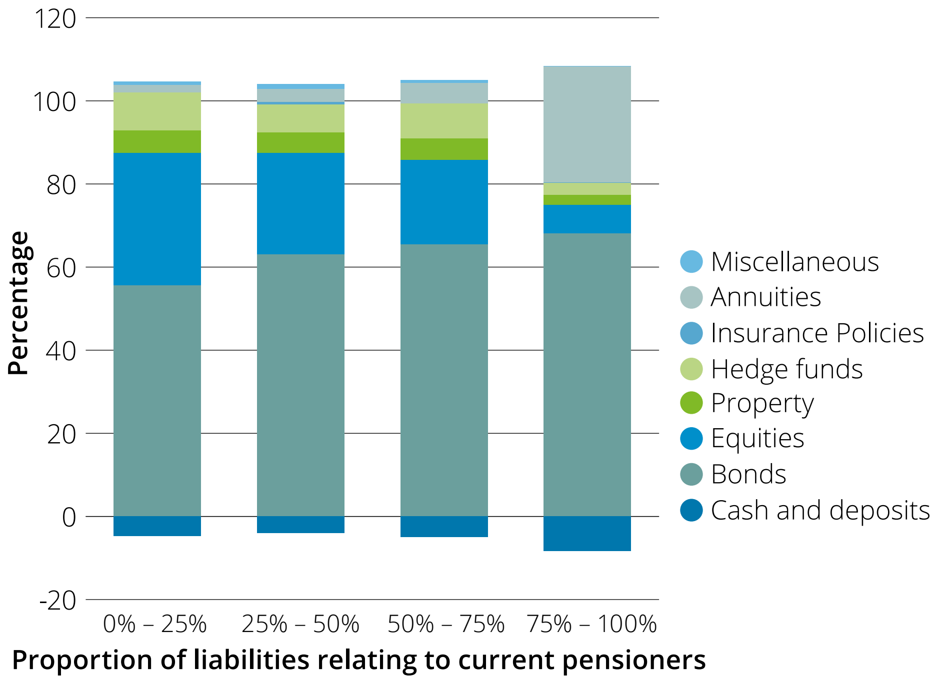
Schemes that are in surplus on an s179 basis have the greatest proportion of assets invested in bonds, which is consistent with the stability of the s179 funding position of these schemes over time as shown in Figure 5.3.

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

As scheme maturity increases, the proportion of bonds rises and 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

8.1 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 2019/20 levy year was 419, compared with 519 in 2018/19. This reflects a reduction in the number of Type A and Type B Contingent Assets (employer parent or group guarantees and security over holdings of cash, real estate and/or securities).
- Based only on current recovery plans in place, total annual recovery plan payments are indicated to decrease by around 80 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 £14.0 billion in 2019 to around £2.7 billion in 2029. 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 12[10], the average recovery plan length was 7.3 years, just over half a year less than that of Tranche 9 (comparable given the three-year valuation cycle) and half a year shorter than Tranche 11. The average funding ratio as measured by assets divided by Technical Provisions was 88.5 per cent in Tranche 12, 0.9 percentage points lower than Tranche 9.
- Technical Provisions as a percentage of s179 liabilities dropped to 97.1 per cent from 102.5 per cent in Tranche 9. There was also a fall in Technical Provisions as a percentage of buy-out liabilities, from 71.5 per cent to 68.7 per cent.
- Total risk transfer business covering buy-outs, buy-ins and longevity swaps amounted to £197 billion between the end of 2007 and the second quarter of 2019. 36 per cent of these deals were longevity swaps.
- Over the year to 30 June 2019, the total value of risk transfer deals was £37 billion, up from £22 billion in the year to 30 June 2018 and only slightly lower than the record of £39 billion in the year to 30 June 2014.

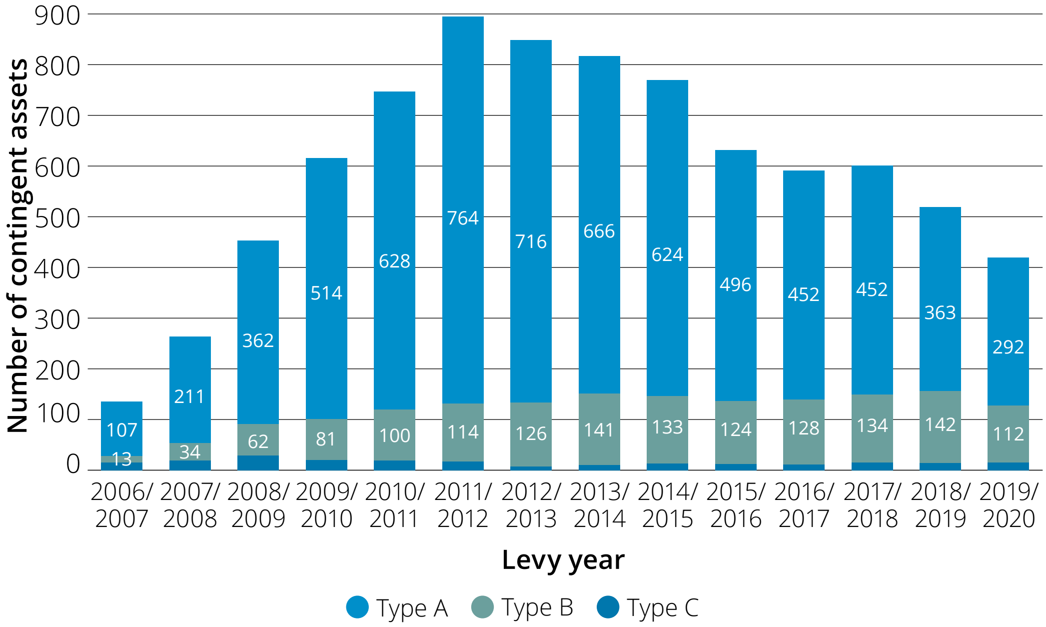
10 Tranche 12 covers schemes with valuation dates between 22 September 2016 and 21 September 2017.

8.2 Contingent assets

Figure 8.1 | Contingent assets by type

The number of recognised contingent assets is the lowest since levy year 2007/2008.

Source: PPF



Type A Contingent Assets are parent/group companies' guarantees to fund the scheme, up to a pre-arranged 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.

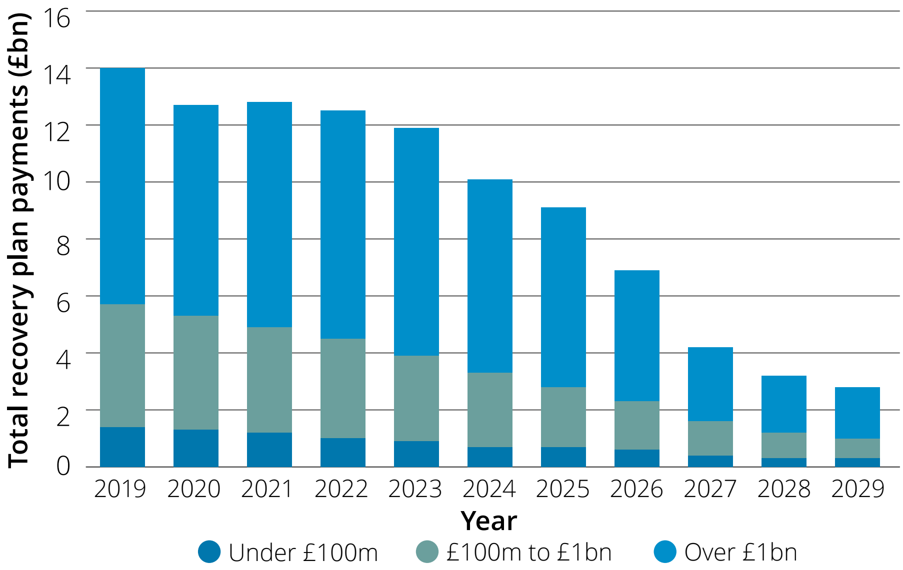
8. Risk reduction continued

8.3 Recovery plan payments

Figure 8.2 | Planned recovery plan payments until 2029 by asset size

Total annual recovery plan payments are planned to reduce by around 80 per cent over the next 10 years, from around £14.0 billion in 2019 to around £2.7 billion in 2029.

Source: TPR



8.4 The scheme funding regime

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

In Tranche 12, the average recovery period was 7.3 years, just under a year shorter than Tranche 9 (comparable given the three-year valuation cycle).

Source: 'Scheme funding analysis 2019: Annex', TPR, June 2019

Notes:
(1) Valuation dates run from 22 September to 21 September.

(2) 77.6 per cent of schemes with Tranche 12 valuations reported in respect of Tranches 9, 6, and 3.

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
3	2007-08	1,840	8.6	81.3%	110.7%	74.5%
6	2010-11	1,652	7.7	82.3%	109.7%	71.3%
9	2013-14	1,530	8.0	89.4%	102.5%	71.5%
10	2014-15	1,403	7.5	88.6%	96.9%	68.9%
11	2015-16	1,462	7.8	87.0%	95.8%	69.2%
12[11]	2016-17	1,452	7.3	88.5%	97.1%	68.7%

11 Tranche 12 covers schemes with valuation dates between 22 September 2016 and 21 September 2017.

8.5 Buy-out, buy-in and longevity hedging

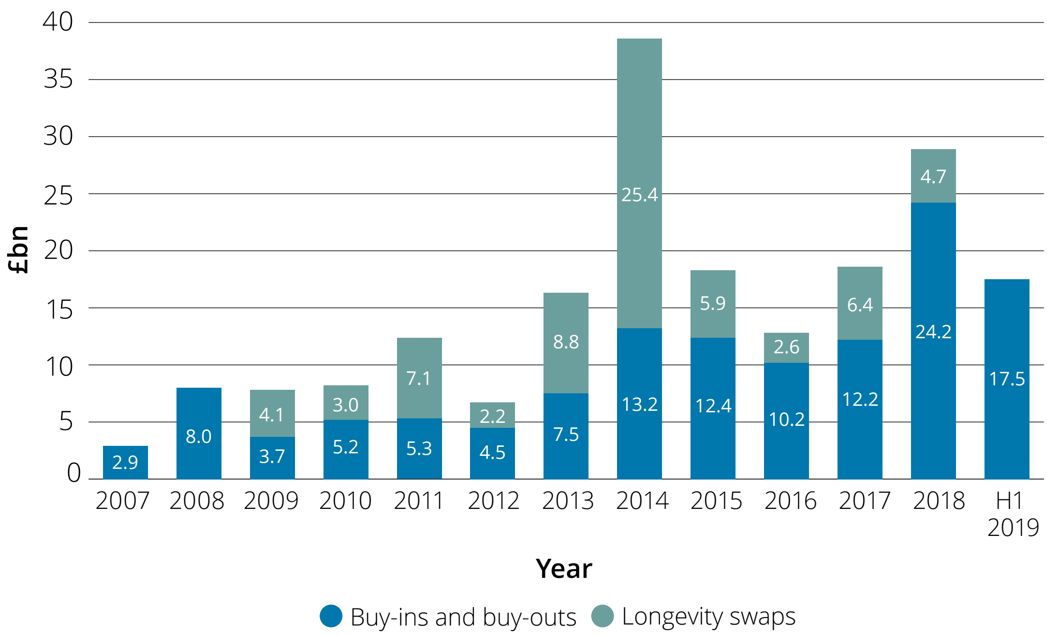
Buy-out and buy-in transactions provide schemes with the opportunity to remove risk relating to all or part of their liability. Under a buy-out deal, a scheme transfers its entire liability and scheme assets to an insurer in exchange for a premium. Insurers tend to require assets significantly in excess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

£28.9 billion of risk transfer deals were completed in 2018, the second highest year on record after deals totalling £38.6 billion in 2014. Deals in 2019 are on track to exceed 2018 and challenge the record year in 2014.

