The Purple Book

DB PENSIONS UNIVERSE RISK PROFILE | 2016

Pension
Protection
Fund

The Purple Books give the most comprehensive picture of the risks faced by the PPF-eligible defined benefit pension schemes.

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Summary

This is the eleventh edition of the Pensions Universe Risk Profile (The Purple Book), which focuses on the risks faced by the PPF's universe of Defined Benefit (DB) pension schemes, predominantly in the private sector.

1.1 Economic background and introduction

The main focus in each year's Purple Book is the position at the end of March for the year in question, and a comparison of how risks have changed over the last year.

Over the 12 months to March 2016 the economic recovery continued, albeit at a somewhat slower pace, while whole economy insolvencies continued to fall.

- UK GDP growth slowed to 1.9 per cent in the year to the first quarter of 2016 from 2.8 per cent in the year to the first quarter of 2015.
- CPI Inflation rose from 0.0 per cent in March 2015 to 0.5 per cent in March 2016.
- Insolvency Service statistics showed that the company liquidation rate in the year to the first quarter of 2016 was 0.4 per cent, down from 0.5 per cent in the first quarter of 2015, and a record low since the start of the series in Q4 1984.
- The total number of company insolvencies (also including receiverships, administrations, and company voluntary arrangements) was 1.7 per cent lower in the first quarter of 2016 than in the same quarter of 2015.
- The FTSE All-Share Index fell by 7.3 per cent in the year to March 2016 while the FTSE All-World Index fell by 6.1 per cent.
- Gilt yields were little changed between March 2015 and March 2016, although 10-year AA corporate bond yields rose by 0.4 per cent.
- The Bank of England kept its policy rate unchanged at 0.5 per cent and did not add to its asset purchases under its Quantitative Easing programme.

Since March 2016, the UK economic recovery has continued with GDP rising by a further 0.7 per cent in the second quarter and 0.5 per cent in the third. The total number of company insolvencies fell by a further four per cent between the first and third quarters of 2016. The referendum result on the UK's EU membership, and subsequent policy easing by the Bank of England, resulted in a fall in 15-year gilt yields to 1.3 per cent at the end of September 2016. Meanwhile, the FTSE All-Share Index rose by 10.6 per cent between end-March and end-September and the FTSE All-World Index by 5.0 per cent. The overall impact was a marked deterioration in scheme funding.

Figure 1.1 | UK economic and financial environment

UK	End March							
	2010	2011	2012	2013	2014	2015	2016	End Sep 2016
GDP growth year-on-year	0.8%	2.3%	1.2%	1.5%	2.6%	2.8%	1.9%	2.3%*
CPI Inflation	3.4%	4.0%	3.5%	2.8%	1.6%	0.0%	0.5%	1.0%
Company liquidation rate – 12 months prior	0.9%	0.8%	0.8%	0.7%	0.6%	0.5%	0.4%	0.4%*
Total new insolvency events**	5,150	4,842	5,216	4,523	4,381	3,843	3,777	3,633*
FTSE All-Share level	2,910	3,068	3,003	3,381	3,556	3,664	3,395	3,755
FTSE All-World level	202.7	226.4	219.1	236.9	270.6	280.1	263.1	276.3
15-year gilt yield	4.4%	4.2%	2.7%	2.3%	3.2%	2.0%	2.0%	1.3%
15-year index linked yield	0.7%	0.7%	0.0%	-0.3%	0.0%	-0.9%	-1.0%	-1.7%
10-year AA corporate bond yield	4.9%	4.9%	3.7%	2.6%	3.4%	2.2%	2.6%	1.8%
Bank of England policy rate	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.25%
QE £billion	200	200	325	375	375	375	375	435

Sources: Office for National Statistics, the Insolvency Service, Bank of England and Bloomberg

*This relates to Q3 2016.

**Composed of liquidations, receiverships, administrations and company voluntary arrangements other than those following administration.These are the insolvency events for the quarter in question rather than annual numbers.

Much of the analysis of the 2016 Purple Book ('Purple 2016') is based on new information from 5,794 scheme returns issued in December 2015 and January 2016 and returned to The Pensions Regulator by the end of March 2016. The Purple Book covers virtually all schemes in the universe of PPF-eligible schemes.

The Purple Books have focused on the risk of scheme members not receiving promised benefits and of claims on the PPF. These in turn depend on two key elements, namely the risk of the sponsoring employer becoming insolvent and the extent of scheme underfunding.

Some of the key points from Purple 2016 are given below.

Purple 2016: Main Developments

Last year's Purple Book was the tenth edition and it described some of the dramatic changes that took place in scheme demographics, funding and asset allocation between 2006 and 2015.

Over this period, there were major changes in the scheme status of the PPF-eligible universe of mainly private sector DB schemes as companies became more aware of the market and longevity risks attached to the schemes. There were also major changes in financial markets as boom was followed by the financial crisis and recession, near-zero interest rates and Quantitative Easing.

The proportion of schemes open to both new members and new accrual dropped by two-thirds between 2006 and 2012, from 43 per cent to 14 per cent, since when it was little changed. The proportion invested in equities almost halved, from 61 per cent to 33 per cent, while the proportion in bonds rose by two-thirds from 28 per cent to 48 per cent and alternative assets grew rapidly. The proportion invested in UK-quoted equities almost halved.

Schemes made around £120 billion in special contributions. However, scheme funding on an s179 basis was significantly weaker in March 2015 than in March 2006 while recovery plan lengths under the scheme funding regime were longer in the latest Tranche than in the comparable Tranche six years ago. A halving of gilt yields had made deficit reduction a major challenge.

Many of the trends continued in 2016:

Scheme demographics

- The percentage of schemes that are closed to future accrual rose again in 2016 – from 34 per cent to 35 per cent. This is a continuation of the trend that has been in place since the start of the Purple Book in 2006.
- The percentage of schemes that are open remained at 13 per cent in 2016 and has changed little over the last four years.
- The proportion of members who were active fell by 3 percentage points in 2016, to 13 per cent.

Scheme funding

- Scheme funding improved a little between end-March 2015 and end-March 2016. The aggregate deficit on an s179 level fell from £244.2 billion to £221.7 billion while the aggregate funding ratio rose from 84.2 per cent to 85.8 per cent.
- The improvement came about because the impact of using new valuations more than offset the adverse effect of lower gilt yields and equity markets.
- Between end-March 2016 and end-August 2016, the scheme funding ratio deteriorated markedly from 85.8 per cent to 78.3 per cent, largely the result of the sharp fall in gilt yields.

Asset allocation

- In 2016, the proportion of assets invested in equities fell from 33.0 per cent to 30.3 per cent while the proportion in bonds rose from 47.7 per cent to 51.3 per cent.
- The share of "other investments", total investments less equities and bonds, fell again in 2016, from 19.3 per cent to 18.4 per cent. The hedge fund share rose for the seventh successive year, to 6.6 per cent, but this was more than offset by falls in the shares of cash and "other ".
- The proportion of UK-quoted equities in total equity holdings fell again from 25.6 per cent in 2015 to 22.4 per cent in 2016, while the overseas-quoted share increased from 65.4 per cent to 68.6 per cent.
- Within bonds, the corporate fixed interest securities' proportion decreased from 37.7 per cent in 2015 to 33.7 per cent in 2016. Meanwhile, the proportion of government fixed interest securities rose from 20.3 per cent to 21.9 per cent. The balance of holdings in index-linked securities also rose to 44.4 per cent from 42.0 per cent in 2015.

2 The Data

2.1 Summary

- The main body of the analysis in Purple 2016 is based on new scheme returns for a dataset of 5,794 Defined Benefit (DB) schemes, covering 10.9 million members[1]. This represents virtually all PPF-eligible schemes and universe liabilities. Complete 2016 information is not yet available for the remaining schemes and, hence, these have been excluded from the sample.
- It is estimated that the eligible universe of schemes was 5,886, a reduction from 5,967 in March 2015. The declining universe reflects schemes winding up, scheme mergers, schemes entering assessment, and schemes transferring into the PPF.
- 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 Purple 2016.
- As in previous Purple Books, the bulk of the analysis uses funding on a section 179 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.
- From the Levy Year 2015/16, Experian has provided the PPF with scores as indicators of insolvency risk using the PPF-specific model. This is a statistical model, developed using observed insolvencies amongst employers and guarantors of DB pension schemes. More detail of the model can be found on the PPF website[2].

[1] One individual can have multiple memberships (for example of different pension schemes). Hence the number of members exceeds the number of individuals.
[2] For more information see: **http://www.pensionprotectionfund.org.uk/levy/Pages/PensionProtectionLevy.aspx**

2.2 Introduction

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

- 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; and
- schemes which began to wind up, or were completely wound up, prior to 6 April 2005.

For a more comprehensive list see 'eligible schemes' on the PPF's website at:
http://www.pensionprotectionfund.org.uk/About-Us/eligibility/Pages/Eligibility.aspx

The information used in Chapters 3 to 8 of this publication comes from three primary sources, as described below.

Scheme returns provided to The Pensions Regulator

Most of the analysis in this year's publication is based on new scheme returns issued in December 2015 and January 2016 and returned by 31 March 2016.

Voluntary form reporting

Electronic forms are available on The Pensions Regulator's website for pension schemes to provide data regarding Contingent Assets (CAs), valuation results on an s179 basis, Deficit-Reduction Contributions (DRCs), the s179 valuation results following block transfers, and Asset-Backed Contributions. More information on DRCs and CAs is given in Chapter 12, "Risk Reduction".

Sponsor failure scores

From the Levy Year 2015/16, Experian has provided the PPF with scores for the purpose of calculating the PPF Levy, using the PPF-specific model. This is a statistical model, developed using observed insolvencies amongst employers and guarantors of DB pension schemes.

Insolvency risk

The starting point in establishing the insolvency risk element of the Risk-Based Levy is normally the annual average of schemes' Experian Monthly Scores. The average Monthly Score is then matched to the minimum and maximum mean score range of one of ten Levy Bands and the corresponding Levy Rate is used.

In earlier levy years, Dun and Bradstreet (D&B) failure scores were used as indicators of insolvency risk in determining scheme levy payments.

To look at insolvency risk more broadly, the PPF uses other information, for example long-term credit ratings from the major ratings agencies, and market-implied ratings (based on the Credit Default Swap and equity markets).

Other data

The data used in Chapters 9 (PPF Levy Payments 2015/16), 10 (Schemes in Assessment) and 11 (PPF Compensation 2015/16) is derived from the PPF's business operations. The data from Chapter 12 is in the main taken from a variety of public sources, as noted underneath each figure.

2.3 The PPF-eligible DB universe[3]

Figure 2.1 | Distribution of schemes excluding those in assessment by number of members as at 31 March 2016

The Purple 2016 sample covers almost all of the estimated number of PPF-eligible schemes.

Number of Schemes by total members	Fewer than 100	100-999	1000-4999	5000-9999	10,000+	Total
Estimated 2016 universe	2,133	2,577	784	184	208	5,886
Purple 2016 dataset	2,056	2,563	783	184	208	5,794
Purple 2016 dataset as % of 2016 PPF-eligible DB universe	96.4%	99.5%	99.9%	100.0%	100.0%	98.4%

Source: PPF/ The Pensions Regulator

Figure 2.2 | Distribution of assets, s179 liabilities and members as at 31 March 2016

Large schemes with over 5,000 members make up 7 per cent of the total number of schemes in the Purple dataset but almost 75 per cent of total assets, liabilities and members.

Number of members	Fewer than 100	100-999	1000-4999	5000-9999	10,000+	Total
Assets £billion	14.2	115.9	209.8	164.5	837.0	1,341.4
s179 Liabilities £billion	15.3	140.3	256.8	189.6	961.1	1,563.1
Members thousands	89.7	899.8	1,766.4	1,264.9	6,843.0	10,863.9

Source: PPF/ The Pensions Regulator

[3] The universe estimates are based on an assessment of the number of additional schemes for which full data will become available.

Figure 2.3 | Purple datasets and universe estimates*

	2010	2011	2012	2013	2014	2015	2016
Estimated eligible DB universe	6,850	6,550	6,460	6,225	6,070	5,967	5,886
Purple dataset (as a percentage of final universe)	6,596 (96.3%)	6,432 (98.2%)	6,316 (97.8%)	6,150 (98.8%)	6,057 (99.8%)	5,945 (99.6%)	5,794 (98.4%)

Source: PPF/ The Pensions Regulator

* Since Purple 2010, schemes in assessment have been excluded from the universe and dataset estimates. This has been done so as to capture accurately the risk present in DB schemes whose employers had not experienced insolvency.

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

2.4 Scheme Funding

As in previous Purple Books, the bulk of the analysis uses funding estimates on a section 179 (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. The PPF uses estimates of scheme funding on an s179 basis 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 2016 with the s179 assumptions that came into effect on 1 May 2014. As in previous years, actuaries at the PPF have also produced full buy-out estimates of the funding position for the Purple 2016 dataset.

3 Scheme Demographics

3.1 Summary

- There has been very little movement over the year in the distribution of schemes by status. The percentage of schemes open to new members was unchanged at 13 per cent for the second successive year, 35 per cent of schemes were closed to future accrual, 1 per cent more than in 2015, with the proportion of schemes closed to new members falling from 51 per cent to 50 per cent.
- 13 per cent of members are still accruing benefits, a decrease of 3 percentage points from 2015. This decline was largely the result of the closure of one large pension scheme. The number of active members was around half of that found in the Purple 2006 dataset.
- The proportion of active members in schemes increases with size, with actives making up 18 per cent of the membership of the largest schemes (categorised as those with 10,000 or more members) compared with 12 per cent for those in schemes with between 1,000 and 10,000 members.
- The proportion of schemes in each of the size categories has remained stable over time.

3.2 Introduction

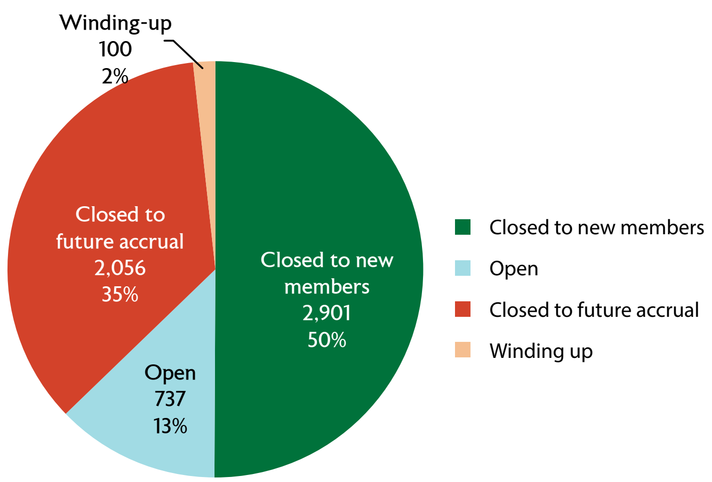
This chapter describes the dataset used for this year's edition of the Purple Book. Figures for the total number of schemes and total scheme membership are included, with breakdowns by scheme size, scheme status, and member status. The data used to categorise schemes as open or closed is that submitted on the annual scheme return.

The categorisation of schemes has varied in previous editions of the Purple book as more informative breakdowns have become available. In particular, hybrid schemes that identified themselves as 'part open' in 2006 have been counted as open. The 'part open' category was removed in 2007. For more detailed information, see the appendix.

3.3 Scheme status

Figure 3.1 | Distribution of schemes by status

50 per cent of schemes are closed to new members, and 35 per cent are also closed to future accrual.



Source: PPF/ The Pensions Regulator

Figure 3.2 | Distribution of schemes by status and year

Percentage of schemes	Open	Closed to new members	Closed to future accrual	Winding up	Totals
2006	43%	44%	12%	1%	100%
2007	36%	45%	16%	2%	100%
2008	31%	50%	17%	2%	100%
2009	27%	52%	19%	2%	100%
2010	18%	58%	21%	2%	100%
2011	16%	58%	24%	2%	100%
2012	14%	57%	26%	2%	100%
2013	14%	54%	30%	2%	100%
2014	13%	53%	32%	2%	100%
2015	13%	51%	34%	2%	100%
2016	13%	50%	35%	2%	100%

Source: PPF/ The Pensions Regulator

In line with the recent trend, there has been no material change in the distribution by status. This contrasts with a rapid closure of schemes in the period 2006 to 2010.