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



8. Risk reduction continued

Figure 8.5 | Number of risk transfer deals since 2010

The number of risk transfer deals in 2018 was higher than the previous two years and similar to levels observed between 2010 and 2015.

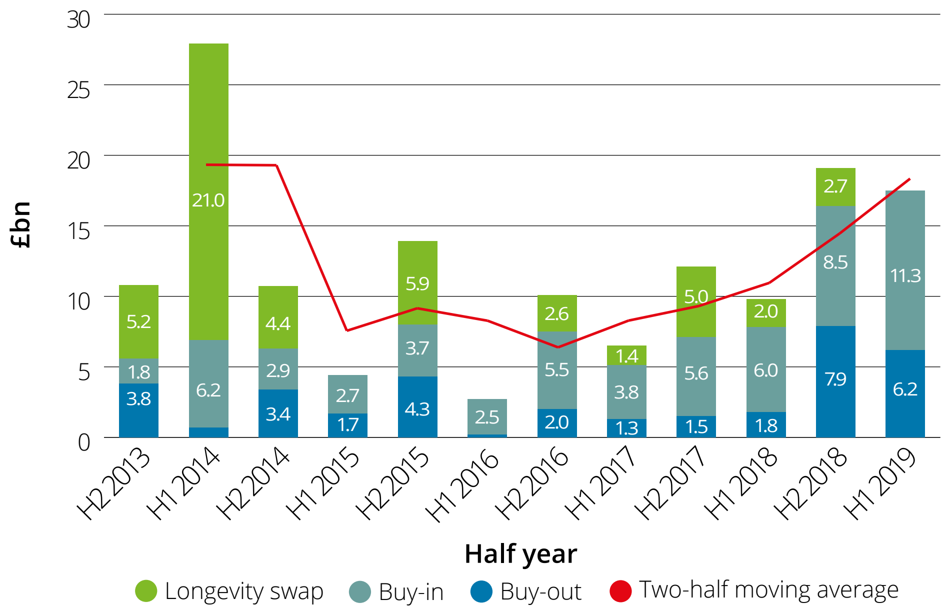
Source: Hymans Robertson, 'Buy-outs, buy-ins and longevity hedging'

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
H1 2019	70	0

Figure 8.6 | Value of risk transfer deals since H2 2013

There has been a recent surge in buy-out activity, with £14.1 billion of deals over the year to 30 June 2019 compared with £3.3 billion of deals over each of the two previous years.

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



9. PPF levy 2018/19

9.1 Summary

- This chapter contains information on how much PPF levy was invoiced and how this was distributed between schemes and by employers.
- The distribution of the levy across schemes is in places quite different from 2017/18 largely as a result of the changes made for the current Three Year Levy Cycle, of which 2018/19 is the first year. The main changes were as follows:
  - Changes to the scorecards, that were designed to change the segmentation of employers, moving some employers to new scorecards that were tailored to reflect the appropriate information and risks. Alongside this the levy rates charged to bands 1 to 3 were increased.
  - As a result of this, a movement of employers from levy bands 1 and 2 to higher levy bands, particularly amongst larger employers, so that fewer employers – particularly those associated with large schemes – were scored in levy band 1 (as shown in the proportion of schemes by stressed smoothed liabilities in levy band 1 reducing from 56 per cent in 2017/18 to 24 per cent in 2018/19 in figure 9.7)
  - The reduction in the risk-based levy cap to 0.5 per cent of smoothed liabilities in 2018/19 from 0.75 per cent of smoothed liabilities in 2017/18, which had the effect of increasing the number of capped schemes.
  - The changes made to the asset and liability stress factors, which had the effect of increasing the proportion of schemes which paid no risk-based levy.
- Since 2006/07, the PPF has collected a total of £7.4 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:

	2018/19[12]	2017/18
Total levy since 2006/07	£7.4bn	£6.8bn
Total levy in year[13]	£564m	£541m
Proportion of total scheme assets	0.04%	0.04%
Number of schemes which contributed to this	5,531	5,639
Amount and proportion of total levy contributed by the top 100 levy payers (by size of levy)	£279m 50%	£226m 42%
Proportion of schemes which paid no risk-based levy	26%	18%
Number of schemes with a capped risk-based levy	184	147
Proportion of total number of schemes	3.3%	2.6%
PPF levy band whose schemes made the largest contribution in the year	3	1
Levy contribution made by these schemes	£93m	£187m
Proportion of total levy contribution	17%	35%
Proportion of total liabilities accounted for by schemes in this category	18%	56%
Proportion of levy that came from schemes sponsored by employers in the two scorecards that account for the largest levy amounts – 'Non Subsidiaries with a turnover of £30m+ and Large Subsidiaries' (new scorecard for 2018/19) and 'Group with a turnover of £50m+'	64%	n/a

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 2018/19 Levy Determination, and its associated appendices, available on our website.

12 Year from 1 April to 31 March.

13 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 2019 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.

9. PPF levy 2018/19 continued

9.2 Total levy by year

In this section we compare total levy by levy year, from levy year 2012/13 to 2018/19. 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 total levy as a percentage of assets has decreased since 2012/13.

Source: PPF

Notes:
a. The figures quoted in this chapter are based on the total levy for the dataset of 5,531 schemes in 2018/19, 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 (reduced by 0.25 percentage points to 0.5 per cent of smoothed liabilities for levy year 2018/19) applied.

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

Figure 9.2 | Distribution of levy by largest levy payers in 2018/19

In 2018/19, the top 100 levy payers accounted for £279 million, or 50 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.

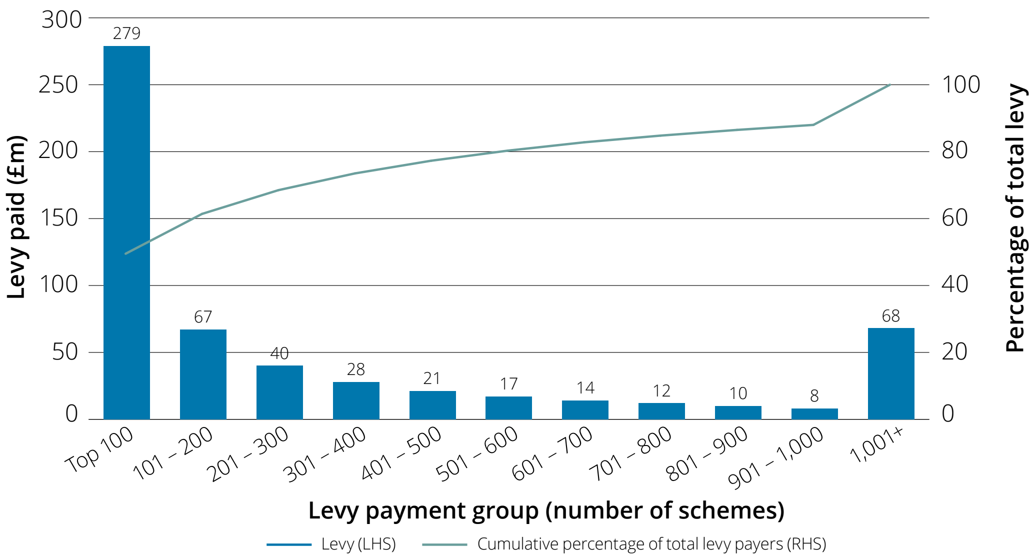


Figure 9.3 | Schemes with no risk-based levy by levy year

The proportion of schemes with no risk-based levy in 2018/19 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[14] (£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%

14 Liabilities are stressed and smoothed.

9. PPF levy 2018/19 continued

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

The proportion of schemes with a capped risk-based levy increased to 3.3 per cent following the reduction in the risk-based levy cap for 2018/19.

Source: PPF

Note: Schemes with multiple employers have had their insolvency probability calculated as an average of the corresponding employers, mapped back to the nearest levy band.

Levy band	Levy rate	Total number of schemes	Number of capped schemes	Percentage of schemes in levy band which are capped
1	0.28%	776	0	0.0%
2	0.31%	408	0	0.0%
3	0.35%	614	0	0.0%
4	0.40%	628	0	0.0%
5	0.53%	770	0	0.0%
6	0.81%	819	0	0.0%
7	1.26%	662	1	0.2%
8	1.76%	324	21	6.5%
9	2.39%	313	69	22.0%
10	3.83%	217	93	42.9%
Total		**5,531**	**184**	**3.3%**

A scheme's risk-based levy is calculated by mapping the sponsoring employer's insolvency probability to one of the ten levy rates above. 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[15].

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

Only four schemes over 75 per cent funded had a risk-based levy that was capped in 2018/19.

Source: PPF

Funding ratio	Number of capped schemes	Percentage of schemes in funding band which are capped	Total number of schemes
Less than 50%	71	15.8%	449
50% – 75%	109	5.3%	2,073
75% – 100%	4	0.2%	1,780
Over 100%	0	0.0%	1,229
Total	**184**	**3.3%**	**5,531**

15 For more information see: https://www.ppf.co.uk/how-levy-calculated.

Figure 9.6 | Levy distribution by levy band

As a result of the changes to the insolvency model altering the distribution of employers, schemes in levy band 3 made the largest contribution to the total levy in 2018/19, paying 17 per cent.