Figure 3.3 | Distribution of schemes by status and year (excluding hybrid schemes[4])

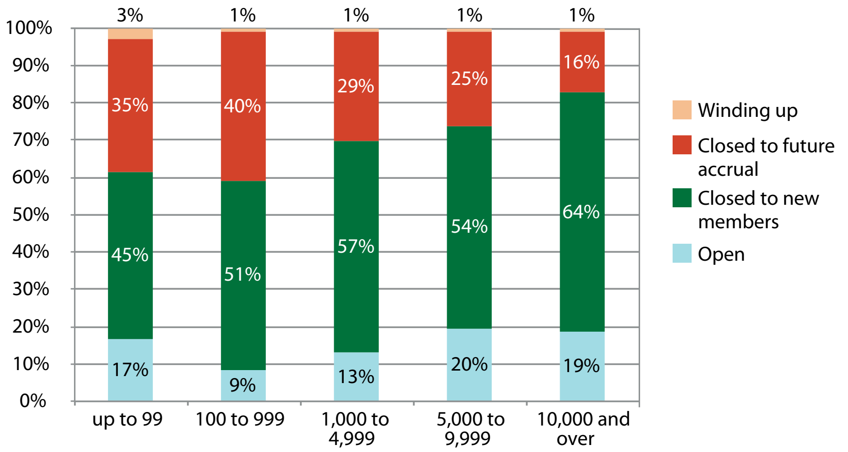
Percentage of schemes	Open	Closed to new members	Closed to future accrual	Winding up	Total
2006	35%	49%	15%	1%	100%
2007	33%	49%	17%	1%	100%
2008	26%	52%	19%	3%	100%
2009	22%	55%	20%	3%	100%
2010	21%	54%	23%	2%	100%
2011	18%	54%	26%	2%	100%
2012	17%	53%	29%	2%	100%
2013	16%	51%	31%	2%	100%
2014	15%	50%	33%	2%	100%
2015	14%	49%	35%	2%	100%
2016	14%	47%	37%	2%	100%

Source: PPF/ The Pensions Regulator

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

Large schemes are less likely to be closed to future accrual of benefits.

Figure 3.4 | Scheme status by member group*



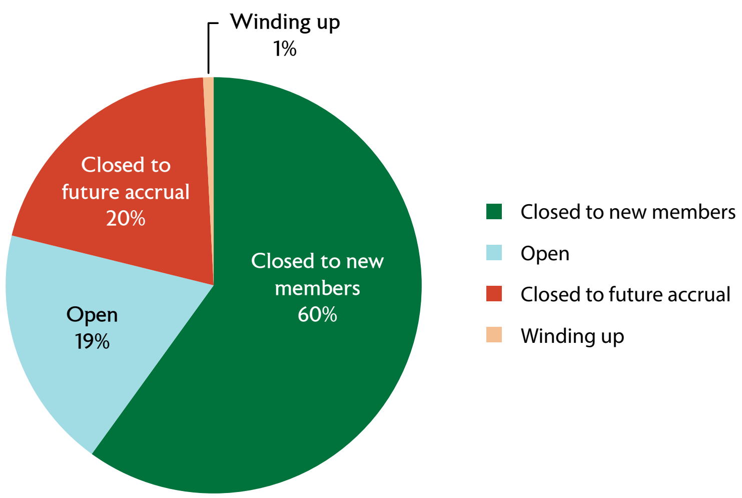
Source: PPF/ The Pensions Regulator

* Note that the percentages of each column may not sum to 100 because of rounding.

3.4 Scheme status and scheme members

19 per cent of members are in schemes that are open to new accrual.

Figure 3.5 | Distribution of members by scheme status



Source: PPF/ The Pensions Regulator

Figure 3.6 | Distribution of members by status

Percentage of schemes	Open	Closed to new members	Closed to future accrual	Winding up	Totals
2006	66%	32%	2%	1%	100%
2007	50%	46%	3%	0%	100%
2008	44%	52%	4%	0%	100%
2009	37%	59%	4%	0%	100%
2010	34%	60%	5%	1%	100%
2011	31%	62%	6%	0%	100%
2012	28%	64%	8%	0%	100%
2013	23%	65%	12%	0%	100%
2014	22%	62%	15%	0%	100%
2015	22%	62%	16%	0%	100%
2016	19%	60%	20%	1%	100%

Source: PPF/ The Pensions Regulator

The proportion of members in open schemes has declined from 66 per cent in 2006 to 19 per cent in 2016. The proportion was stable from 2013 to 2015 but fell by 3 percentage points in 2016 owing to the closure of one large scheme.

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

Percentage of schemes	Open	Closed to new members	Closed to future accrual	Winding up	Total
2006	35%	49%	15%	1%	100%
2007	55%	41%	3%	0%	100%
2008	46%	49%	4%	0%	100%
2009	38%	57%	5%	0%	100%
2010	38%	56%	6%	1%	100%
2011	34%	58%	8%	0%	100%
2012	30%	61%	9%	0%	100%
2013	27%	61%	11%	0%	100%
2014	25%	60%	14%	1%	100%
2015	24%	59%	16%	1%	100%
2016	19%	56%	24%	1%	100%

Source: PPF/ The Pensions Regulator

Excluding hybrid schemes, the proportion of members in open schemes fell to 19 per cent from 24 per cent in 2016.

Of the 10.9 million members included in the Purple book, 79 per cent were in schemes still open to future accrual. However, only 13 per cent of members were still accruing benefits.

The number of active members has been steadily declining since 2006.

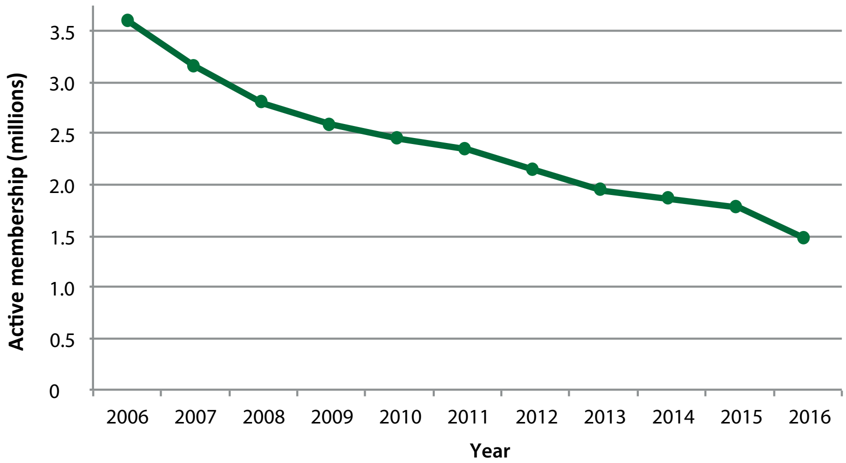
3.5 Scheme membership

Figure 3.8 | Members by member type and status, 31 March 2016 *

Members	Open	Closed to new members	Closed to future accrual	Winding up	Total
Active members	6%	8%	0%	0%	13%
Deferred members	7%	27%	13%	0%	47%
Pensioner members	6%	26%	7%	0%	40%
Total	19%	60%	20%	1%	100%

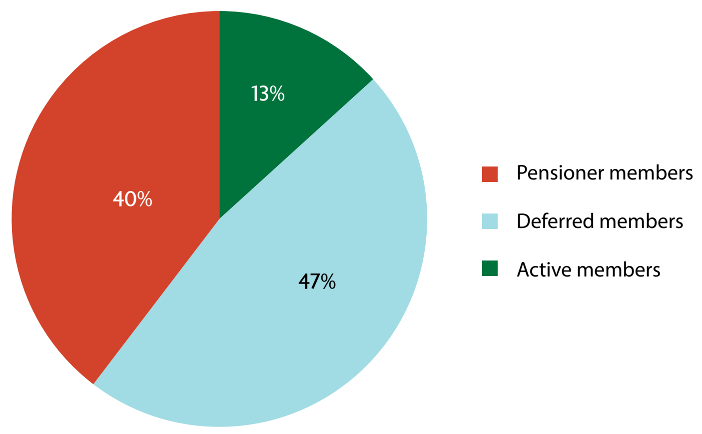
Source: PPF/ The Pensions Regulator
*Note that the components may not sum to the total column because of rounding.

Figure 3.9 | Active members in Purple datasets



Source: PPF/ The Pensions Regulator

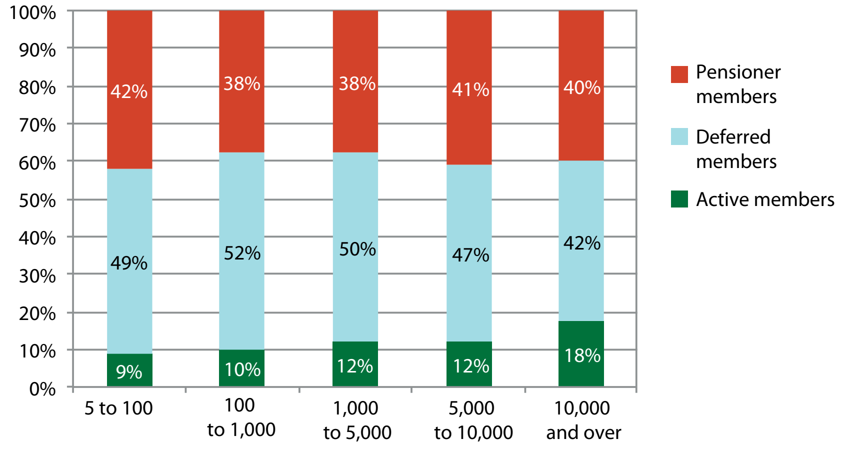
Figure 3.10 | Distribution of member types in the Purple 2016 dataset



Source: PPF/ The Pensions Regulator

Active members comprise 13 per cent of the dataset, with 47 per cent being deferred members and 40 per cent pensioners.

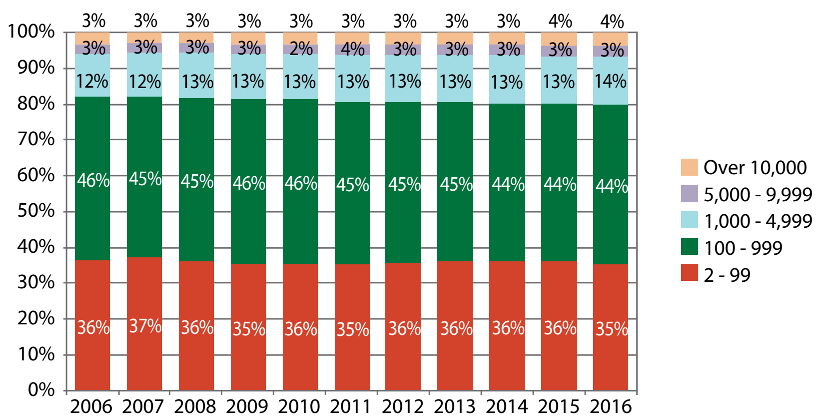
Figure 3.11 | Distribution of member types in the Purple 2016 dataset



Source: PPF/ The Pensions Regulator

The distribution of member types is stable across scheme sizes.

Figure 3.12 | Proportion of schemes by size by year



Source: PPF/ The Pensions Regulator

The proportions of schemes by size have remained stable over time.

4 Scheme Funding

4.1 Summary

- The aggregate s179 funding position of the schemes in the Purple 2016 dataset as at 31 March 2016 was a deficit of £221.7 billion, down from £244.2 billion a year earlier.
- Total liabilities increased by 1.3 per cent to £1,563.1 billion this year. Total assets increased by 3.3 per cent to £1,341.4 billion.
- The s179 funding ratio rose to 85.8 per cent at end-March 2016, from 84.2 per cent at end-March 2015.
- In the year to end-March 2016, 15-year conventional gilt yields fell by 2 basis points and index linked by 7 basis points while the FTSE All-Share Index fell by 7 per cent and FTSE All-World by 6 per cent.
- The impact of market movements alone would have resulted in a deterioration in the scheme funding ratio of around 1.4 percentage points which compares to the estimated improvement of 1.6 percentage points. This points to the new scheme valuations having a positive impact on funding.
- Smaller and larger schemes tend to have better funding ratios, as do the more mature schemes.
- 24 per cent of s179 liabilities in the dataset were in respect of active members.
- The funding ratio on a full buy-out basis improved to 63.2 per cent at end-March 2016, up from 61.8 per cent a year earlier, while the deficit improved to £779.9 billion from £800.9 billion.

4.2 Introduction

This chapter primarily deals with funding on an s179 basis as at March 2016. Funding information supplied in scheme returns is processed so that the funding ratio can be estimated at a common date, allowing consistent totals to be used. A scheme 100 per cent funded on an s179 basis is broadly speaking at the level which would have to be paid to an insurance company for it to take on the payment of PPF levels of compensation. In addition, estimated full buy-out funding information is included.

The processing of s179 results allows for the different assumptions used for the s179 valuations at different effective dates. s179 figures form the basis for PPF levy calculations, subject to subsequent adjustments in defined circumstances. Estimates of liabilities on the full buy-out basis have used the same valuation assumptions and underlying data but an approximate allowance for the difference between the PPF level of compensation and full scheme benefits.

4.3 Overall funding

Figure 4.1 | Key funding statistics as at 31 March 2016

	s179	Full buy-out
Total number of schemes	5,794	5,794
Total assets (£ billion)	1,341.4	1,341.4
Total liabilities (£ billion)	1,563.1	2,121.3
Aggregate funding position (£ billion)	-221.7	-779.9
Total balance for schemes in deficit (£ billion)	-273.5	-784.0
Total balance for schemes in surplus (£ billion)	51.8	4.1
Funding ratio	85.8%	63.2%

Source: PPF/ The Pensions Regulator

The aggregate s179 funding position of the schemes in the Purple 2016 dataset as at 31 March 2016 was a deficit of £221.7 billion.

The s179 funding ratio for 2016 was 85.8 per cent, up from 84.2 per cent a year earlier. Total liabilities increased by 1.3 per cent and total assets by 3.3 per cent.

Figure 4.2 | Historical funding figures on an s179 basis

Year	No. of schemes	Total assets (£ billion)	s179 Liabilities				
			Liabilities (£ billion)	Aggregate funding (s179) (£ billion)	Deficit of schemes in deficit (£ billion)	Surplus of schemes in surplus (£ billion)	Funding ratio
2006	7,751	769.5	792.2	-22.7	-76.3	53.5	97.1%
2007	7,542	837.7	769.9	67.8	-46.8	96.5	108.8%
2008	6,897	837.2	842.3	-5.1	-67.7	62.6	99.4%
2009	6,885	780.4	981.0	-200.6	-216.7	16.0	79.6%
2010	6,596	926.2	887.9	38.3	-49.1	87.4	104.3%
2011	6,432	968.5	969.7	-1.2	-78.3	77.1	99.9%
2012	6,316	1,026.8	1,231.0	-204.2	-231.3	27.1	83.4%
2013	6,150	1,118.5	1,329.2	-210.8	-245.8	35.0	84.1%
2014	6,057	1,137.5	1,176.8	-39.3	-119.0	79.7	96.7%
2015	5,945	1,298.3	1,542.5	-244.2	-285.3	41.1	84.2%
2016	5,794	1,341.4	1,563.1	-221.7	-273.5	51.8	85.8%

Source: PPF/ The Pensions Regulator

The buy-out funding ratio increased from 61.8 per cent to 63.2 per cent over the year, and the aggregate deficit decreased from £800.9 billion to £779.9 billion.

Figure 4.3 | Historical funding figures on a full buy-out basis

Year	Full buy-out				
	Liabilities (£ billion)	Aggregate funding (£ billion)	Deficit of schemes in deficit (£ billion)	Surplus of schemes in surplus (£ billion)	Funding ratio
2006	1,273.5	-504.0	n/a	n/a	60.4%
2007	1,289.3	-451.6	n/a	n/a	65.0%
2008	1,356.0	-518.6	-520.4	1.6	61.7%
2009	1,351.6	-571.2	-572.3	1.1	57.7%
2010	1,359.2	-433.0	-436.5	3.5	68.1%
2011	1,435.5	-467.0	-470.7	3.7	67.5%
2012	1,702.6	-675.8	-677.3	1.5	60.3%
2013	1,826.7	-708.2	-709.9	1.7	61.2%
2014	1,690.3	-552.8	-558.2	5.4	67.3%
2015	2,099.2	-800.9	-804.9	4.0	61.8%
2016	2,121.3	-779.9	-784.0	4.1	63.2%

Source: PPF/ The Pensions Regulator

4.4 Analysis of funding by scheme size

Figure 4.4 | s179 funding ratio by size of scheme membership, as at 31 March 2016

Membership	Number of schemes in sample	Market value of assets (£ billion)	Liabilities (£ billion)	Balance (£ billion)	Weighted average funding ratio	Simple average funding ratio*
1 to 99 members	2,056	14.2	15.3	-1.0	93.2%	90.6%
100 to 999 members	2,563	115.9	140.3	-24.4	82.6%	80.3%
1,000 to 4,999 members	783	209.8	256.8	-47.0	81.7%	80.0%
5,000 to 9,999 members	184	164.5	189.6	-25.1	86.7%	83.9%
Over 10,000 members	208	837.0	961.1	-124.1	87.1%	84.1%
Total	5,794	1,341.4	1,563.1	-221.7	85.8%	84.2%

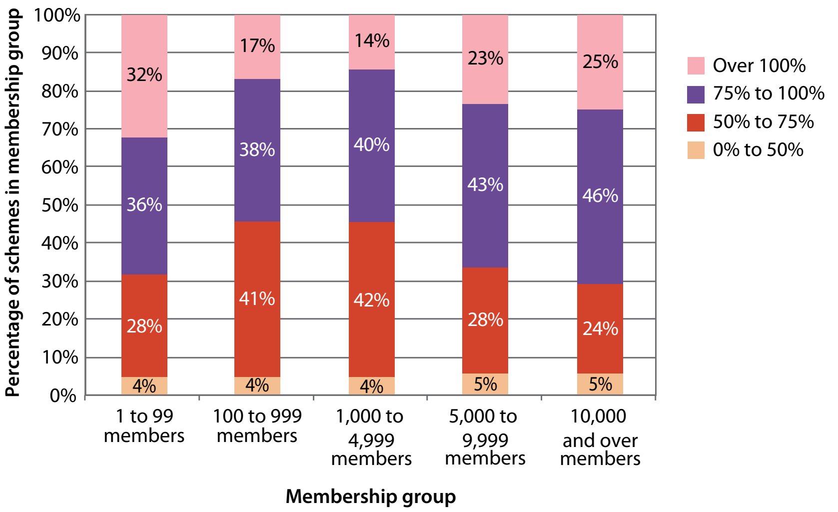
Source: PPF/ The Pensions Regulator

*Note that nineteen schemes with funding ratio over 200 per cent were excluded from the simple averages to avoid distortions.

Note that the percentages in each column may not sum to the total column because of rounding.

The best funded schemes were the smallest with an aggregate funding level of 93.2 per cent for schemes with fewer than 100 members.

Figure 4.5 | Distribution of s179 funding ratio by size of scheme membership as at 31 March 2016



Source: PPF/ The Pensions Regulator

Note that the percentages in each column may not sum to 100 because of rounding.

Schemes with over 10,000 members and schemes with fewer than 100 members are less likely to have a funding level under 75 per cent.

Figure 4.6 | Estimated buy-out levels by size of scheme membership as at 31 March 2016

Members	Number of schemes in sample	Market value of assets (£ billion)	Liabilities (£ billion)	Balance (£ billion)	Aggregate funding ratio	Simple average funding ratio*
1 to 99 members	2,056	14.2	21.3	-7.1	66.8%	66.8%
100 to 999 members	2,563	115.9	191.7	-75.8	60.4%	59.5%
1,000 to 4,999 members	783	209.8	343.7	-133.8	61.1%	60.4%
5,000 to 9,999 members	184	164.5	254.9	-90.4	64.5%	60.4%
Over 10,000 members	208	837.0	1,309.8	-472.8	63.9%	63.9%
Total	5,794	1,341.4	2,121.3	-779.9	63.2%	62.5%

Source: PPF / The Pensions Regulator

*Note that schemes with unusual funding arrangements were excluded from the simple averages in this table to avoid distortions. Nineteen schemes were removed on the basis that their buy-out funding level was equal to or greater than 200 per cent.

Note that the percentages in each column may not sum to the total column because of rounding.

Schemes with fewer than 100 members are less likely to have a buy-out funding level under 75 per cent.

Figure 4.7 | Distribution of buy-out funding ratio by size of scheme membership as at 31 March 2016

Source: PPF / The Pensions Regulator

Note that the percentages of each column may not sum to 100 because of rounding.

4.5 Analysis of funding by scheme maturity

Maturity is the percentage of the scheme that relates to pensioners.

Figure 4.8 | Analysis of s179 funding ratio by scheme maturity as at 31 March 2016

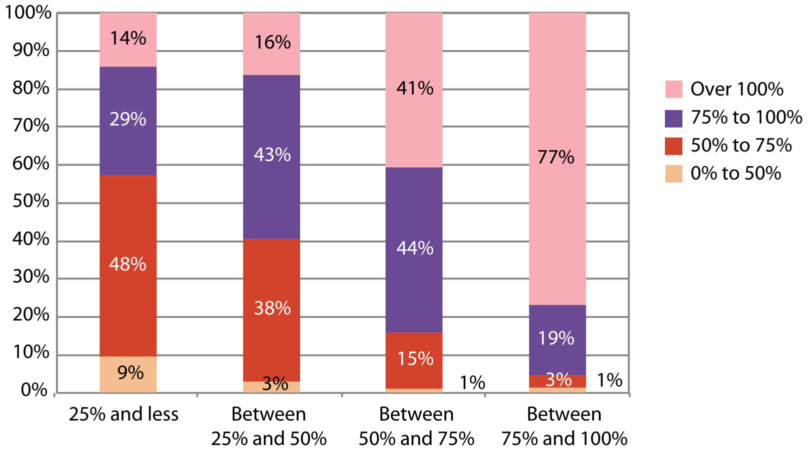
Proportion of s179 liabilities relating to pensioners	Number of schemes in sample	Market value of assets (£ billion)	Liabilities (£ billion)	Balance (£ billion)	Aggregate funding ratio	Simple average funding ratio*
25% and less	1,700	166.1	236.9	-70.8	70.1%	76.2%
Between 25% and 50%	2,821	794.5	930.2	-135.7	85.4%	81.6%
Between 50% and 75%	1,057	351.7	371.1	-19.4	94.8%	97.7%
Between 75% and 100%	216	29.1	24.9	4.2	116.7%	116.8%
Total	5,794	1,341.4	1,563.1	-221.7	85.8%	84.2%

Source: PPF/ The Pensions Regulator

*Note that schemes with unusual funding arrangements were excluded from the simple averages in this table to avoid distortions. Nineteen schemes were removed on the basis that their buy-out funding level was equal to or greater than 200 per cent.

More mature schemes tend to have a higher funding ratio.

Figure 4.9 | Distribution of funding ratio on an s179 basis by scheme maturity as at 31 March 2016



Source: PPF/ The Pensions Regulator

Note that the percentages of each column may not sum to 100 because of rounding.

The more mature schemes have higher funding ratios. For the most mature group, 77 per cent of schemes are funded over 100 per cent.

4.6 Analysis of funding by scheme status

Schemes that were open to new entrants were the worst funded, with an aggregate funding ratio of 74.4 per cent.

Figure 4.10 | Analysis of s179 funding ratio by scheme status as at 31 March 2016

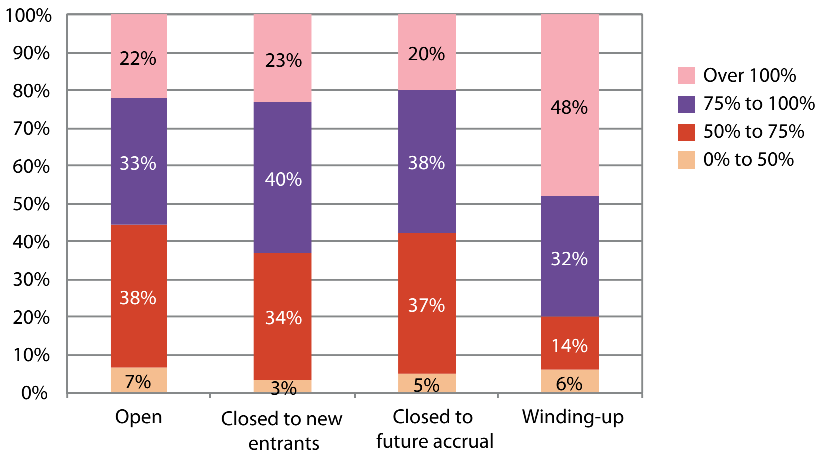
Status	Number of schemes in sample	Market value of assets (£ billion)	Liabilities (£ billion)	Balance (£ billion)	Aggregate average funding ratio	Simple average funding ratio
Open	737	214.1	287.8	-73.7	74.4%	83.1%
Closed to new entrants	2,901	916.9	1,019.8	-102.9	89.9%	85.3%
Closed to future accrual	2,056	201.7	247.2	-45.6	81.6%	82.2%
Winding-up	100	8.8	8.3	0.4	105.2%	101.1%
Total	**5,794**	**1,341.4**	**1,563.1**	**-221.7**	**85.8%**	**84.2%**

Source: PPF/ The Pensions Regulator

Note that the percentages in each column may not sum to the total column because of rounding.

The distribution of funding ratios is similar for open and closed schemes.

Figure 4.11 | Distribution of schemes by s179 funding ratio within scheme status groups as at 31 March 2016



Source: PPF/ The Pensions Regulator

Figure 4.12 | Analysis of estimated full buy-out funding ratio by scheme status as at 31 March 2016

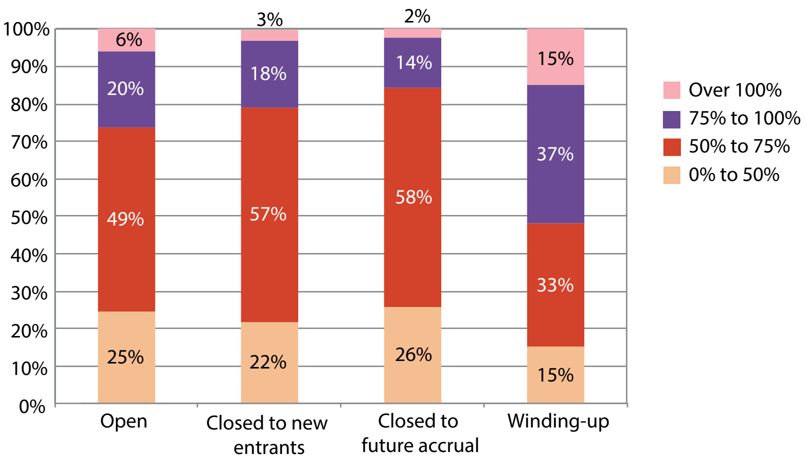
Status	Number of schemes in sample	Market value of assets (£ billion)	Liabilities (£ billion)	Balance (£ billion)	Aggregate average funding ratio	Simple average funding ratio*
Open	737	214.1	383.3	-169.2	55.9%	64.6%
Closed to new entrants	2,901	916.9	1,391.5	-474.6	65.9%	63.1%
Closed to future accrual	2,056	201.7	335.1	-133.4	60.2%	60.2%
Winding-up	100	8.8	11.5	-2.7	76.1%	75.9%
Total	5,794	1,341.4	2,121.3	-779.9	63.2%	62.5%

Source: PPF/ The Pensions Regulator

*Note that schemes with unusual funding arrangements were excluded from the simple averages in this table to avoid distortions. Nineteen schemes were removed on the basis that their buy-out funding level was equal to or greater than 200 per cent.

As measured by the buy-out funding ratio, open schemes are worse funded than closed schemes. Schemes that are winding up have an aggregate buy-out funding ratio of 76 per cent.

Figure 4.13 | Distribution of estimated full buy-out funding ratio by scheme status as at 31 March 2016

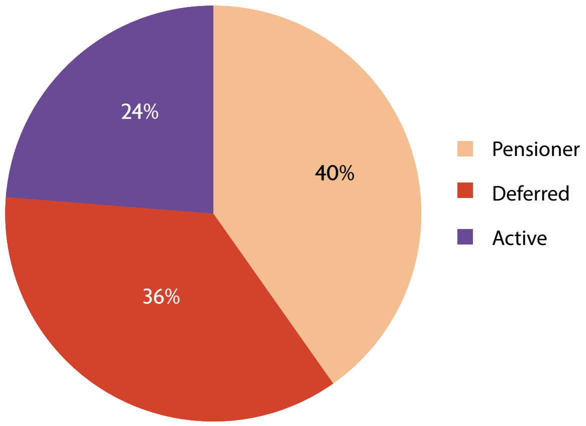


Source: PPF/ The Pensions Regulator

Only 15 per cent of schemes that are winding up are in surplus on a full buy-out basis. 15 per cent of schemes that are winding up are under 50 per cent funded.

24 per cent of s179 liabilities in the dataset were in respect of active members.

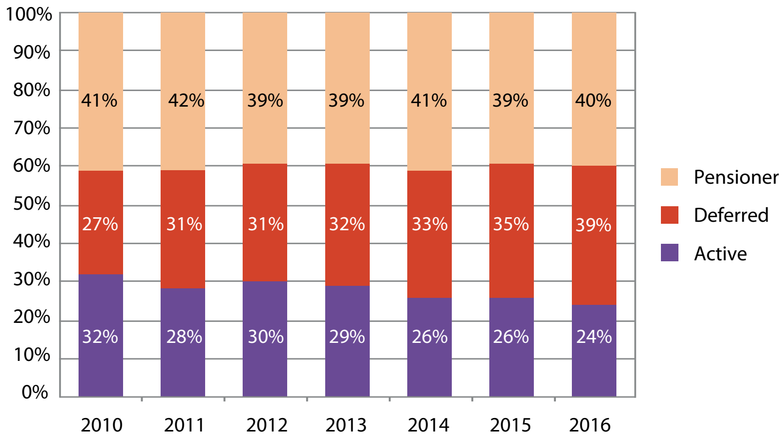
Figure 4.14 | s179 liabilities by active, deferred and pensioner members



Source: PPF/ The Pensions Regulator

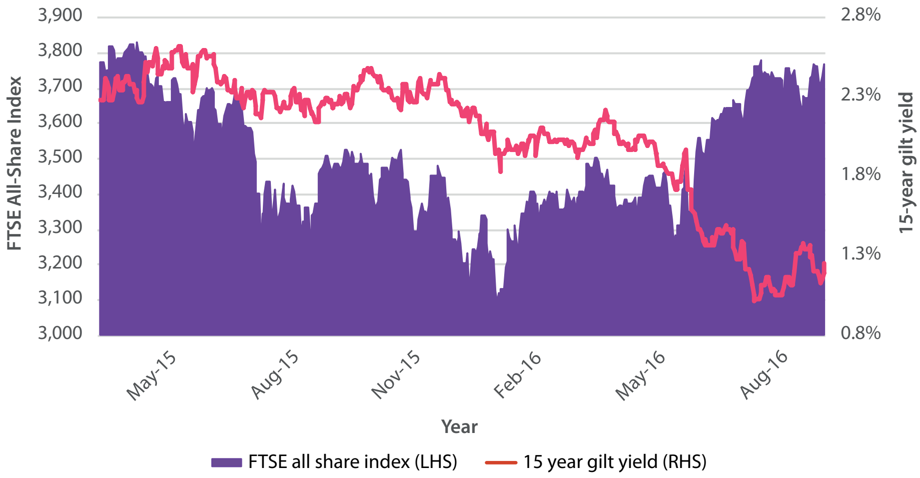
Since 2010 the proportion of liabilities that relates to pensioners has been constant at around 40 per cent. The proportion relating to active members has reduced from 32 per cent to 24 per cent.