Source: PPF

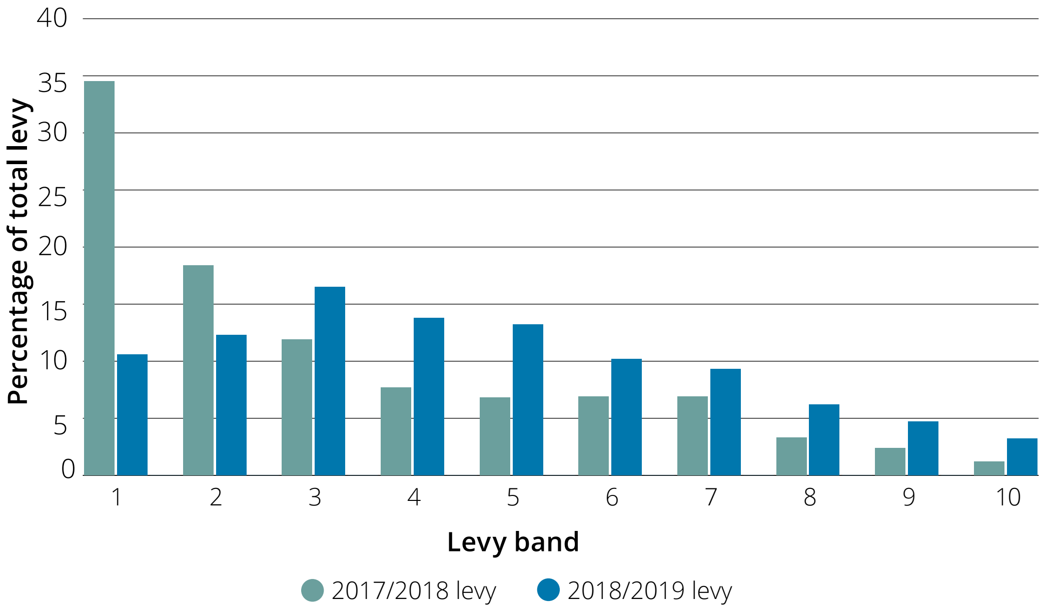
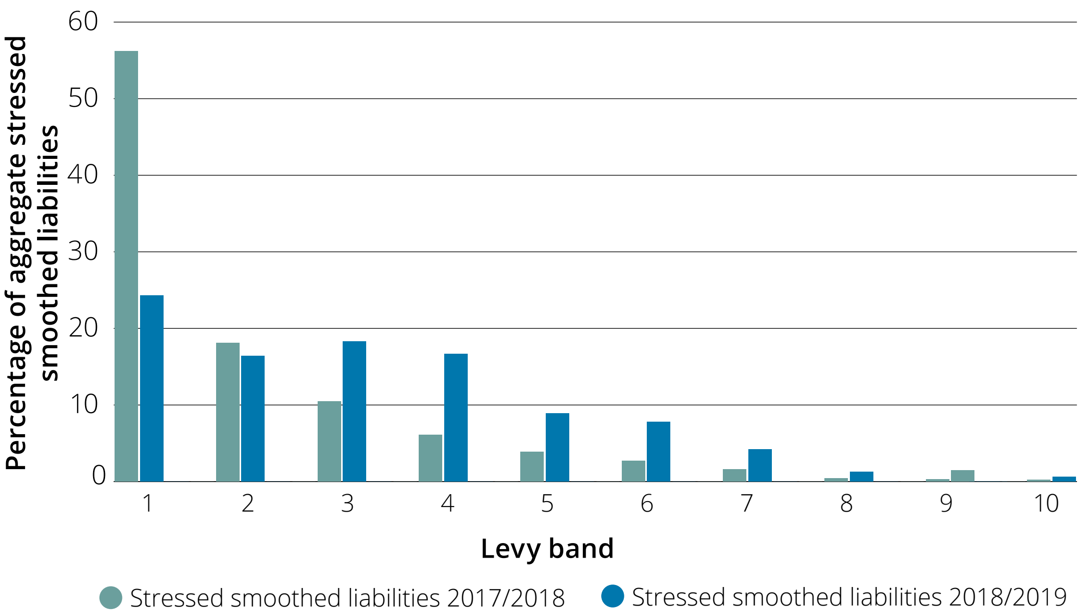


Figure 9.7 | s179 aggregate stressed smoothed liabilities distribution by levy band

As a result of the changes to the insolvency model altering the distribution of employers, schemes in levy band 1 account for 24 per cent of the total liabilities in 2018/19 compared with 56 per cent in 2017/18.

Source: PPF



9. PPF levy 2018/19 continued

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

The average proportion of PPF levy compared with the total value of assets was 0.04 per cent in 2018/19.

Source: PPF

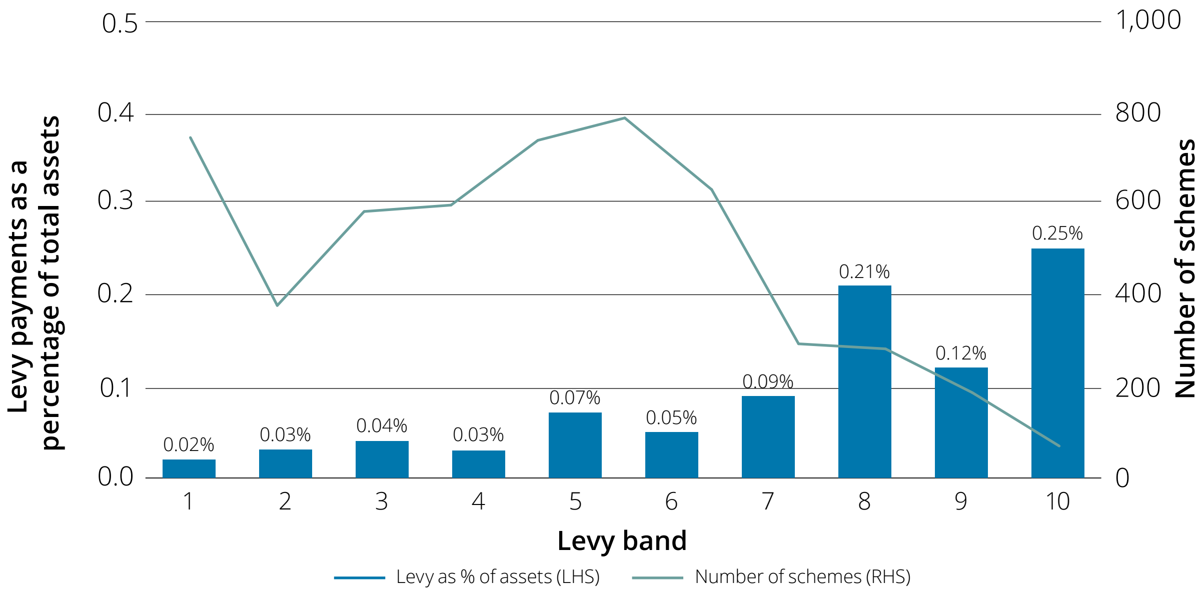


Figure 9.9 | Percentage of total levy that is scheme-based[16] by levy band

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

Source: PPF

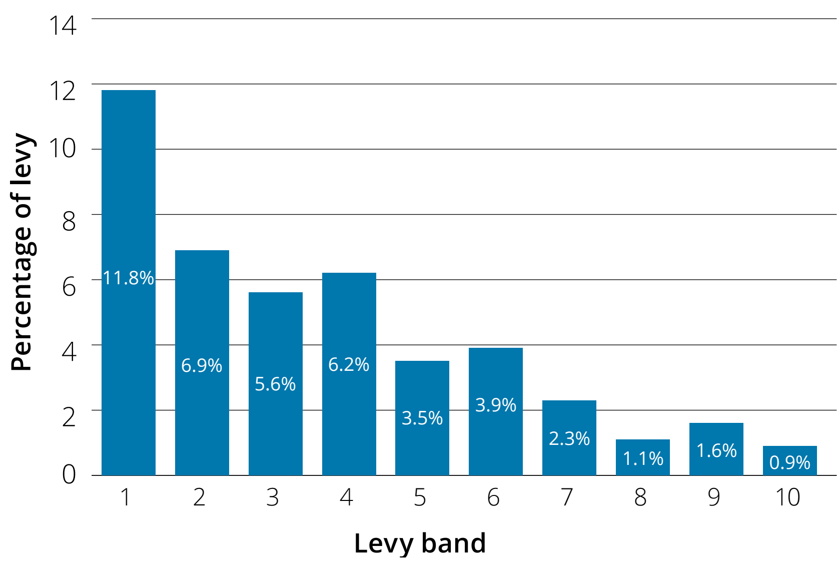


Figure 9.10 | Percentage of total levy that is scheme-based by funding ratio (on a stressed and smoothed basis)

The proportion of total levy made up by the scheme-based levy increases as the funding ratio increases.

Funding ratio	Less than 50%	50% – 75%	75% – 100%	Over 100%
Percentage of levy that is scheme-based	1.7%	2.8%	9.1%	97.8%

Source: PPF

16 For the definition of scheme-based levy, please see the 2018/19 Levy Determination.

9.3 Experian scorecards

For the 2018/19 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 2018/19 PPF levy was collected in respect of schemes sponsored by the employers in these categories[17].

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

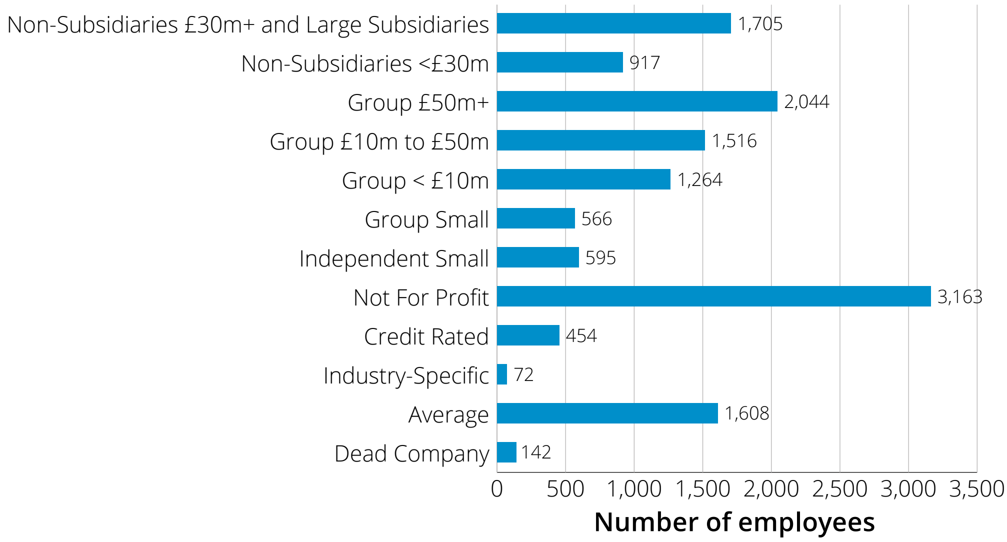
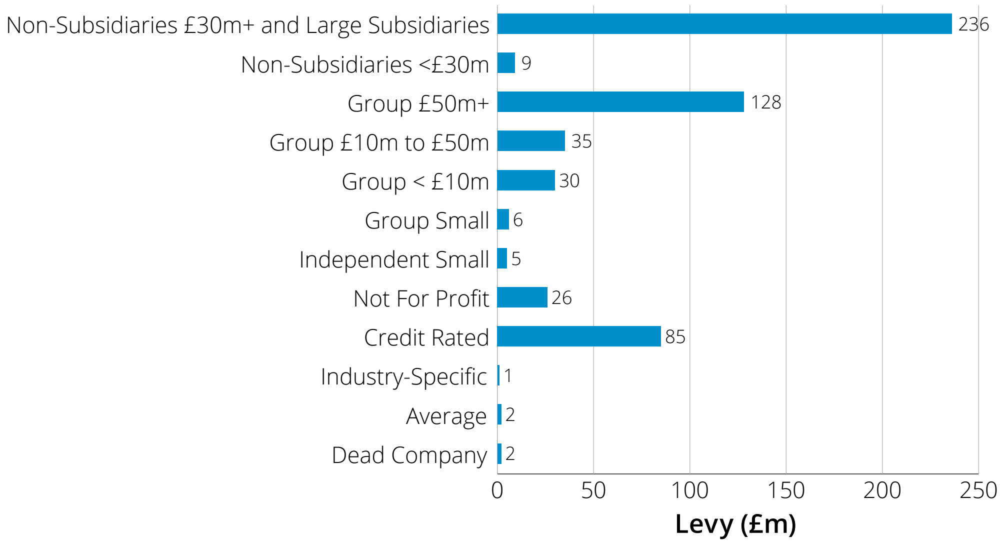


Figure 9.12 | Levy invoiced in respect of schemes with sponsoring employers in each Experian scorecard

64 per cent of the levies paid in the 2018/19 levy year came from schemes sponsored by employers categorised as 'Non-Subsidiaries £30 million+ and Large Subsidiaries' or 'Group £50 million+'.

Source: PPF



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

9. PPF levy 2018/19 continued

Figure 9.13 | Number of schemes with sponsoring employers in each Experian scorecard[18]

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

Source: PPF

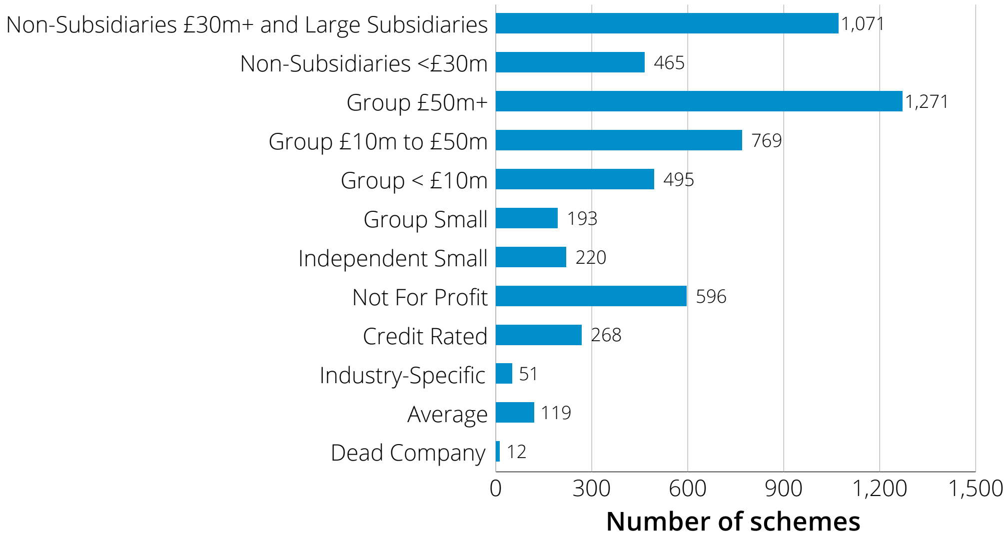
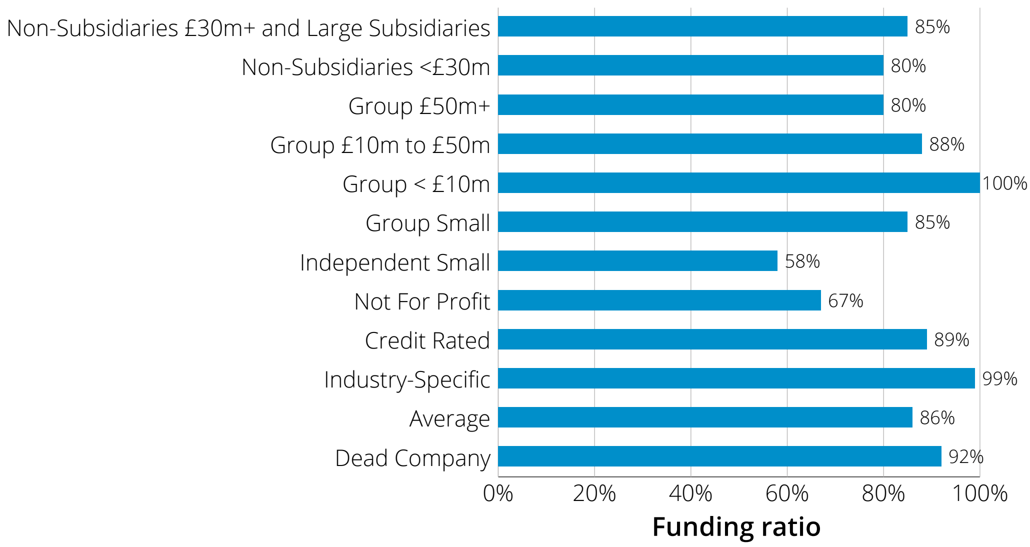


Figure 9.14 | Aggregate funding ratio (unstressed and unsmoothed) of schemes with sponsoring employers in each Experian scorecard

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

Source: PPF



18 One scheme hasn't been categorised on an Experian scorecard as it was levied using the methodology that applies for schemes without a substantive sponsor (SWOSS). Further details of this methodology can be found in the SWOSS appendix on our website.

10. Claims and schemes in assessment

10.1 Summary

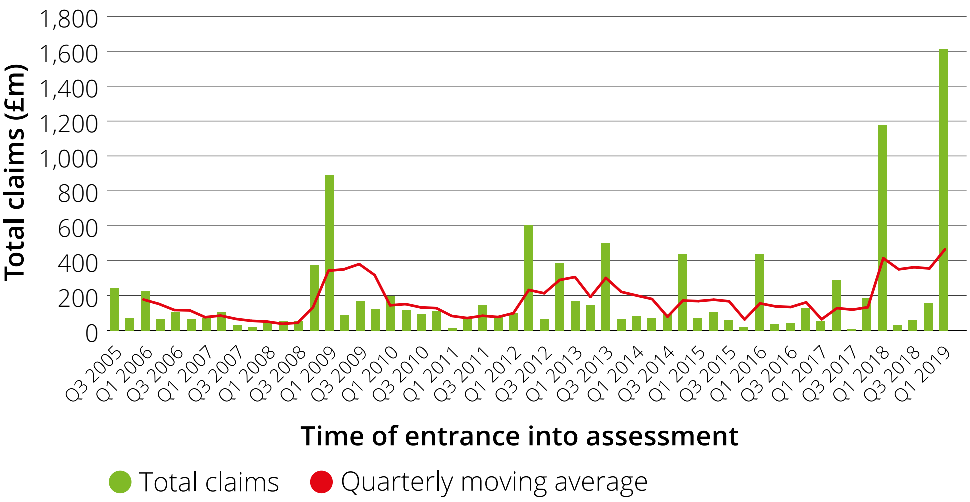
- This chapter shows information on the schemes[19] that were in a PPF assessment period as at 31 March 2019. Once they have made a claim, all schemes go through an assessment period to determine their ability to pay PPF levels of compensation before they are able to enter the PPF. The changes over the year since 31 March 2018 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 2019, including comparisons with both the previous year and schemes in the universe.

		31 March 2019	31 March 2018
Schemes in assessment[20]	Number of schemes	73	91
	Number of members	113,000	106,000
	Total assets	£7.7bn	£6.9bn
	Total PPF liabilities	£11.2bn	£9.3bn
	Funding ratio	69%	74%
Schemes in universe	Funding ratio	99%	96%

10.2 Schemes entering assessment

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

The total deficit of schemes entering assessment in the year to 31 March 2019 was £1,862 million, which exceeded even last year's £1,661 million and is mainly due to a very large claim from the KPP2.



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.

10. Claims and schemes in assessment

continued

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

The number of schemes in assessment decreased in the year to 31 March 2019.

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.

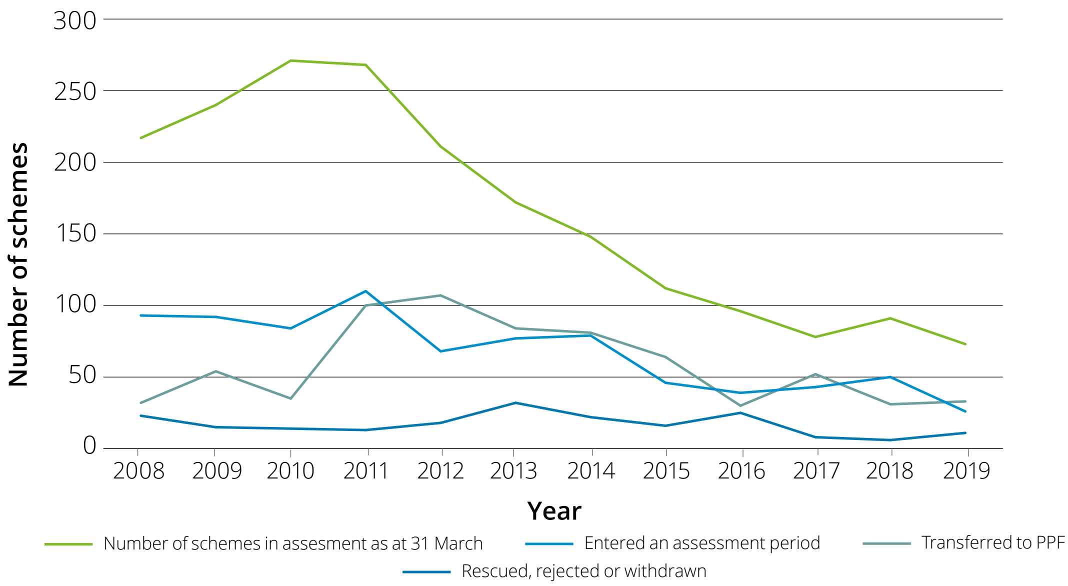


Figure 10.3 | Funding statistics for schemes in assessment each year, as at 31 March

The funding ratio of schemes in assessment at 31 March 2019 decreased to 69 per cent.

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%

10.3 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 2019

Schemes in PPF assessment that have liabilities of over £250 million represent around 14 per cent of schemes and 76 per cent of liabilities.