Figure 4.15 | s179 liabilities by member status in historical Purple datasets



Source: PPF/ The Pensions Regulator

Figure 4.16 | Movements in stock markets and gilt yields since end March 2015



Source: Bloomberg

Had the 2015 Purple dataset been retained, then market movements would have led to a deterioration in the scheme funding ratio of around 1.4 percentage points rather than the estimated improvement of 1.6 percentage points.

5 Funding Sensitivities

5.1 Summary

- All the funding sensitivities in Chapter 5 are on an s179 basis, taking the funding position as at 31 March 2016[5] as the base and using the Purple 2016 dataset. The sensitivities do not take into account the use of derivative instruments to hedge changes in interest rates, inflation, equity levels or longevity.
- The historical series in section 5.2 shows how funding levels have changed over time. The 31 March results are taken from the Purple Book for the year in question, with interim values being obtained by rolling forward the assets and liabilities using movements in nominal and real gilt yields and equity markets.
- The funding position of schemes can change over time reflecting changes in a number of factors including: financial markets, actuarial assumptions, the decline in the universe of defined benefit schemes (given a closed population), employers' special contributions[6], and pensions getting closer to payment.
- Since the start of the financial crisis in 2008, aggregate scheme funding on an s179 basis has been over 100 per cent in only 10 of the 100 months. Over this period, the funding ratio has averaged 89.7 per cent compared with 102.1 per cent between March 2006 and March 2008.
- Both the historical aggregate balance (assets less liabilities) and funding ratio have been trending downwards since 2006.
- The percentage of schemes in deficit on a historical s179 basis was around 83 per cent in August 2016, which is slightly lower than the historical high percentages of 2009, 2012 and 2015.
- A 0.1 percentage point (10 basis point) rise in gilt yields decreases the end-March 2016 aggregate deficit by £22.7 billion from £221.7 billion to £199.0 billion while a 2.5 per cent rise in equity prices would reduce the aggregate deficit by £9.9 billion to £211.8 billion.
- A 0.1 percentage point (10 basis point) reduction in gilt yields raises aggregate scheme liabilities by 2.0 per cent and raises aggregate scheme assets by 0.6 per cent. A 2.5 per cent rise in equity markets raises scheme assets by 0.7 per cent.
- If the assumed rate of inflation increases by 0.1 per cent, with nominal gilt yields unchanged, then the s179 liabilities for aggregate schemes increases by approximately 0.7 per cent or £10.4 billion.
- An increase in longevity such that the experienced mortality is now equivalent to that of an individual two years younger would increase aggregate schemes' liabilities by 6.5 per cent, or £101.8 billion.

[5] Using the previous valuation guidance as in Chapter 4, please follow the link for more information **www.pensionprotectionfund.org.uk/DocumentLibrary/Documents/Section_179_Assumptions_Guidance_VA7_May14.pdf**
[6] For more information, please see Chapter 12, section 12.3 on special contributions.

5.2 Historical changes in s179 scheme funding since 2006

Movements in the estimated funding position of schemes can change over time reflecting changes in a number of factors including: financial markets, actuarial assumptions, the decline in the universe of defined benefit schemes, employers' special contributions, and pensions getting closer to payment. The historical series in this section takes the estimated funding position at 31 March of each year given in Chapter 4 "Scheme Funding". The 31 March results are taken from the Purple Book for the year in question, with interim values being obtained by rolling forward the assets and liabilities using movements in nominal and real gilt yields and equity markets.

Figure 5.1 | Historical s179 funding ratio (assets as a percentage of liabilities) of pension schemes in the Purple datasets

Source: PPF / The Pensions Regulator

Since the start of the financial crisis in 2008, scheme funding on an s179 basis has been over 100 per cent in only 10 of the 100 months. After March 2008, the funding ratio has averaged 89.7 per cent compared with 102.1 per cent between March 2006 and March 2008.

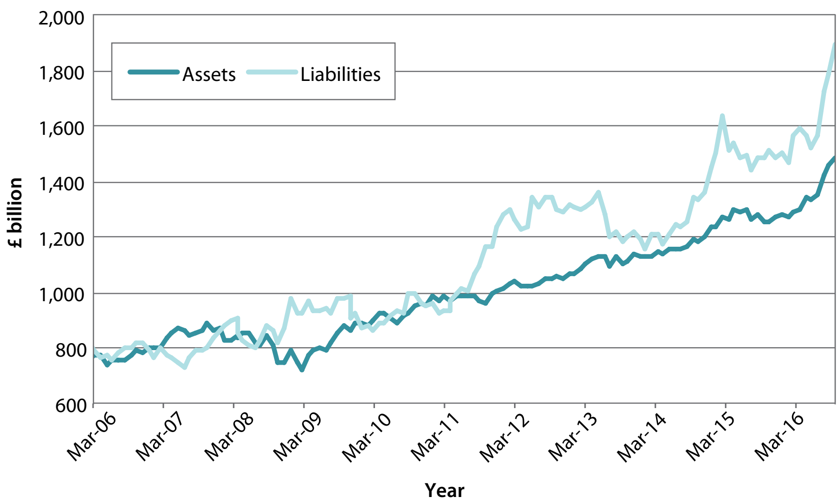
There has been a strong downward trend in the aggregate balance, leading to successive all-time lows for the aggregate balance of pension schemes in our universe.

Figure 5.2 | Historical s179 aggregate balance (assets less liabilities) of pension schemes in the Purple datasets

Source: PPF/ The Pensions Regulator

Scheme liabilities have risen sharply since March 2016, reflecting the drop in gilt yields.

Figure 5.3 | Historical movements in assets and s179 liabilities of schemes in the Purple datasets



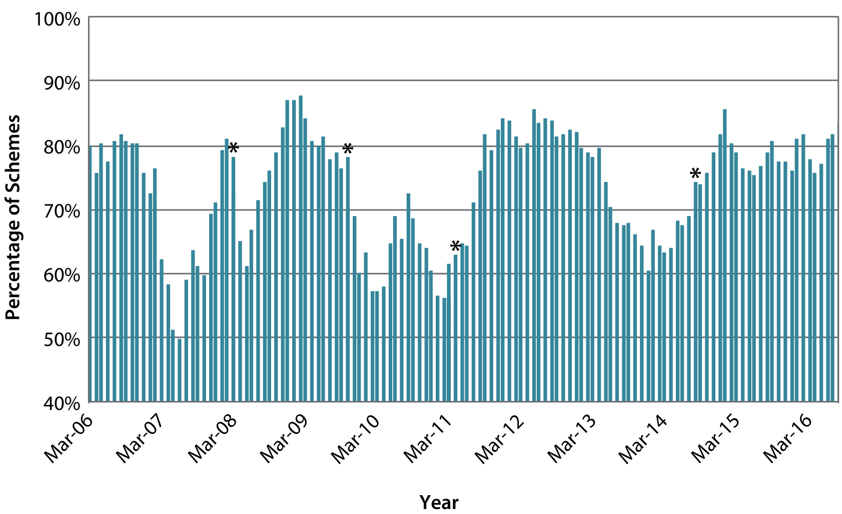
Source: PPF/ The Pensions Regulator

Figure 5.4 | Historical aggregate assets less aggregate liabilities for schemes in deficit

Source: PPF/ The Pensions Regulator

The aggregate deficit of schemes in deficit was at its largest in August 2016 at £451.1 billion.

Figure 5.5 | Historical percentage of schemes in deficit each month in the Purple datasets*



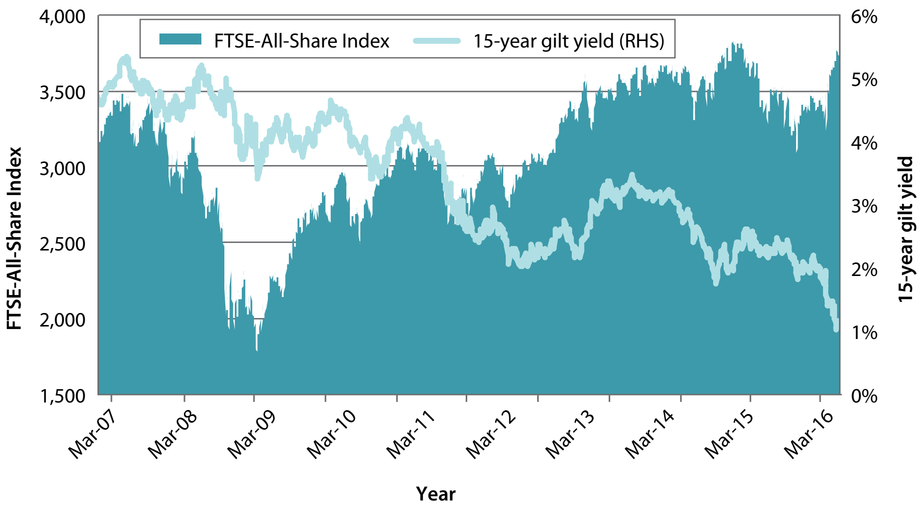
Source: PPF/ The Pensions Regulator

*Note: the changes to assumptions in March 2008, October 2009 and April 2011 reduced the number of schemes in deficit by 473, 714 and 253 respectively, while the changes in assumptions in May 2014 raised the number of schemes in deficit by 259.

In August 2016, around 83 per cent of schemes were in deficit, slightly lower than the historical high percentages of 2009, 2012 and 2015.

The FTSE All-Share Index dropped in 2015. However, by August 2016 it had almost recovered its losses. Meanwhile, the 15-year gilt yield fell to an all-time low in August 2016.

Figure 5.6 | Movements in stock markets and gilt yields



Source: Bloomberg

5.3 Funding Sensitivities: rules of thumb

Funding levels are sensitive to movements in the markets with equity and gilts prices having a major impact upon scheme assets, and gilt yields affecting scheme liabilities. In this section we show the effect on funding of changes in equity and gilt markets. We have accurately calculated the impact of a change of a 7.5 per cent rise in equity prices and a 0.3 per cent rise in gilt yields, and interpolated to obtain the other results.

A 0.1 percentage point rise in gilt yields would have improved the end-March 2016 s179 aggregate deficit by £22.7 billion from £221.7 billion (bold) to £199.0 billion (shaded), somewhat larger than the impact of a 2.5 per cent increase in equity prices which would have resulted in a deficit of £211.8 billion (shaded).

Figure 5.7 | Impact of changes in gilt yields and equity prices on the s179 funding ratio from a base aggregate deficit of £221.7 billion at 31 March 2016

Assets less s179 liabilities (£ billion)							
Movement in equity prices	Movement in gilt yields						
	-0.3pp	-0.2pp	-0.1pp	0.0pp	0.1pp	0.2pp	0.3pp
7.5%	-259.8	-237.4	-214.8	-192.1	-169.4	-146.6	-123.7
5.0%	-269.7	-247.2	-224.6	-202.0	-179.3	-156.5	-133.6
2.5%	-279.6	-257.1	-234.5	-211.8	-189.1	-166.3	-143.4
0.0%	-289.4	-266.9	-244.3	**-221.7**	-199.0	-176.2	-153.3
-2.5%	-299.3	-276.8	-254.2	-231.6	-208.8	-186.0	-163.1
-5.0%	-309.1	-286.6	-264.1	-241.4	-218.7	-195.9	-173.0
-7.5%	-319.0	-296.5	-273.9	-251.3	-228.5	-205.7	-182.9

Source: PPF/ The Pensions Regulator

Figure 5.8 | Impact of changes in gilt yields and equity prices on assets from a base of 100 at 31 March 2016

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%	104.0	103.4	102.8	102.2	101.6	101.0	100.5
5.0%	103.3	102.7	102.1	101.5	100.9	100.3	99.7
2.5%	102.5	101.9	101.3	100.7	100.1	99.6	99.0
0.0%	101.8	101.2	100.6	**100.0**	99.4	98.8	98.2
-2.5%	101.1	100.5	99.9	99.3	98.7	98.1	97.5
-5.0%	100.3	99.7	99.1	98.5	97.9	97.4	96.8
-7.5%	99.6	99.0	98.4	97.8	97.2	96.6	96.0

Source: PPF/ The Pensions Regulator

A 2.5 per cent increase in equity prices would have raised scheme assets by 0.7 per cent. A 0.3 percentage point decrease in gilt yields would have increased scheme assets by 1.8 per cent.

Figure 5.9 | Impact of changes in gilt yields on s179 liabilities from a base of 100 at 31 March 2016

s179 liabilities relative to a base of 100							
s179 liabilities relative to March level (=100)	Movement in gilt yields						
	-0.3pp	-0.2pp	-0.1pp	0.0pp	0.1pp	0.2pp	0.3pp
	105.9	103.9	102.0	100.0	98.0	96.1	94.1

Source: PPF/ The Pensions Regulator

A 0.1 percentage point movement in gilt yields would increase or reduce s179 liabilities by 2 per cent.

Figure 5.10 | Impact of changes in gilt yields and equity prices on s179 funding from a base total deficit of £273.5 billion at 31 March 2016, excluding schemes in surplus

Assets less s179 liabilities (£ billion)							
Movement in equity prices	Movement in gilt yields						
	-0.3pp	-0.2pp	-0.1pp	0.0pp	0.1pp	0.2pp	0.3pp
7.5%	-309.3	-290.1	-270.7	-251.4	-232.0	-212.5	-193.0
5.0%	-316.7	-297.4	-278.1	-258.8	-239.3	-219.9	-200.4
2.5%	-324.1	-304.8	-285.5	-266.1	-246.7	-227.3	-207.8
0.0%	-331.5	-312.2	-292.9	**-273.5**	-254.1	-234.6	-215.1
-2.5%	-338.9	-319.6	-300.3	-280.9	-261.5	-242.0	-222.5
-5.0%	-346.2	-327.0	-307.7	-288.3	-268.9	-249.4	-229.9
-7.5%	-353.6	-334.4	-315.0	-295.7	-276.3	-256.8	-237.3

Source: PPF/ The Pensions Regulator

A 2.5 per cent increase in equity prices would decrease the scheme deficit by £7.4 billion from a base case of £273.5 billion. A 0.3 percentage point decrease in gilt yields would increase the scheme deficit by £58.0 billion to £331.5 billion.

If the assumed rate of inflation increases by 0.1 percentage point and nominal rates remain unchanged then the s179 liabilities rise by 0.7 per cent or £10.4 billion.

Figure 5.11 | Impact of changes in the rate of inflation on s179 liabilities at 31 March 2016 (base = £1,563.1 billion)

	s179 liabilities (£ billion)			
	Change in nominal yields		Change in real yields	
	-0.1pp	0.1pp	-0.1pp	0.1pp
£ billions	1,584.5	1,541.8	1,573.5	1,552.8
Percentage change	1.4%	-1.4%	0.7%	-0.7%

Source: PPF/ The Pensions Regulator

An increase in longevity such that experienced mortality is now equivalent to that of an individual two years younger would cause total scheme s179 liabilities to increase by £101.8 billion, or 6.5 per cent.