Source: PPF

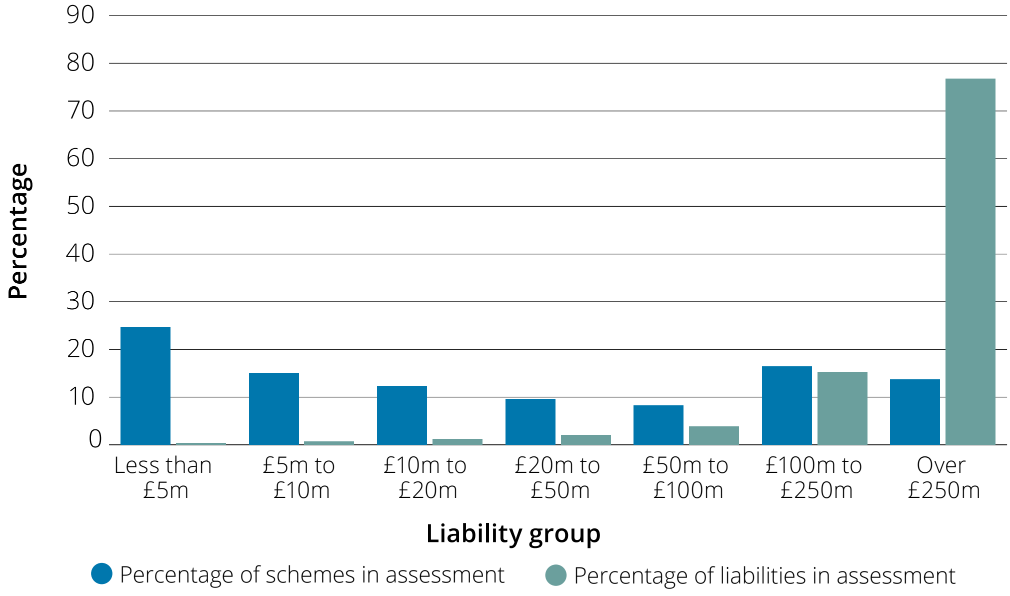
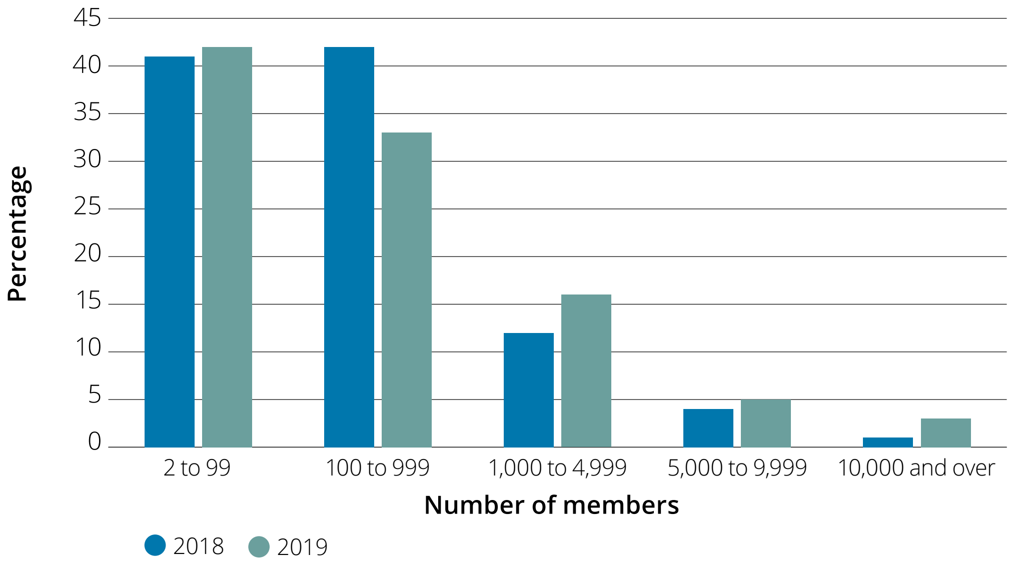


Figure 10.5 | Proportion of schemes in assessment by membership size

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

Source: PPF



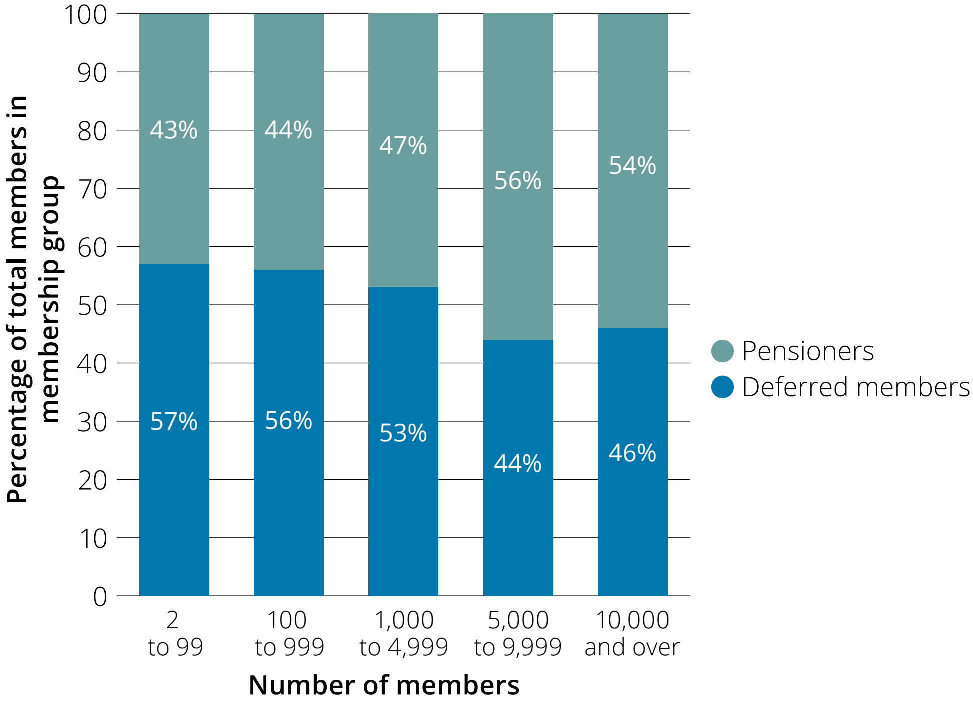
10. Claims and schemes in assessment

continued

Figure 10.6 | Maturity of schemes in assessment by membership size

The proportion of pensioners in schemes in PPF assessment generally increases with scheme size.

Source: PPF

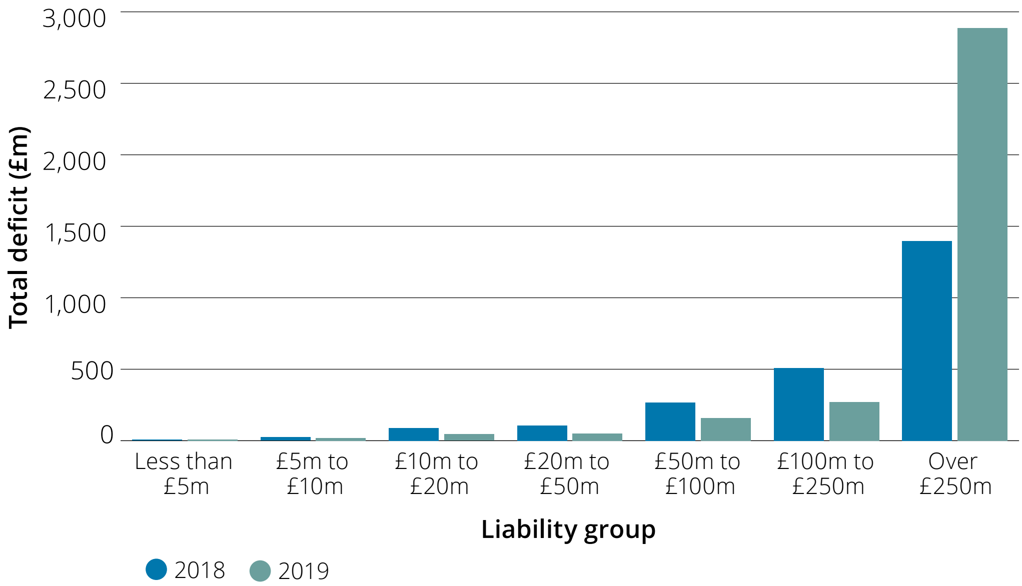


10.4 Funding ratio

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

Over 90 per cent of the deficit from schemes in assessment relates to schemes with liabilities of over £100 million.

Source: PPF



11. PPF compensation 2018/19

11.1 Summary

This chapter shows information on the compensation that we paid to PPF members in 2018/19.

When a scheme transfers into the PPF, we generally pay compensation of 90 per cent of the scheme pension (subject to a compensation cap) 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 2019	31 March 2018
PPF compensation paid in the year	£775m	£725m
Number of members receiving compensation	148,005	135,377
Average annual amount paid to members and dependants	£4,382	£4,380
Number of deferred members*	109,567	107,759
Average annual compensation accrued by deferred members (ignoring any impact of the compensation cap)	£3,296	£3,362

* (i.e. members with compensation not yet in payment)

11.2 Total compensation and other member statistics

Figure 11.1 | Total compensation and number of members

Total compensation paid in the year to 31 March 2019 was £775.1 million, around 7 per cent above the amount paid in the year to 31 March 2018.

Source: PPF

		Number of members[21]		
Year ended 31 March	Total compensation paid	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

21 Please note that these refer to the numbers of member records. As some members have more than one record (for example because of different periods of service or tranches of benefit), these numbers may be different to those stated in the PPF's Annual Report and Accounts, for which purpose individuals are counted only once, regardless of the number of records.

11. PPF compensation 2018/19 continued

Figure 11.2 | Sex of members in the PPF

64 per cent of our members are male.

Source: PPF

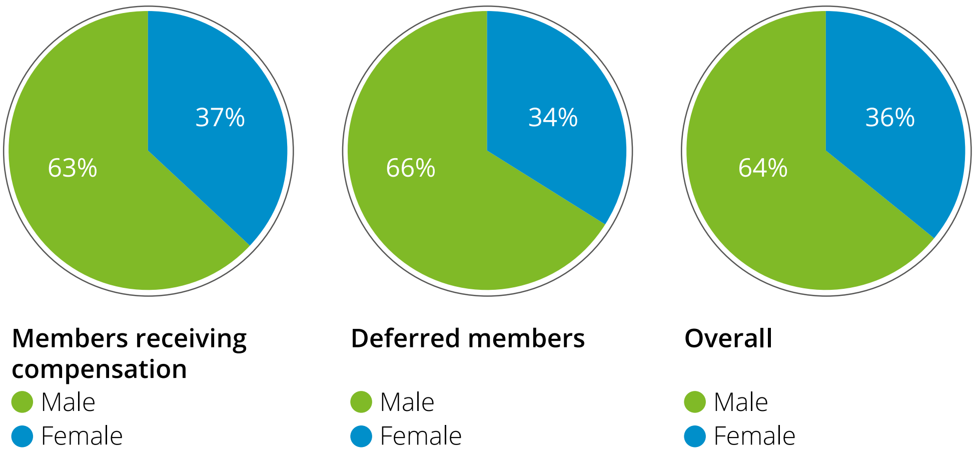


Figure 11.3 | Distribution of members receiving compensation by annualised compensation level