Figure 5.12 | Impact of changes in longevity assumptions on s179 liabilities at 31 March 2016 (base = £1,563.1 billion)

	s179 liabilities (£ billion)	% Change from base
Age Rating + 2 years	1,461.0	-6.5%
Age Rating - 2 years	1,664.9	6.5%

Source: PPF/ The Pensions Regulator

Insolvency Risk

6

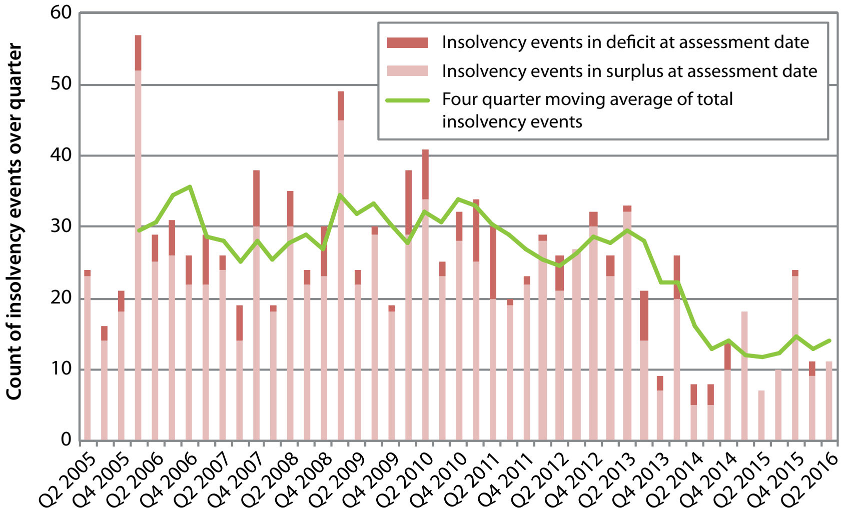
6.1 Summary

- The four quarter average of PPF universe insolvencies fell sharply between the second quarter of 2013 and the fourth quarter of 2014, since when it has been broadly flat.
- UK growth has slowed somewhat since the end of 2014. GDP in the third quarter of 2016 was 8.1 per cent above the pre-crisis high in the first quarter of 2008.
- The level of whole economy insolvencies has fallen a little over the last year.
- Schemes with fewer than 100 members tend to have higher insolvency probabilities. The average one-year ahead insolvency probability for schemes with fewer than 100 members is 1 per cent, considerably higher than for schemes with between 1,000 and 4,999 members which stood at 0.53 per cent at the end of the first quarter of 2016.[7]

[7] Insolvency probabilities are calculated using the Experian score of the scheme, as used for calculating a scheme's PPF levy.

The number of PPF-universe insolvencies fell sharply between the second quarter of 2013 and the fourth quarter of 2014 since when they have levelled out.

Figure 6.1 | PPF universe insolvency rates*

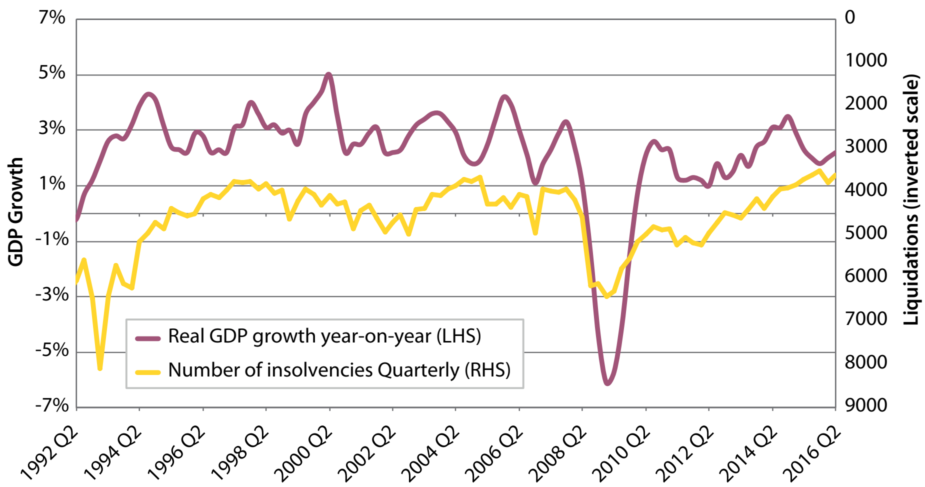


Source: The UK Insolvency Service and the PPF / The Pensions Regulator

* There are around 14, 500 companies in the PPF universe compared with around three million companies in the UK.

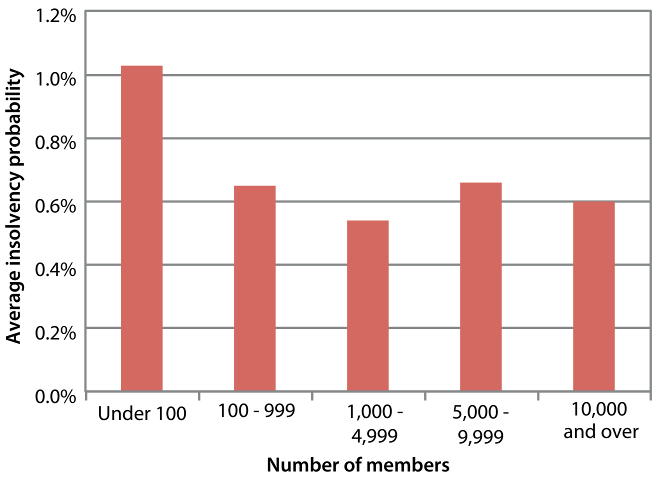
GDP in Q2 2016 was 8.1 per cent above the pre-crisis level in Q1 2008.

Figure 6.2 | UK company insolvencies



Source: Office for National Statistics and the UK Insolvency Service

Figure 6.3 | Average one-year ahead insolvency probability based on Experian failure scores* by scheme size as measured by number of members, as at 31 March 2016



Source: PPF/The Pensions Regulator

*Experian failure scores are converted into credit ratings. These are then converted into the probability of insolvency over the next year. This conversion uses a mapping matrix that takes into account data on historical company insolvencies.

Schemes with fewer than 100 members tend to have higher insolvency probabilities.

7 Asset Allocation

7.1 Summary

- Looking at the movements in the year to 31 March 2016:
  - Continuing the long-term trends, the proportion invested in equities fell from 33.0 per cent to 30.3 per cent in 2016 while the proportion in bonds rose from 47.7 per cent to 51.3 per cent.
  - Also continuing the long-term trend, within equities, the UK-quoted proportion fell from 25.6 per cent to 22.4 per cent in 2016, while the overseas share increased from 65.4 per cent to 68.6 per cent.
  - Within bonds, the corporate fixed interest securities' proportion decreased from 37.7 per cent in 2015 to 33.7 per cent in 2016, the fourth successive decline.
  - The proportion of government fixed interest securities rose for a fourth consecutive year from 20.3 per cent to 21.9 per cent. The balance of holdings in index-linked securities rose from 42.0 per cent in 2015 to 44.4 per cent, continuing the trend since 2010.
  - The proportion invested in instruments other than bonds and equities fell from 19.3 per cent in 2015 to 18.4 per cent. However, the proportion in hedge funds rose to 6.6 per cent, the seventh successive rise.
- Smaller schemes tend to have a higher proportion of assets in UK equities and a smaller proportion in overseas equities and unquoted/private equities. For example, schemes with under £5 million in assets have 53.7 per cent of their equity holdings in UK equities compared with 24.9 per cent for schemes with over £100 million in assets.
- Within bonds, smaller schemes tend to have a higher proportion in government fixed interest and a smaller proportion in index-linked bonds. For example, schemes with under £5 million in assets have 30.7 per cent of their bond holdings in government bonds compared with 21.3 per cent for schemes with over £100 million in assets.
- The proportion of equities in total assets falls with scheme maturity while the proportion of bonds rises.
- The best funded schemes tend to have the greatest proportion of their assets invested in bonds, and a smaller proportion invested in equities.

7.2 Scheme return data[8]

Figure 7.1 | Distribution of schemes by asset allocation date*

Asset allocation year	Number of schemes	Percentage of Purple dataset
2006-2011	9	0.2%
2012	5	0.1%
2013	57	1.0%
2014	1,931	33.3%
2015	3,772	65.1%
2016	20	0.3%

Source: PPF/ The Pensions Regulator

*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.

Around 99 per cent of schemes provided an asset allocation that was at most three years old.

Figure 7.2 | Weighted average asset allocation in total assets

	Purple 2006	Purple 2007	Purple 2008	Purple 2009	Purple 2010	Purple 2011	Purple 2012	Purple 2013	Purple 2014	Purple 2015	Purple 2016
Equities	61.1%	59.5%	53.6%	46.4%	42.0%	41.1%	38.5%	35.1%	35.0%	33.0%	30.3%
Bonds	28.3%	29.6%	32.9%	37.1%	40.4%	40.1%	43.2%	44.8%	44.1%	47.7%	51.3%
Other Investments of which:	10.6%	10.9%	13.5%	16.5%	17.6%	18.8%	18.3%	20.1%	20.9%	19.3%	18.4%
Insurance policies	*0.9%*	*0.8%*	*1.1%*	*1.4%*	*1.4%*	*1.6%*	*0.2%*	*0.1%*	*0.1%*	*0.1%*	*0.1%*
Cash and deposits	*2.3%*	*2.3%*	*3.0%*	*3.9%*	*3.9%*	*4.1%*	*5.1%*	*6.7%*	*6.1%*	*3.5%*	*3.0%*
Property	*4.3%*	*5.2%*	*5.6%*	*5.2%*	*4.6%*	*4.4%*	*4.9%*	*4.7%*	*4.6%*	*4.9%*	*4.8%*
Hedge Funds	*n/a*	*n/a*	*n/a*	*1.5%*	*2.2%*	*2.4%*	*4.5%*	*5.2%*	*5.8%*	*6.1%*	*6.6%*
*'Other'**	*3.1%*	*2.5%*	*3.8%*	*4.5%*	*5.4%*	*6.3%*	*3.6%*	*3.5%*	*4.3%*	*4.7%*	*3.8%*

Source: PPF/ The Pensions Regulator

*Other alternative investments excluding hedge funds

In 2016, the proportion invested in bonds rose while the proportion in equities decreased, continuing the long-term trend.

[8] Asset allocations submitted by schemes are not adjusted for market movements. Most of this chapter uses weighted-average asset allocations. For example, the share of equities of each scheme is multiplied by its assets' weight in total assets and then summed up for all schemes. The simple average takes the arithmetic average of the share of equities in total assets for each scheme.

Looking at simple averages, in 2016 there were similar movements in asset allocation as those seen for the weighted averages.

Figure 7.3 | Asset allocation: simple averages

	Simple averages										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Equities	52.6%	53.5%	50.2%	46.6%	43.1%	43.7%	43.7%	40.6%	39.4%	38.8%	36.8%
Bonds	22.6%	24.0%	26.5%	29.2%	32.6%	32.6%	36.1%	39.1%	39.0%	39.4%	41.1%
Other Investments *of which:*	24.8%	22.5%	23.3%	24.2%	24.3%	23.7%	20.2%	20.3%	21.6%	21.8%	22.1%
Insurance policies	*14.9%*	*13.7%*	*13.0%*	*12.4%*	*12.3%*	*11.8%*	*4.4%*	*2.0%*	*1.8%*	*1.7%*	*1.2%*
Cash and deposits	*3.9%*	*3.7%*	*4.4%*	*5.6%*	*5.7%*	*4.9%*	*5.5%*	*6.2%*	*6.4%*	*5.7%*	*5.4%*
Property	*2.1%*	*2.5%*	*2.9%*	*2.8%*	*2.6%*	*2.7%*	*3.5%*	*3.6%*	*3.5%*	*3.6%*	*3.7%*
Hedge Funds	*n/a*	*n/a*	*n/a*	*0.7%*	*0.9%*	*1.0%*	*3.7%*	*5.0%*	*6.2%*	*7.3%*	*7.9%*
'Other'	*3.6%*	*2.6%*	*2.9%*	*2.6%*	*2.8%*	*3.3%*	*3.2%*	*3.5%*	*3.9%*	*3.7%*	*3.9%*

Source: PPF/ The Pensions Regulator

Within bonds, the proportion invested in corporate bonds declined in 2016 for a fourth consecutive year, while the proportion invested in government fixed interest and index-linked bonds rose.

Figure 7.4 | Bond splits

Year	Bonds					
	Government fixed interest bonds		Corporate fixed interest bonds		Index linked bonds	
	Average share	Weighted average share	Average share	Weighted average share	Average share	Weighted average share
2008	47.2%	33.2%	33.0%	32.6%	19.8%	33.9%
2009	45.6%	29.0%	37.3%	38.3%	17.1%	32.6%
2010	37.3%	24.6%	43.0%	42.2%	19.8%	33.1%
2011	31.2%	19.6%	47.1%	44.3%	21.7%	36.1%
2012	28.2%	17.7%	49.4%	44.8%	22.4%	37.5%
2013	27.0%	18.5%	49.6%	40.6%	23.4%	40.9%
2014	23.8%	18.6%	51.9%	40.3%	24.4%	41.1%
2015	23.8%	20.3%	51.2%	37.7%	25.0%	42.0%
2016	24.4%	21.9%	49.0%	33.7%	26.6%	44.4%

Source: PPF/ The Pensions Regulator

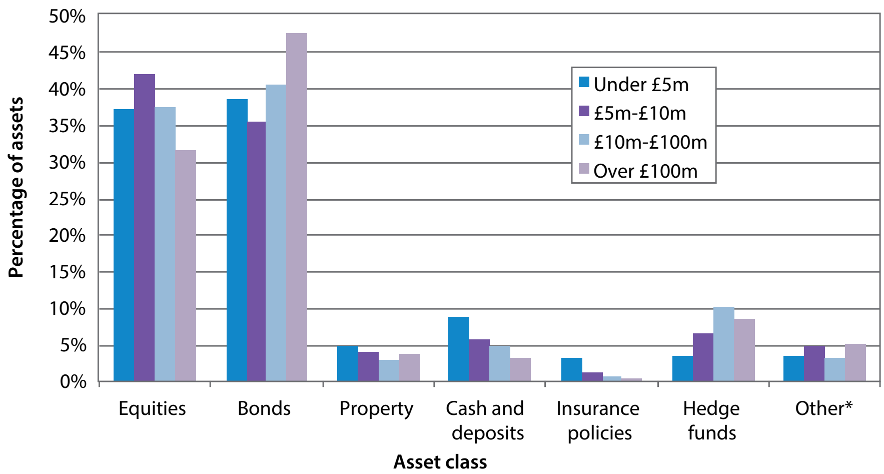
Figure 7.5 | Equity splits

Year	Equities					
	UK-quoted equities		Overseas-quoted equities		Unquoted/private equities	
	Average share	Weighted average share	Average share	Weighted average share	Average share	Weighted average share
2008	60.4%	48.0%	39.6%	51.6%	n/a	n/a
2009	57.6%	44.2%	41.7%	53.8%	0.7%	1.9%
2010	55.3%	40.1%	43.7%	55.3%	1.0%	4.4%
2011	52.7%	38.0%	46.1%	57.2%	1.2%	4.8%
2012	49.9%	33.9%	48.5%	60.0%	1.7%	6.1%
2013	47.5%	31.0%	50.3%	61.3%	2.2%	7.7%
2014	44.9%	28.9%	52.7%	62.4%	2.4%	8.7%
2015	42.2%	25.6%	55.3%	65.4%	2.5%	9.0%
2016	38.8%	22.4%	58.6%	68.6%	2.6%	9.0%

Source: PPF/ The Pensions Regulator

Within equities, the proportion invested in overseas equities continued to rise, while the share of UK equities continued to fall. The unquoted equity proportion was unchanged after six successive annual increases.

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



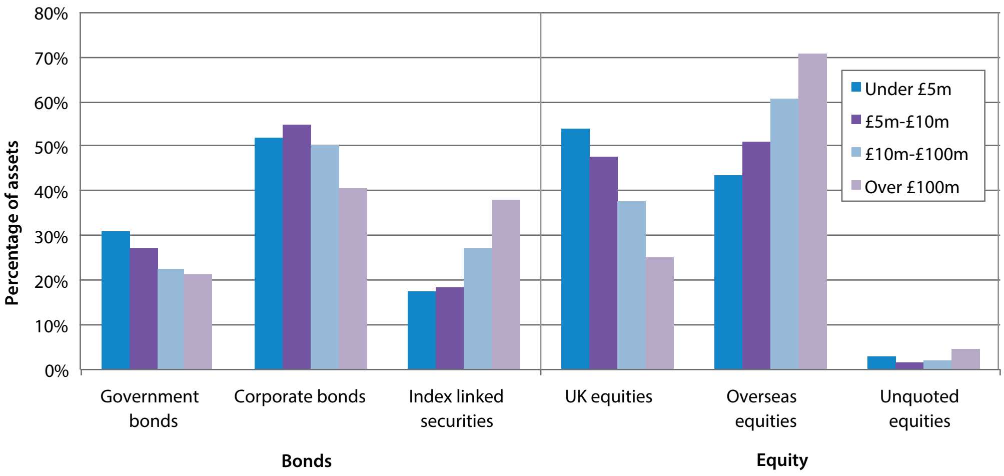
Source: PPF/ The Pensions Regulator

*Other alternative investments excluding hedge funds

The proportion of assets held in bonds and hedge funds tends to increase with scheme size.

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

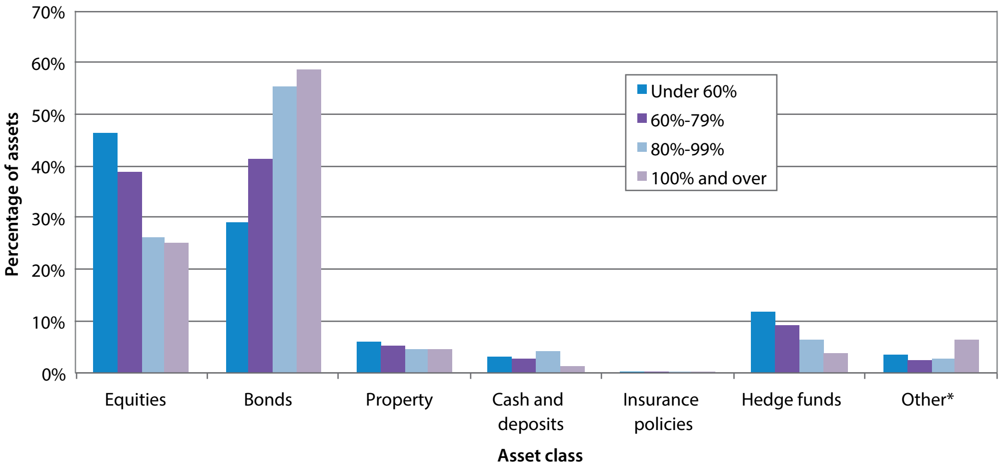
Figure 7.7 | Simple average of equities and bonds split by asset size



Source: PPF/ The Pensions Regulator

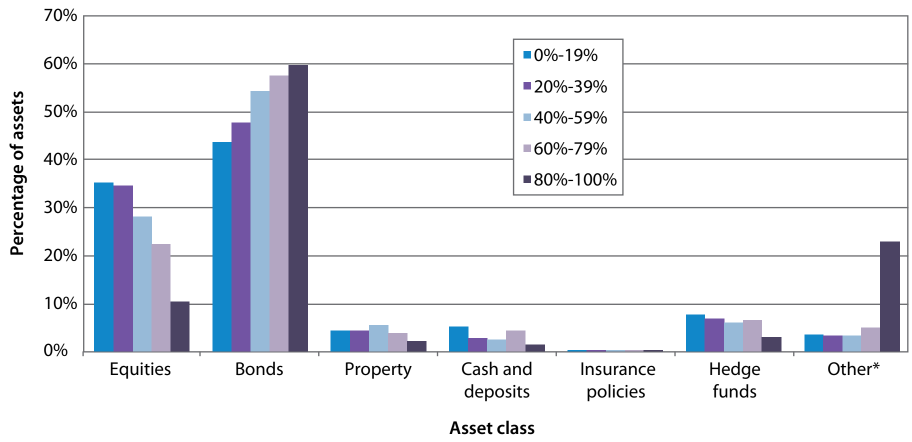
The best funded schemes tend to have the greatest proportion of assets invested in bonds, and a smaller proportion invested in equities.

Figure 7.8 | Weighted-average asset allocation by s179 funding level



Source: PPF/ The Pensions Regulator
*Other alternative investments excluding hedge funds

Figure 7.9 | Weighted-average asset allocation of schemes by current pensioner liabilities as a percentage of total liabilities



Source: PPF/ The Pensions Regulator

*Other alternative investments excluding hedge funds

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

The proportion of equities and hedge funds falls as scheme maturity (measured as the percentage of the scheme relating to pensioners) rises, whereas the proportion in bonds is higher for more mature schemes.

8 PPF Risk Developments

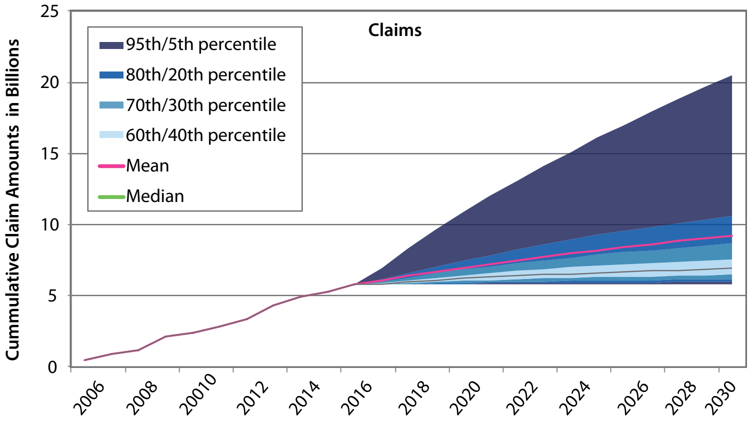
8.1 Summary

- The PPF published its Long-Term Funding Strategy in August 2010. As part of this strategy the PPF aims to be self-sufficient by the end of the funding horizon. The target for self-sufficiency is set as a percentage margin over liabilities, this being held to cover remaining risks after the PPF reaches the funding horizon, currently set as 2030. This risk margin covers the risk of unexpected longevity improvements and any future claims (beyond the horizon) in excess of PPF levies together with operational risk and the fact that the PPF's assets do not exactly track its CPI-linked liabilities. The margin required to cover these risks was reviewed in 2015 and the decision taken to retain a margin of 10 per cent. The Funding Strategy is reviewed annually to check whether the funding objective remains appropriate and whether the PPF is on track to achieve it.
- The PPF uses two key statistics to monitor progress against its funding objective – the "probability of success" and "downside risk". To measure these statistics it has developed an internal model that projects the level of PPF assets and liabilities in future years. It generates an extensive range of asset returns, insolvency and longevity scenarios and then projects a range of balance sheet outcomes.
- The model projections, with a calculation date of 31 March 2016, suggest that the PPF has a 93 per cent probability of meeting its funding objective compared with 88 per cent one year earlier[9] while the "downside risk" has fallen from £5 billion to £2 billion. This assumes no change to its investment strategy or to the PPF Levy formula.
- The 5 per cent increase in the probability of success is mostly attributable to changes made to the model the PPF uses for projecting nominal interest rates and inflation. These changes were introduced as part of the 2016 review of the funding strategy to better meet industry's practice and to comply with our internal Calibration Framework principles.
- Changes to the financial conditions over the year and the impact of other assumption changes also acted to increase the probability of success. There were a few factors that served to work in the opposite direction, including changes to the data held on schemes in the universe and a deterioration in the starting funding level of the PPF, driven largely by a large claim towards the end of the year.

[9] This probability is sensitive to a range of modelling assumptions. For a description of the modelling methodology and assumptions employed, see:
http://www.pensionprotectionfund.org.uk/DocumentLibrary/Documents/PPF_Funding_Strategy_Document.pdf
For the July 2016 review of the funding strategy, see:
http://www.pensionprotectionfund.org.uk/DocumentLibrary/Documents/Funding_Strategy_Review_2016.pdf

8.2 Long-Term Risk

Figure 8.1 | Historical amount of claims entering the PPF and projected deficits of schemes entering the PPF from 31 March 2016*



Source: PPF/ The Pensions Regulator

*As projected in the PPF's internal model. The fan chart depicts the probability that the cumulative deficits of schemes entering the PPF from 31 March 2016 will be within certain boundaries.

Claims on the PPF are the pension deficits that are brought into the PPF when scheme sponsors suffer insolvency. The PPF faces a significant tail-risk, i.e. high impact, low probability claims. The claims distribution also means that expected (mean) claims are some way above the median level.

8.3 The PPF's Long-Term Funding Strategy

- The PPF published its Long-Term Funding Strategy in August 2010 and its most recent annual update was in July 2016. The strategy established a long-term funding objective and a framework for monitoring the Fund's progress towards this target.
- The PPF's long-term funding objective is to be self-sufficient by the current funding horizon of 2030. Self-sufficiency means that the PPF is fully-funded with zero exposure to market, inflation and interest rate risk and with protection against a number of risks beyond the funding horizon: future claims, members living longer than expected, the PPF's RPI-linked assets not exactly tracking its CPI-linked liabilities and operational risk. The assumption is that at 2030 the PPF levy will be set at a level to match future expected claims.
- Exposure to market, inflation and interest rate risk can be reduced using conventional hedging arrangements and investment in low-risk securities. Analysis of output from the PPF's internal model described below suggests that a funding reserve equivalent to 10 per cent of PPF liabilities at the current funding horizon of 2030 would be sufficient to cover unexpected claims, longevity, operational and matching risk (over the lifetime of the Fund) in 9 out of 10 scenarios.
- The PPF has two key measures to monitor progress against its funding objective – the "probability of success" and the "downside risk". The probability of success measures its chances of being self-sufficient at the funding horizon if it continues on its current course with no change to its investment strategy or to the PPF Levy formula on its course to self-sufficiency. The downside risk is a measure of how poorly funded the PPF might become on its path to self-sufficiency. It is calculated such that in ten per cent of modelled scenarios its deficit reaches at least that level at some point before it reaches its funding horizon.

- To measure these statistics the PPF has developed an internal model that projects the level of PPF assets and liabilities in future years. It generates an extensive range of asset returns, insolvency and longevity scenarios and then projects a range of PPF balance sheet outcomes. The process of using a large number of modelled scenarios to derive a distribution of outcomes is termed stochastic analysis. It is widely used in the financial services industry and its primary advantage over deterministic or 'single point' forecasts is that having a distribution of outcomes allows the PPF to assess not just its best estimate of the future but also the likelihood of specific variations from that outcome.
- As at 31 March 2016, the probability of success was estimated to be 93 per cent, up from 88 per cent at 31 March 2015, while the downside risk was estimated to be £2 billion, down from £5 billion.
- As with any financial model it is important to exercise an appropriate degree of caution when analysing output. To help assess the level of model and parameter risk the PPF carries out multiple runs to test the sensitivity of the output to changes in the key assumptions - see Figure 8.2. The PPF also carries out more fundamental stresses by changing various assumptions all at once.

The probability of the PPF meeting its funding objective is 93 per cent, up from 88 per cent a year ago. The probability of meeting the funding objective and the downside risk are subject to modelling assumptions as illustrated in the table.

Figure 8.2 | Modelled probability of the PPF meeting its funding objective, as at 31 March 2016

Scenario	Change in probability of meeting funding objective	Change in Downside Risk (£ billion)
Base case	**93%**	**2**
Initial PPF Funding reduced by 10 percentage points	-5%	4
Size of the PPF increases by 20% (assets and liabilities)	No change	No change
Reduction in asset returns of 1% pa (excluding cash and government bonds)	-6%	2
Scheme funding ratio reduce by 10%	-2%	2
Recovery Plans 5 years longer	-1%	1
Scheme Technical Provisions reduced by 10% (relative to S179 basis)	-3%	1
Sponsor credit rating falls by one rating notch	-2%	2
PPF levies lower by 10%	-1%	No change
No closure to new accruals	-1%	No change
Longevity stress (probability of death in any single year reduced by 20%)	-3%	3
A market in CPI instruments emerges (after 5 years)	No change	No change
Assumed difference between best estimate RPI and CPI widens (1.1% to 1.5%)	2%	No change
Assumed difference between best estimate RPI and CPI narrows (1.1% to 0.5%)	-3%	1

Source: PPF/ The Pensions Regulator

PPF Levy Payments 2015/16

9

Summary

- Since 2006/7, the PPF has collected a levy determined mainly by the risk schemes pose to the PPF. Over this period, it has collected a total of £5.7 billion.
- The dataset used in this chapter is based on 5,935 schemes which have contributed a total levy of £560 million for the year 2015/16. This represents 0.05% of the total assets of the schemes[10].
- In 2015/16, the number of schemes paying no Risk-Based Levy represented 17 per cent of total schemes which is similar to the three preceding years.
- In 2015/16, 211 schemes had their Risk-Based Levy capped at 0.75 per cent of smoothed liabilities. This cap bites for around 3.6 per cent of the total number of schemes.
- The top 100 levy payers accounted for £231 million or 41 per cent of the total levy in 2015/16.

9.1 Levy payments

In this chapter we analyse the levy payments made in levy year 2015/16. We look at the distribution across schemes broken down by the size and levy band, considering the Risk-Based Levy and Scheme-Based Levy separately.

Since 2007/08, levy payments have fluctuated between £560 million and £663 million with payments at their lowest in the last three years.

Figure 9.1 | Levy Payments

	Levy payments (£ m)*	Levy as percentage of assets**	Number of capped schemes
2006/07	271	0.03%	310
2007/08	585	0.07%	411
2008/09	651	0.08%	564
2009/10	592	0.07%	340
2010/11	663	0.09%	679
2011/12	596	0.08%	626
2012/13	648	0.08%	427
2013/14	577	0.06%	302
2014/15	579	0.06%	274
2015/16	560	0.05%	211

Source: PPF/ The Pensions Regulator

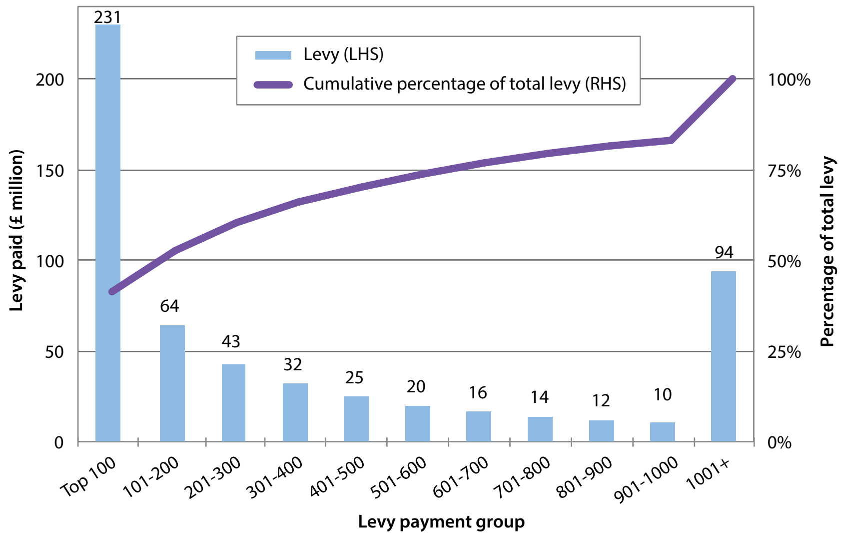
*Levy payments are the total amount collected in each year. The remainder of the figures quoted in this chapter are based on the total levy invoiced for the dataset of 5,935 schemes in 2015/16, or from prior years' Purple Books.

**Levy payments as a percentage of total assets of schemes paying a levy.

[10] Assets and liabilities in this chapter are on a smoothed, stressed basis unless otherwise stated and exclude deficit reduction contributions (DRCs). **http://www.pensionprotectionfund.org.uk/levy/Pages/1516_Levy_Determination.aspx**

In 2015/16, the top 100 levy payers accounted for £231 million, or 41 per cent of the total levy and 39 per cent of total liabilities.