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

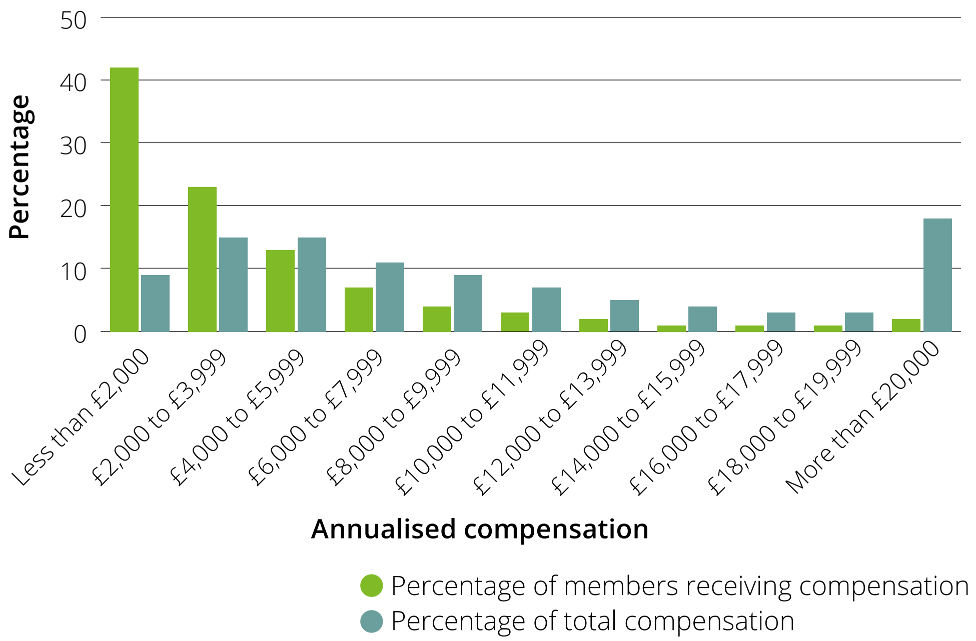


Figure 11.4 | Distribution of deferred members by annualised compensation level

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

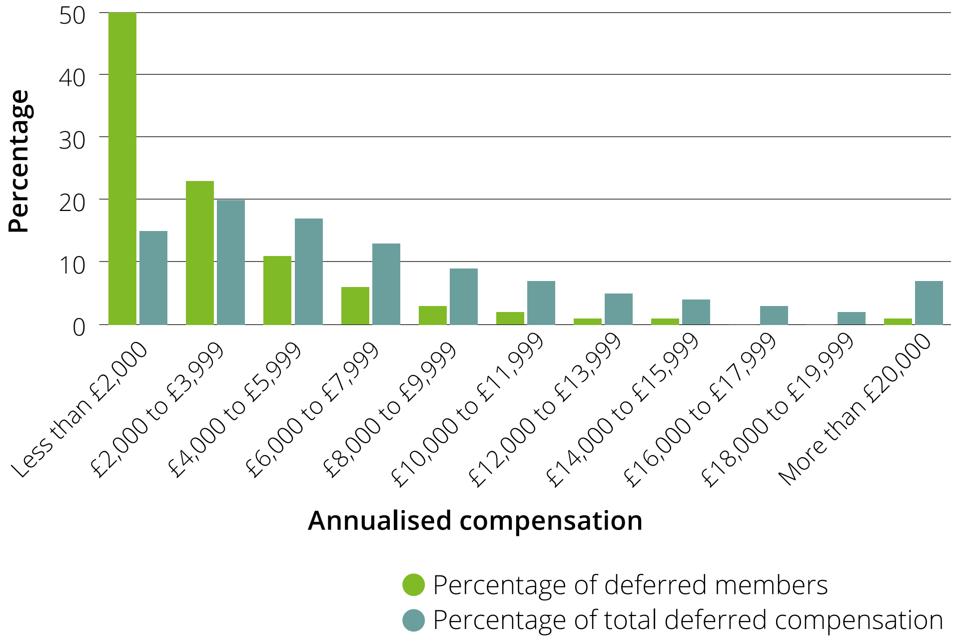


Figure 11.5 | Status of members receiving compensation

Source: PPF

Note: annualised compensation is less than compensation paid in the year to 31 March 2019 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.

	Number within population of members receiving compensation	Percentage of total population	Annualised compensation (£m)	Percentage of total annualised compensation
Members[22]	125,102	85%	582	90%
Dependants	22,903	15%	67	10%
Total	**148,005**	**100%**	**648**	**100%**

22 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 2018/19 continued

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 a 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.

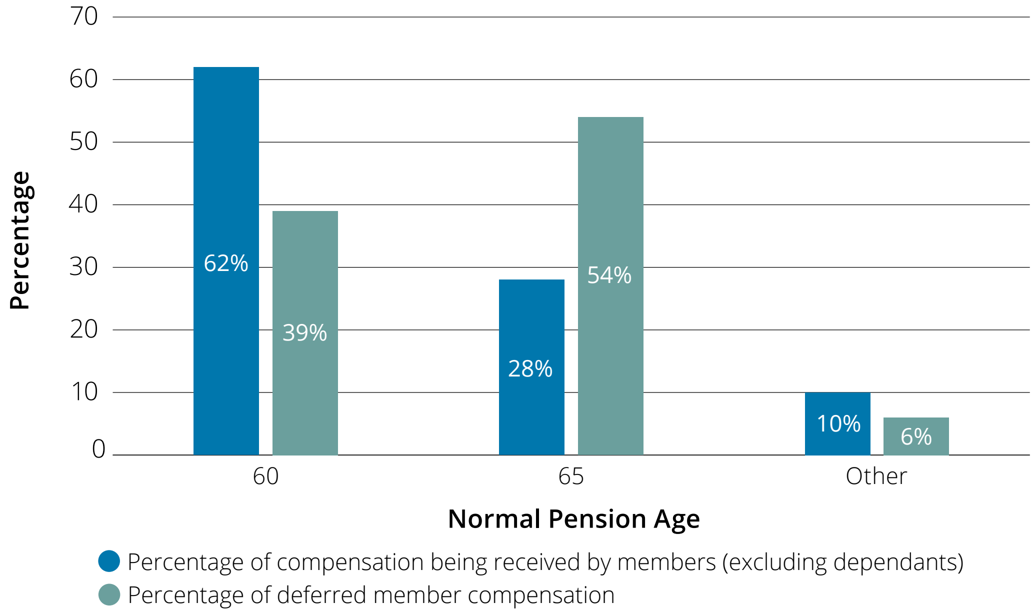


Figure 11.7 | Annualised compensation by UK region

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

Source: PPF

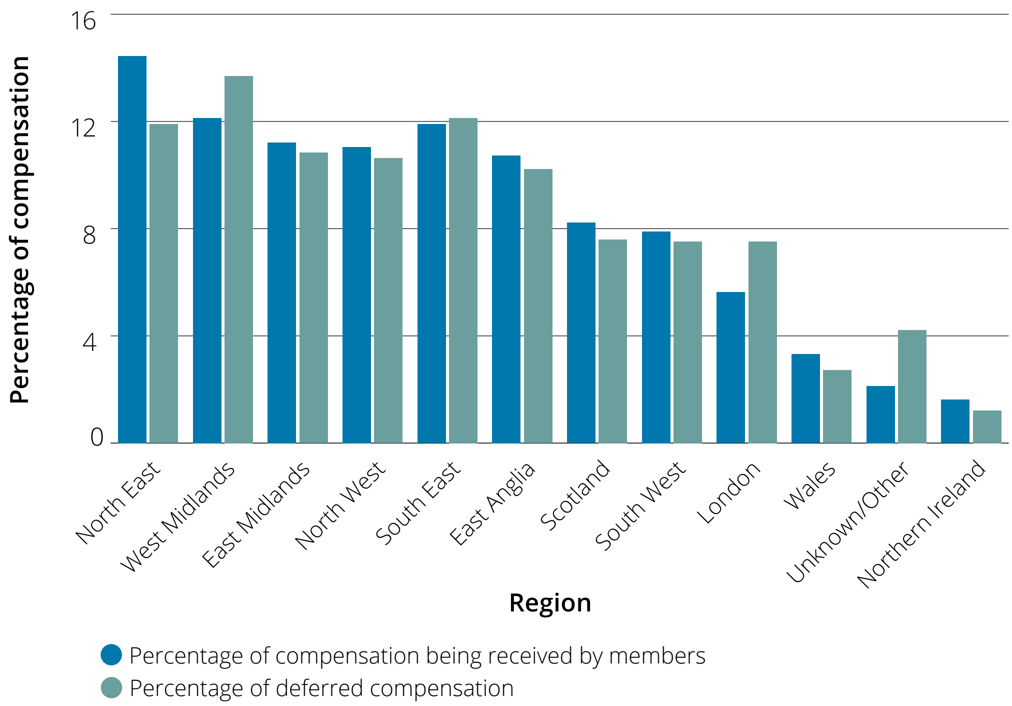


Figure 11.8 | Annualised compensation for members receiving compensation and deferred members before 6 April 1997 and after 5 April 1997

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
Pre-6 April 1997	453	70%	156	43%
Post-5 April 1997	195	30%	205	57%
Total	**648**	**100%**	**361**	**100%**

12. PPF risk developments

12.1 Summary

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 risk in the universe of schemes that the PPF protects, and so as well as understanding the risk in those schemes it is important for the PPF to understand the risks it faces.

The PPF uses the LTRM[23] to inform its understanding of the funding risks it faces, and to help predict its finances in a range of possible versions of the future. The LTRM allows the PPF to monitor the progress against its funding objective, which is to be financially self-sufficient by the funding horizon, currently estimated to be 2030. As at 31 March 2019, there is an 89 per cent chance the PPF will achieve its funding objective.

Given the importance and the complexity of the LTRM, the model is regularly validated following a process that includes scenario analysis and sensitivity tests to key modelling assumptions.

Like any complex modelling exercise, the projections are subject to significant uncertainty and the PPF's success ultimately depends on some influences outside of its control. In particular, the model run for the base case makes the simplifying assumption that the PPF's 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. It also takes a neutral view of possible future changes that might affect the PPF or the schemes it protects (see section 12.6), making the simplifying assumption that they will have a neutral impact on the PPF's future.
These specific possible changes are addressed using stress or scenario tests.

The PPF is reviewing the design of the LTRM and the IT system on which it is hosted, to ensure that the model is flexible and responsive enough to help the PPF answer the questions it needs to address in a volatile world.

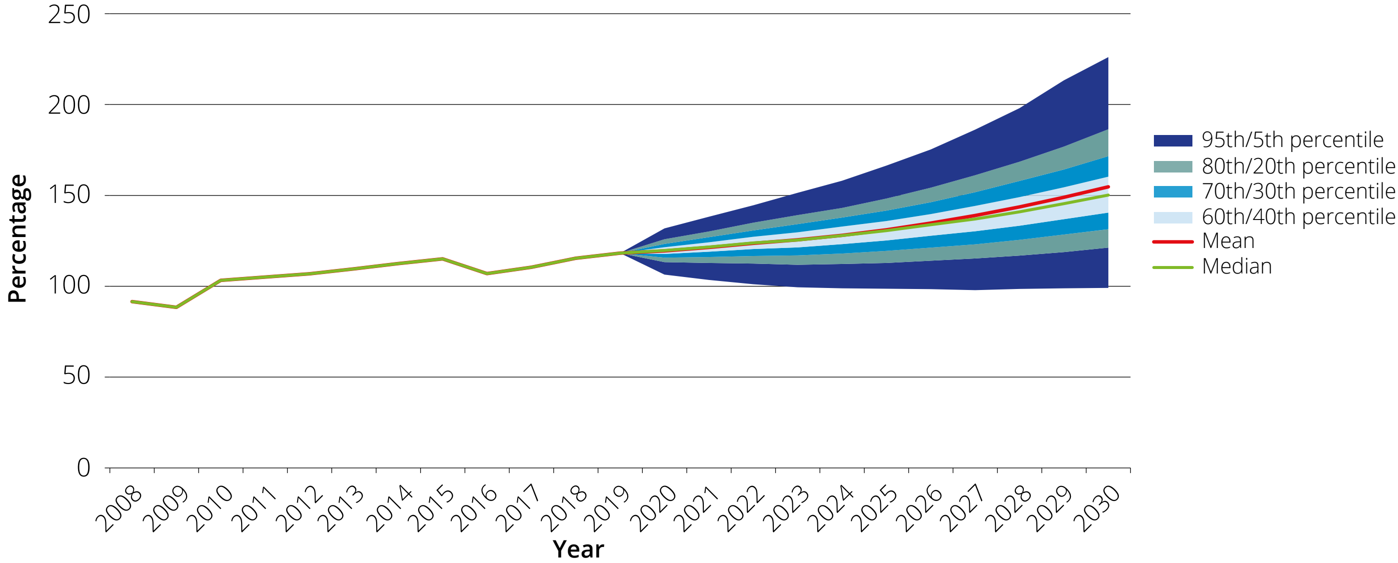
12.2 Monitoring the PPF funding objective

- The PPF's long-term funding objective is to be financially self-sufficient by the target funding horizon, currently estimated as 2030. Self-sufficiency means that the PPF will have accumulated sufficient reserves by the funding horizon to protect itself against reasonably adverse experience, and will have little reliance on levy or return-seeking assets. The current estimate is that the PPF would need a funding reserve equivalent to 10 per cent of PPF liabilities to achieve this. Each year the Board reviews the targets for the funding reserve and horizon to ensure they remain appropriate.
- The PPF uses the PoS[24] and Downside Risk[25] statistics to monitor progress against its funding objective. As at 31 March 2019, the PoS was 89 per cent, which means that the PPF would meet its funding target to have a margin of at least 10 per cent at 2030 in 89 per cent of the modelled scenarios. The Downside Risk was £2 billion, which means that in 10 per cent of modelled scenarios the PPF reaches a deficit of £2 billion or more.

23 The LTRM is a stochastic model that projects PPF assets and liabilities in future years, allowing for investment returns and liability changes in the PPF, and for future claims and levies.
24 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.
25 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 12.1 | Projections of PPF funding ratio

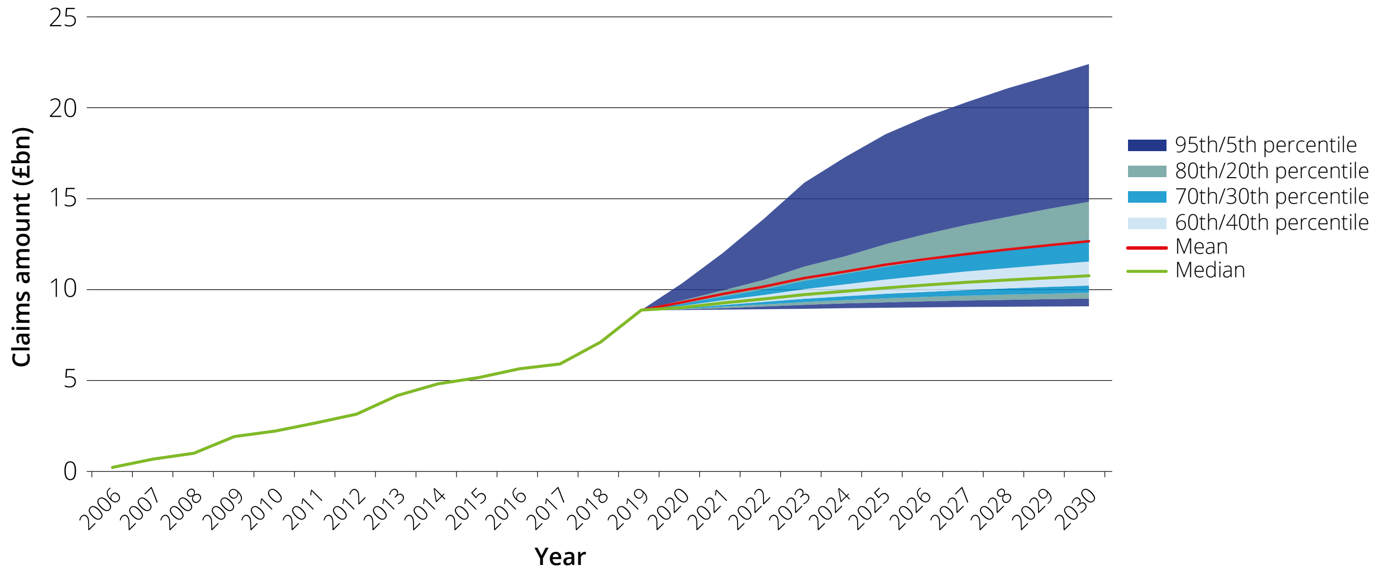
Source: PPF



The fan chart shows the history of the PPF funding ratio as well as the base case projection beyond 2019. The funding ratio at the start of the projection (31 March 2019) is 118 per cent and includes claims that have not yet materialised but that the PPF expects to occur in the immediate future. While 118 per cent is above the target to be 110 per cent funded at the funding horizon, this level of funding does not mean that the funding objective of being self-sufficient has been achieved. This is because self-sufficiency is measured only at the funding horizon and there is a material chance that the funding ratio could fall before that time. Indeed, there are schemes eligible for PPF protection that have a current deficit which would be enough to wipe out the PPF's current surplus were they to make a claim.

Figure 12.2 | Projections of cumulative claims on the PPF

Source: PPF

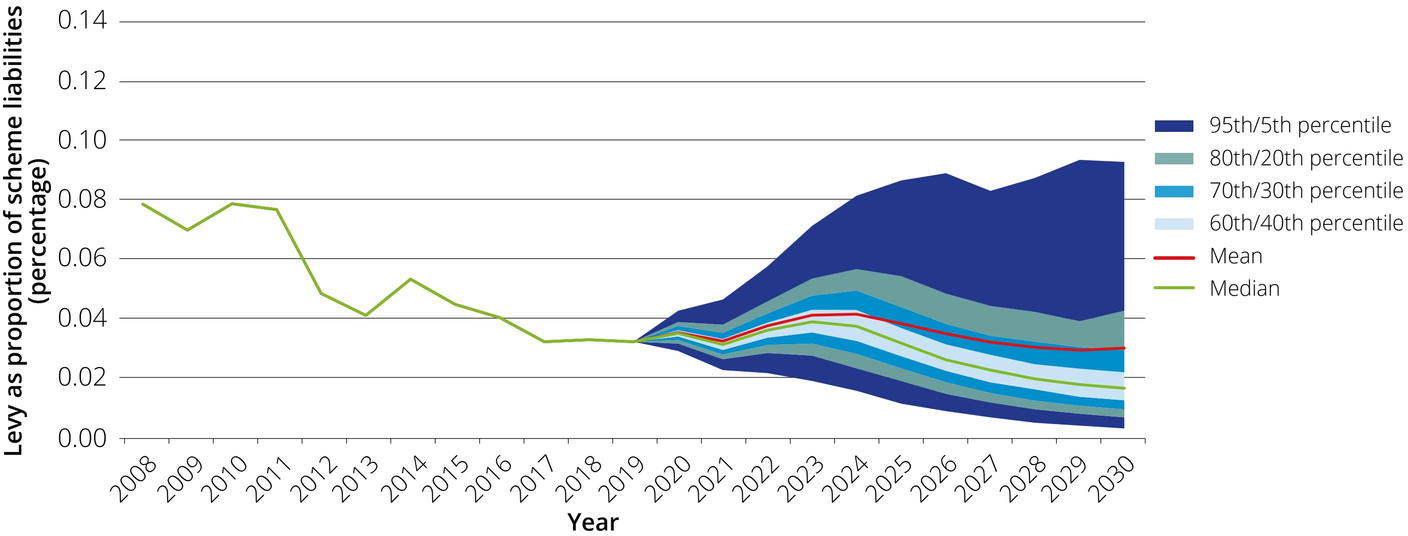


The fan chart shows the cumulative deficit of schemes that make a claim on the PPF. The level of claims being made on the PPF in future years is one of the main factors that could lead to a decline in funding level, and this is largely outside of the PPF's control. The chart shows that, while on average cumulative claims are expected to increase gradually, in less favourable, but still plausible, scenarios the cumulative claims could be more than double what they are today.

12. PPF risk developments continued

Figure 12.3 | Projections of PPF levies as a proportion of scheme liabilities

Source: PPF



PPF levies are for the most part risk-based, in the sense that they depend explicitly on the size of schemes' deficits, the risk associated with their investment strategies and the strength of sponsoring employers. Therefore as schemes repair their funding deficits and reduce their holding of return-seeking assets, the PPF levy is expected to reduce both in absolute terms and as a percentage of their liabilities.

12.3 Sensitivities

- The LTRM output has been tested for sensitivity to an extensive range of modelling assumptions. A selection of the more significant sensitivity tests is shown below.
- 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.

Figure 12.4 | Sensitivities

Source: PPF

Base case at March 2019	PoS: 89 per cent	Downside Risk: £2bn

Assumption	Change in PoS	Change in Downside Risk
Lower life expectancy *Modelled mortality is adjusted so that a male aged 63 lives on average one year less*	+4pp	-£3bn
Lower returns on growth assets *Growth asset returns are 1 percentage point p.a. lower*	-6pp	+£2bn
Smaller difference between RPI and CPI *The difference between RPI and CPI narrows from 1.0 per cent to 0.5 per cent, so CPI is 50 basis points p.a. higher than best-estimate*	-5pp	+£2bn
Continued low interest rate *The central path of the nominal and real GBP yield curve is held at current levels rather than being allowed to rise towards historical norms*	-6pp	+£4bn
Larger dependency between the financial health of companies and the UK stock market *The insolvency correlation between companies and the UK stock market increase by 10 percentage points*	-0.3pp	0
Higher chance of a solvent company becoming insolvent *The probability of downgrade from solvent to insolvent status increased by 20 per cent at all times*	-2pp	+£1bn

12.4 Scenario Analysis

- By applying stresses to a number of assumptions on asset returns, bond yields and insolvency experience simultaneously, the PPF can explore the extent to which its funding strategy is resilient to scenarios in which future financial market conditions depart significantly from current best estimates. This kind of analysis helps to assess how resilient the PPF's funding objective is to different types of macro-economic shocks, whether the PPF's current funding strategy could be maintained in such conditions, and how best to respond to and plan for such a scenario.
- Three global macro-economic scenarios have been modelled in order to test the resilience of the PPF's balance sheet and funding strategy to different types of financial market shocks over a range of time horizons.
- The 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 are modelled in the LTRM. The one million scenarios that the PPF projects using the LTRM can therefore show considerable variation around these central projections.