Figure 9.2 | Distribution of levy payments by largest levy payers in 2015/16



Source: PPF/ The Pensions Regulator

Note: the 1,001+ category accounts for a relatively large percentage of the total levy as it contains just under 5,000 schemes.

The percentage of schemes paying no Risk-Based Levy rose markedly with the introduction of the New Levy Framework in 2012/13 and has remained at a similar level since.

Figure 9.3 | Schemes paying no Risk-Based Levy by levy year

	Number of schemes	Percentage of total schemes	s179 liabilities [11] (£ billion)	s179 liabilities as percentage of total
2006/07	345	5%	44	6%
2007/08	570	9%	83	12%
2008/09	473	7%	72	10%
2009/10	363	6%	33	5%
2010/11	195	3%	9	1%
2011/12	296	5%	25	3%
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%

Source: PPF/ The Pensions Regulator

[11] Liabilities are stressed and smoothed from 2012/13 onwards, in line with the New Levy Framework.
http://www.pensionprotectionfund.org.uk/levy/Pages/1516_Levy_Determination.aspx

Figure 9.4 | Number of schemes with capped Risk-Based Levies by levy band

Levy band[12]	Levy rate[13]	Total number of schemes	Number of capped schemes[14]	Percentage of schemes in levy band which are capped
1	0.17%	1,466	0	0.0%
2	0.23%	632	0	0.0%
3	0.30%	648	0	0.0%
4	0.40%	584	0	0.0%
5	0.53%	572	0	0.0%
6	0.81%	617	0	0.0%
7	1.26%	628	1	0.2%
8	1.76%	273	18	6.6%
9	2.39%	263	75	28.5%
10	3.83%	252	117	46.4%
Total		**5,935**	**211**	

Source: PPF/ The Pensions Regulator

Note that schemes with multiple employers have had their insolvency probability calculated as an average of the corresponding employers, and then this has been mapped back to the nearest levy band.

In 2015/16, 211 schemes had their Risk-Based Levy capped compared with 274 in 2014/15. The proportion of schemes in each levy band which are capped increases with levy rates (from band 7 onwards).

Figure 9.5 | Number of schemes with capped Risk-Based Levies by funding level

Funding level	Number of capped schemes	Percentage of schemes in funding band which are capped	Number of schemes
Less than 50%	94	12.1%	774
50%-75%	117	4.2%	2,756
75%-100%	0	0.0%	1,567
Greater than 100%	0	0.0%	838
Total	**211**		**5,935**

Source: PPF/ The Pensions Regulator

The proportion of schemes which are capped decreases as the funding level improves, as higher funding makes the application of the cap less likely.

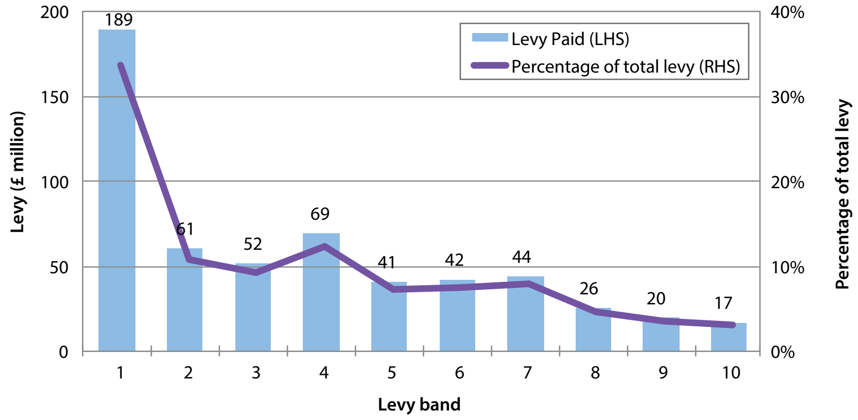
[12] For full details of the levy bands, please visit
http://www.pensionprotectionfund.org.uk/levy/Pages/1516_Levy_Determination.aspx

[13] For the definition of scheme and Risk-Based Levy, please visit:
http://www.pensionprotectionfund.org.uk/levy/Pages/1516_Levy_Determination.aspx

[14] For the definition of capped schemes, please visit
http://www.pensionprotectionfund.org.uk/levy/Pages/1516_Levy_Determination.aspx

Levy band 1 made the largest contribution to total levy receipts, paying £189 million, or 34 per cent, of total levy collected.

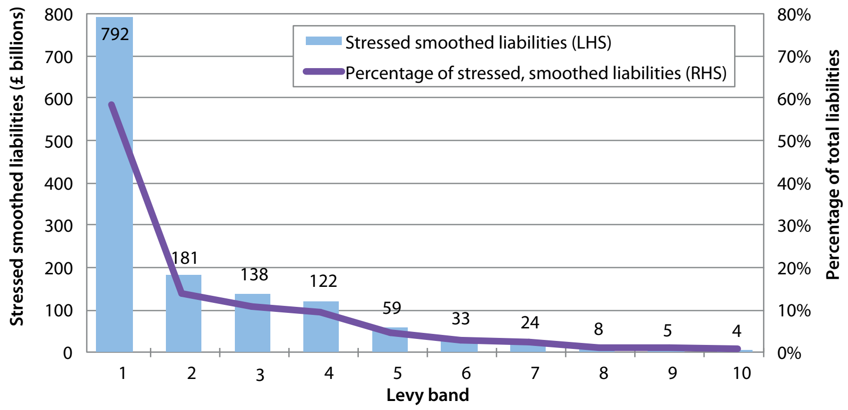
Figure 9.6 | Levy distribution by levy band



Source: PPF/ The Pensions Regulator

Levy band 1 accounts for 58 per cent of the total liabilities.

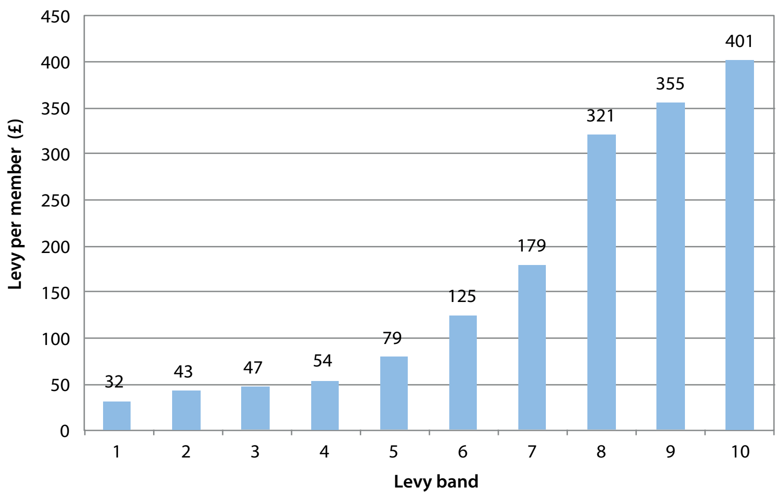
Figure 9.7 | Liabilities by levy band



Source: PPF/ The Pensions Regulator

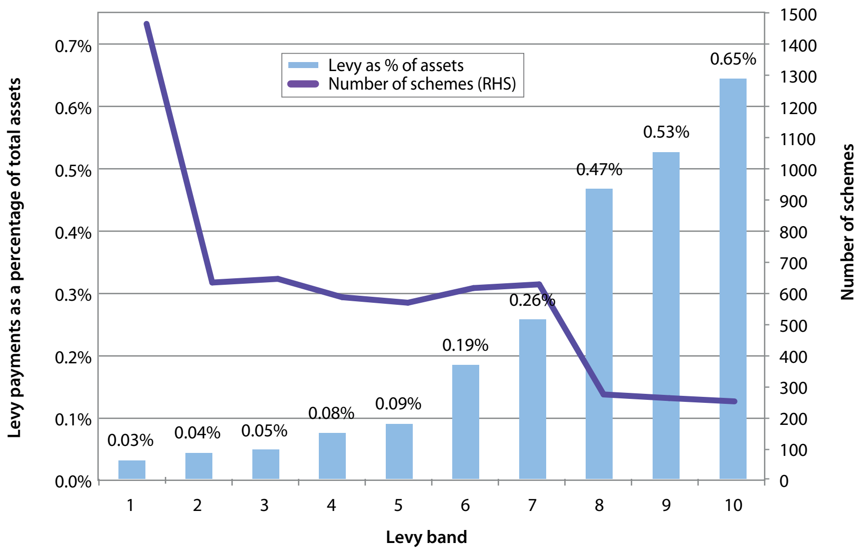
The average levy per member was £51 in 2015/16. Levy per member is the highest in band 10.

Figure 9.8 | Levy per member by levy band



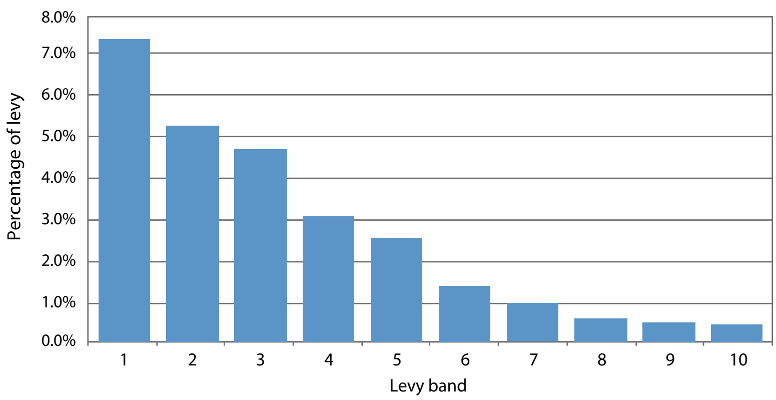
Source: PPF/ The Pensions Regulator

Figure 9.9 | Levy payments as a proportion of assets by levy band



Source: PPF/ The Pensions Regulator

Figure 9.10 | Percentage of total levy that is Scheme-Based[15] by levy band



Source: PPF/ The Pensions Regulator

Figure 9.11 | Percentage of total levy that is Scheme-Based by funding level

Funding level	Less than 50%	50%-75%	75%-100%	Over 100%
Percentage of levy that is Scheme-Based	1.3%	3.5%	8.9%	98.3%

Source: PPF/ The Pensions Regulator

Note: schemes that are over 100% funded on a smoothed and stressed basis will generally pay no Risk-Based Levy; however, there are a few such schemes that do pay a Risk-Based Levy because the calculation of their levy is based on unstressed assets and liabilities, rather than stressed.

The PPF levy is very small compared with the value of total assets. The average was 0.05 per cent in 2015/16.

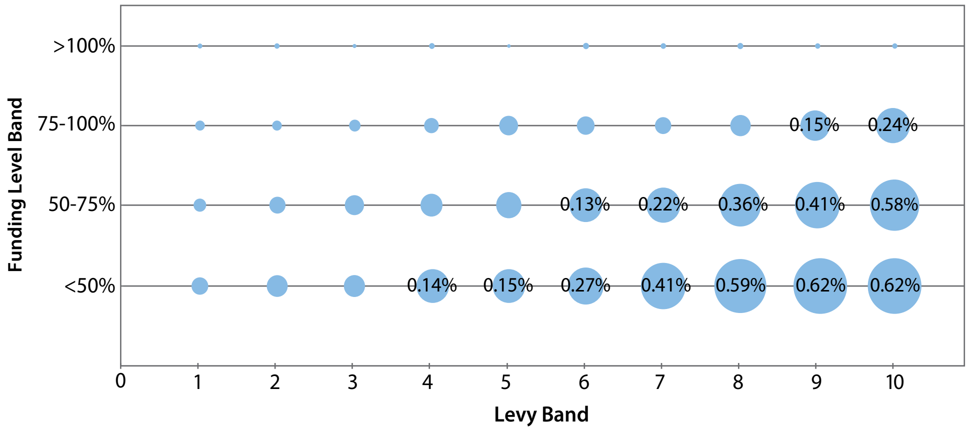
The share of total levy made up by the Scheme-Based Levy falls as the levy band increases.

The share of total levy made up by the Scheme-Based Levy falls as the levy band increases.

[15] For the definition of Scheme-Based Levy, please visit: **http://www.pensionprotectionfund.org.uk/levy/Pages/1516_Levy_Determination.aspx**

Levy paid increases as a scheme's underfunding risk and insolvency risk increases.

Figure 9.12 | Levy per £ of liabilities by levy and funding bands



Source: PPF/ The Pensions Regulator

Schemes in Assessment

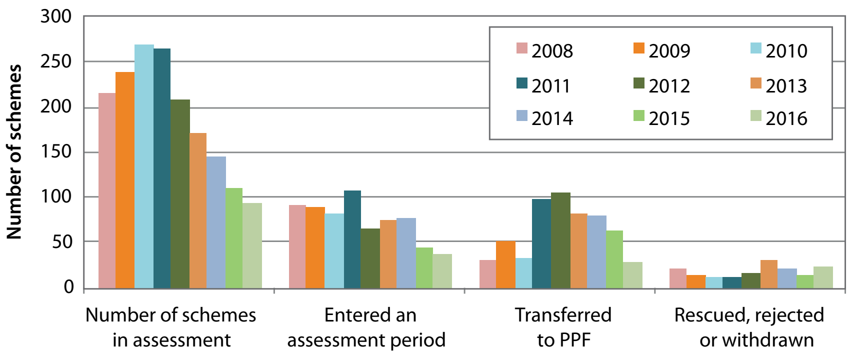
10

10.1 Summary

- Before transferring into the PPF, all schemes go through an assessment period to determine their ability to pay PPF levels of compensation. The PPF aims to complete the assessment period for most schemes within two years.
- In this chapter, we consider the schemes[16] that were in a PPF assessment period as at 31 March 2016. There were 96 such schemes at 31 March 2016, comprising some 90,000 members, which is a little lower than the 112 schemes one year earlier. The change over the year reflects new schemes entering and remaining in assessment, schemes transferring into the PPF, schemes being rescued, rejected or withdrawn and a change of methodology this year whereby we have excluded expected reapplications[17] from the analysis.
- As at 31 March 2016, the assets of schemes in assessment totalled £5.0 billion and the liabilities £7.4 billion as measured on a section 179 basis[18]. This compares with the PPF's assets of £23.6 billion and liabilities of £18.3 billion at 31 March 2016 as measured on our accounting basis and disclosed in the PPF's 2015/16 Annual Report and Accounts.
- The aggregate funding level (total assets divided by total liabilities) of the schemes in assessment as at 31 March 2016 was 68 per cent, compared with 86 per cent for the universe. This number has been generally falling since 2010 when the funding level was 89 per cent. The fall in the funding ratio for schemes in assessment is similar to that for the universe.

10.2 Schemes entering assessment

Figure 10.1 | Number of schemes in assessment each year, as at 31 March



Source: PPF

The number of schemes in assessment has been declining since 2011.

[16]For the purpose of this chapter we treat separate sections and segregated parts of the same scheme as one single scheme. This is a different from the approach in the PPF's Annual Report and Accounts which treats all segregated parts of schemes as schemes.

[17]A reapplication is a scheme that has been through an assessment period but has failed to secure a buy-out and is therefore expected to reapply for entry to the PPF.

[18]This differs from the number 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.

Since 2010 the funding level of schemes in assessment has fallen from 89 per cent to 68 per cent.