12. PPF risk developments continued

Figure 12.5 | Stress tests

Source: PPF

The scenarios show that the main threat to the PPF's financial resilience involves sustained economic adversity. Short-term shocks are less likely to impact it.

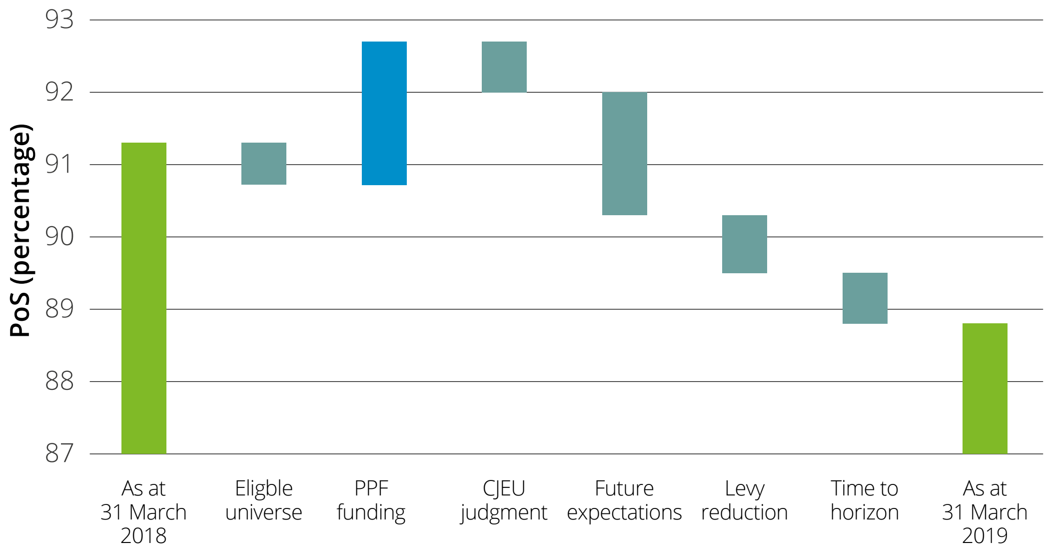
Stress test	Description	Change in PoS	Change in Downside Risk
Prudential Regulation Authority (PRA) 2018 Annual Cyclical Scenario (adapted)	An unexpected downturn in China's economy leads to a short and sharp global recession, with sharp falls in the price of growth assets and in bond yields in the US and Eurozone. The impact in the UK is even more severe, as sharp falls in sterling see the Bank of England aggressively raise interest rates to curb inflation. This is followed by a 3 – 4 year period of partial recovery in asset values. While this scenario contains a severe short-term shock to growth assets, this is greatly 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 relatively mild stress to the PPF's long-term funding objective.	+1pp	£0bn
Low yield low growth	Sluggish global growth sees prolonged weak performance of growth assets, and persistently depressed yields mean that scheme liabilities remain high in the long term. Underperforming assets combined with continuing high liabilities mean that scheme funding fails to improve, leading to prolonged higher claims on the PPF.	-48pp	+£38bn
Medium term global slowdown	Escalation of trade tariffs between the US and China resonates across markets, resulting in a slowdown in global growth and poor performance of growth assets in the near to medium term. The impact in the UK is more severe due to the added uncertainties about the UK's long-term relationship with Europe, with sharper falls in UK equities and bond yields. After a few years, yields gradually recover as trade conditions ease. This scenario constitutes a medium-to-long-term stress to growth assets, and a sustained if moderate stress to scheme liabilities. While initially milder, this scenario is more protracted than the PRA scenario, but is not as protracted, or severe, as the low-yield-low-growth scenario.	-22pp	+£15bn

12.5 Changes over the year

- **Kodak:** on 25 March 2019 the KPP2 entered PPF assessment. While KPP2 is the PPF's largest claim to date, the PPF remains financially strong and able to absorb a claim of this size, as it holds reserves for situations like this.
- **Hampshire ruling:** in September 2018 the Court of Justice of the European Union said that PPF members should receive at least 50 per cent of the value of their accrued old age pension in the event of employer insolvency. The ruling is estimated to have increased PPF liabilities by around one per cent, but the impact on the PPF's long-term funding position is small.
- **Trouble in the high street:** some famous high street names have been in the news owing to their financial circumstances. House of Fraser, Debenhams and Arcadia are sponsors of large pension schemes, and the PPF has engaged in re-structuring discussions with them in the last two years. The PPF regularly monitors its exposures to potential claims, considering both individual schemes and industry sectors. The new LTRM and other tools being developed will enhance the PPF's ability to analyse these risks.
- On a more technical level, the PPF continues to be impacted by reductions in bond yields globally. Many schemes have liabilities and assets imperfectly matched, with their asset portfolio having a shorter duration than their liabilities. For those schemes, the fall in yields will have continued to increase the immediate pressure on funding ratios. The PPF's approach is to hedge liabilities closely, immunising its balance sheet to these changes. The PPF's own funding ratio has been barely impacted.

Figure 12.6 | PoS attribution over year to 31 March 2019

Source: PPF



The chart indicates the main changes in PoS over the year. The most significant drivers of the fall are in the PPF's expectations of what the future holds: a combination of updated economic, and other assumptions. The projections also reflect lower levy collection based on the estimate published in autumn 2018. Actual collections in the future depend on a range of factors and therefore cannot be accurately predicted.

There was an offsetting effect of an improvement in the PPF funding position. Although the PPF's reserve levels fell during the year, the claim from KPP2 was already anticipated in the long-term projection at March 2018 even though it was not reflected on the accounting balance sheet until after that date. Finally, since the expected funding horizon is one year closer, there is less time to recover from any possible adverse development.

12. PPF risk developments continued

12.6 Possible future changes

Like all financial services institutions, including the DB pension schemes it protects, the PPF is exposed to other possible circumstances over which it has no or limited influence. The following is a list of some of the most significant which we are monitoring at the moment.

- **Bauer:** At the date of compiling *The Purple Book*, the Court of Justice of the European Union has not yet handed down its decision in the case of Pensions-Sicherungs-Verein VVAG v Gunther Bauer. A preliminary opinion on the Bauer case was issued by the Advocate General earlier in 2019, which suggested that EU law requires a pension protection system that is reasonably expected to protect old-age benefits under an occupational pension scheme in full in the event of an employer's insolvency. However, the opinion is not legally binding and the Court may not follow the Advocate General's opinion. If the final judgment were to follow the opinion exactly and were to be applicable to the PPF then it could have a material impact on the PPF's current and future funding level. The applicability of the Bauer judgment to the UK pension protection system is potentially affected by the ongoing Brexit negotiations.
- There are significant economic headwinds on the horizon, including potential increases on barriers to international trade, particularly between the US and China. Any slowdown in economic growth could have an impact on the business models of the sponsors of eligible schemes and on the investment returns of the asset portfolios of both the eligible schemes and the PPF. In particular, sustained weak returns on growth assets coupled with continued low interest rates would be a challenging scenario, both for the PPF and for the schemes it protects.
- **Brexit:** At the date of compiling *The Purple Book* there is still considerable political uncertainty, including over the final outcome of the Brexit negotiations. Any outcome which results in weaker economic conditions in the UK could have an adverse impact on the sponsors of the schemes that the PPF protects, and therefore could affect future claims.
- **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. TPR plans to consult on how trustees should calculate their scheme's technical provisions prudently, set an appropriate recovery plan if the scheme is in deficit, and define a suitable long-term objective to prepare for the end game. For closed schemes, this will include ideas on how they should seek to progressively reduce their reliance on the employer covenant over time and reach a position of low dependency by the time they are significantly mature. Scheme underfunding is a major risk for the PPF. Therefore the new funding framework has the potential to change significantly the risks to which the PPF is exposed.
- **Phasing out RPI as a measure of inflation:** the Government reiterated its intention to gradually move to CPIH as the main measure of inflation, which is similar to CPI so it tends to be lower than RPI. Although the PPF hedges its inflation risk it currently does so via RPI-linked assets and so is exposed to the basis risk between CPI and RPI. Convergence between the two measures would reduce the PPF's basis risk, but this might be offset by other impacts of any change on the schemes it protects.
- **Commercial consolidators:** the propositions for these vehicles are advancing. The PPF has set out its approach for charging a levy to commercial consolidators, based on the methodology for calculating a levy for schemes without a substantive sponsor, with adjustments to reflect the specific risks posed by commercial consolidators. As the regulatory and capitalisation framework for this novel type of pension scheme emerges, and the shape and size of the market becomes clearer, the PPF will continue to adapt its analysis of the risk such schemes pose to its objectives.

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 2018 and January 2019 and returned by 31 March 2019.

2. Voluntary form reporting
   Electronic forms are available on TPR's website so pension schemes can provide data regarding contingent assets, valuation results on an s179 basis, DRCs and the s179 valuation results following block transfers. More information on DRCs and Contingent Assets (CAs) 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[26].

   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 2018/19), 10 (Schemes in assessment) and 11 (PPF compensation 2018/19) 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 2019* dataset

The PPF covers certain DB occupational schemes and DB elements of hybrid schemes. Some DB schemes will be exempt from the PPF, including[27]:

- 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 2019 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[28], 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 2019 after allowing for deductions for items such as additional benefit accrual and benefit augmentations.

26 For more information see: https://www.ppf.co.uk/current-levy-rules
27 For a more comprehensive list see 'eligible schemes' on our website.
28 For more information see the 2018/19 DRC appendix and guidance on our website.

Appendix continued

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 2019* 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 2018* – 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.

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.

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.

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.

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.

Glossary continued

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

Hybrid scheme or partial DB scheme
A scheme that can provide defined benefits 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.

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.

KPP2
The Kodak Pension Plan No.2

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.

Official Bank Rate
The interest rate that the Bank of England charges banks for secured overnight lending. Also called the Bank of England base rate or (BOEBR).

ONS
Office for National Statistics.

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

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.

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.

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.

Three year levy cycle

The three year levy cycle from 1 April 2018 to 31 March 2021. For levy purposes, the policy intention is to restrict any significant changes to levy calculations so that they're made between cycles as much as possible, for stability and predictability purposes.

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

Chapter 2:

Chapter 3:

Chapter 4:

Charts and tables continued

Chapter 5:

Chapter 6:

Chapter 7:

Chapter 8:

Chapter 9:

Chapter 10:

Charts and tables continued

Chapter 11:

Chapter 12:

Pension
Protection
Fund

Renaissance
12 Dingwall Road
Croydon
CR0 2NA

T: 020 8406 2107

www.ppf.co.uk