Figure 10.2 | Funding statistics for schemes in assessment each year, as at 31 March

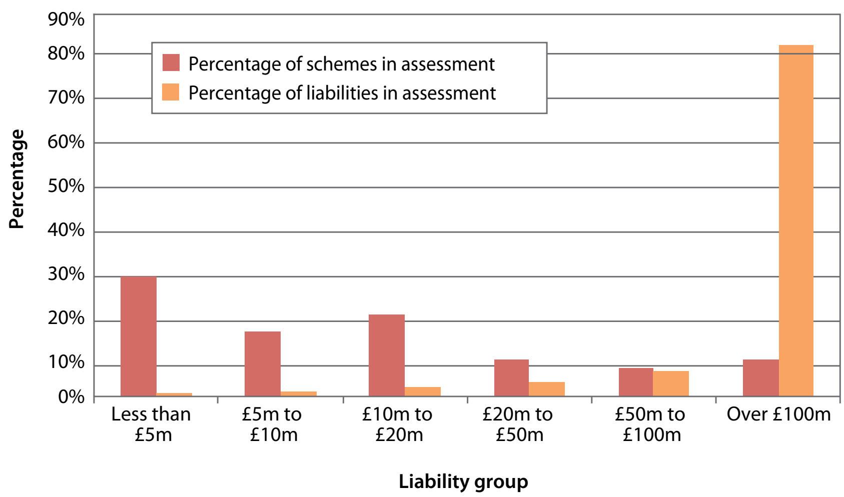
Year	Assets (£billion)	Liabilities (£billion)	Surplus (£billion)	Funding ratio	Universe funding ratio
2007	4.0	4.7	-0.7	85%	109%
2008	4.2	5.4	-1.2	78%	99%
2009	6.7	9.4	-2.8	71%	80%
2010	8.9	10.0	-1.1	89%	104%
2011	9.5	10.9	-1.4	87%	100%
2012	6.2	8.4	-2.2	74%	83%
2013	5.8	7.6	-1.8	77%	84%
2014	5.8	7.6	-1.7	77%	97%
2015	5.3	7.5	-2.3	70%	84%
2016	5.0	7.4	-2.4	68%	81%

Source: PPF

10.3 Scheme Demographics

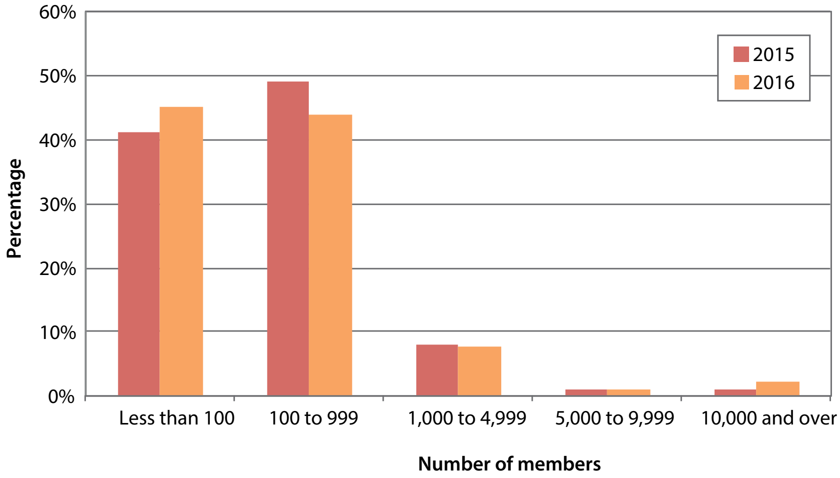
Around 80 per cent of liabilities is concentrated in the largest 12 per cent of schemes.

Figure 10.3 | Percentage of schemes and percentage of s179 liabilities grouped by size of liabilities for schemes in assessment as at 31 March 2016



Source: PPF

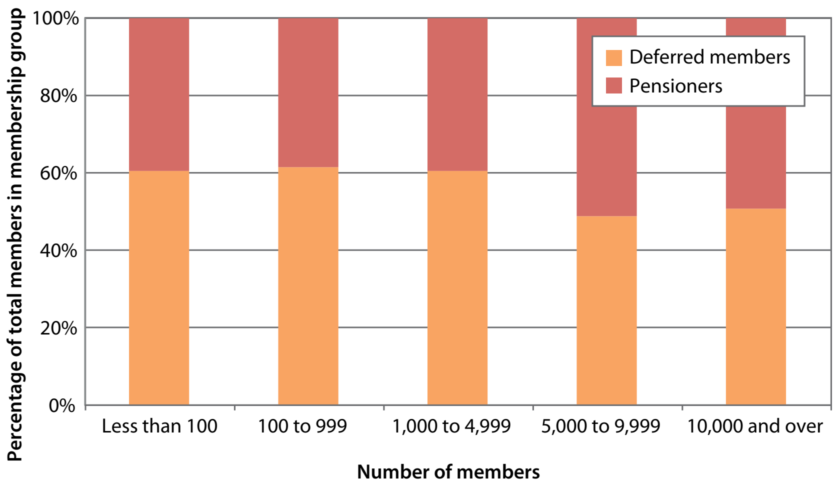
Figure 10.4 | Proportion of schemes in assessment by number of members



Source: PPF

Most schemes in assessment have fewer than a thousand members, but two have over 10 thousand each.

Figure 10.5 | Maturity of schemes in assessment by membership size



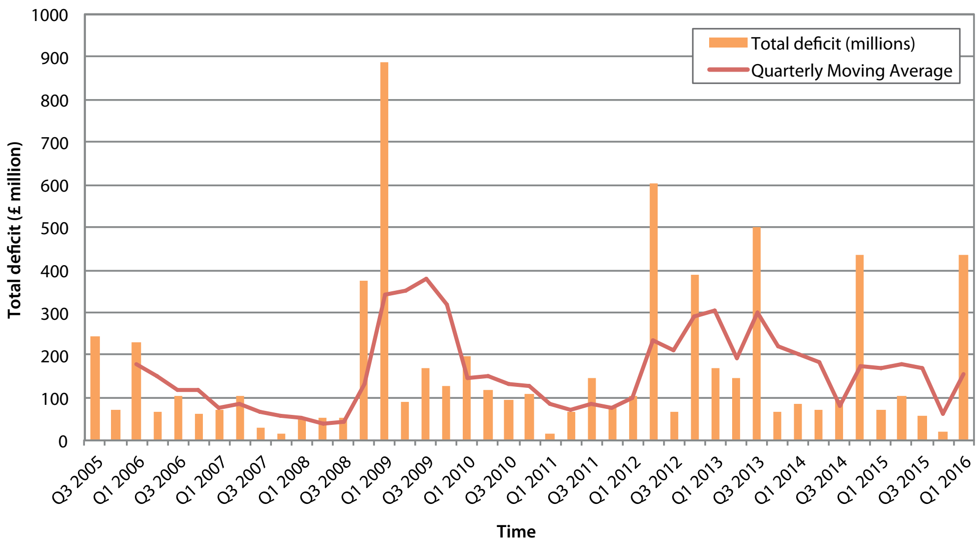
Source: PPF

Pensioners constitute around 40 per cent of the membership for most schemes. The three schemes with over 5,000 members are broadly half pensioner and half non-pensioner.

10.4 Funding level

The total deficit of schemes entering assessment in the year to 31 March 2016 was £623 million, down from £674 million the year before.

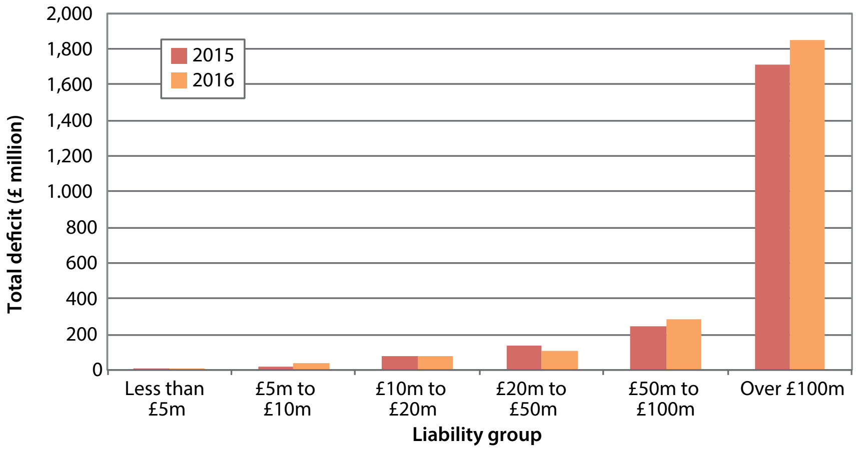
Figure 10.6 | Total s179 deficits for schemes entering an assessment period



Source: PPF

Around 80 per cent of the deficit from schemes in assessment relates to schemes with liabilities over £100 million.

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



Source: PPF/ The Pensions Regulator

PPF Compensation 2015/16

11

11.1 Summary

When a scheme transfers into the PPF, the PPF generally pays compensation of 90 per cent of scheme pension (subject to a compensation cap) to members who were yet to reach their Normal Pension Age (NPA) at the date the scheme entered assessment. The PPF will generally pay a starting level of compensation equivalent to 100 per cent of scheme pension to those who were already over their NPA at the start of the assessment period.

- In the year to 31 March 2016, the PPF made compensation payments of £616 million compared with £564 million in the previous year. These amounts include cash lump sums payable at retirement arising from the commutation of annual compensation.
- As at 31 March 2016, 121,059 members were in receipt of PPF compensation, up from 114,028 as at 31 March 2015. Spouses and other dependants account for 15 per cent of those currently in receipt of compensation.
- The average amount of compensation in payment to pensioners and dependants increased to £4,162 per year from £4,128.
- The number of deferred pensioner members, i.e. members with compensation not yet in payment as at 31 March 2016, totalled 109,143. For these members, the average accrued periodic compensation (before any prospective application of the compensation cap) was £3,335 per year.
- As at 31 March 2016, males constituted 65 per cent of our members.
- 91 per cent of members are in receipt of (or have accrued) compensation of less than 25 per cent of the compensation cap at age 65 (i.e. £9,100 a year).
- The North East region has the largest receipt of compensation, currently at 15 per cent of total pensioner compensation.

11.2 Total compensation and number of members

Total compensation paid has increased over the last five years from £119.5 million to £616.0 million. Until 2014 there were more deferred pensioners than pensioners in the PPF.

Figure 11.1 | Total compensation and number of members

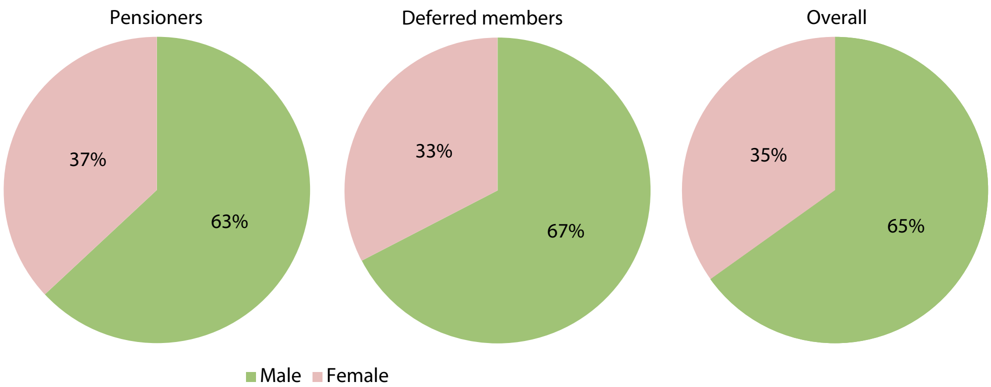
	Year				
	2007	**2008**	**2009**	**2010**	**2011**
Total compensation paid (£ million, year to 31 March)	1.4	17.3	37.6	81.6	119.5
Total pensioner members	1,457	3,596	12,723	20,775	33,069
Total deferred members	5,621	8,577	18,009	26,058	42,063
	Year				
	2012	**2013**	**2014**	**2015**	**2016**
Total compensation (£ million, year to 31 March)	203.3	331.8	445.1	564.0	616.0
Total pensioner members (31 March)	57,506	80,665	95,599	114,028	121,059
Total deferred members (31 March)	70,608	91,353	100,070	110,681	109,143

Source: PPF

11.3 Gender

Overall, 65 per cent of our members are male and 35 per cent are female.

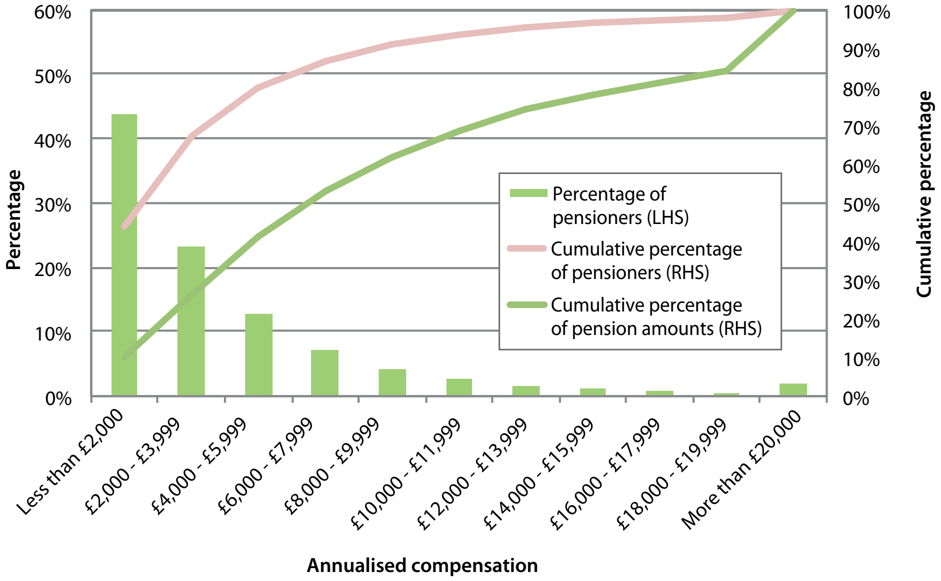
Figure 11.2 | Gender composition of pensioners and deferred pensioners.



Source: PPF

11.4 Distribution of compensation

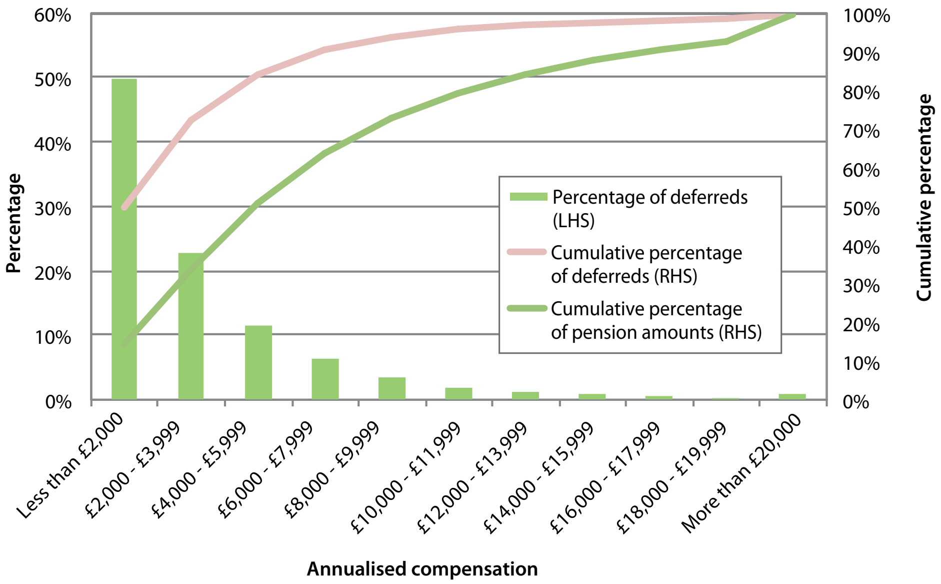
Figure 11.3 | Distribution of pensioners by annualised compensation level



Source: PPF

80 per cent of pensioner members are in receipt of annualised compensation of less than £6,000.

Figure 11.4 | Distribution of deferred pensioners by annualised compensation level



Source: PPF

Around 80 per cent of deferred pensioner members have annualised compensation of less than £6,000.

Spouses and other dependants constitute 15 per cent of total pensioners and 11 per cent of compensation.

11.5 Spouses and other dependants

Figure 11.5 | Proportions of spouses and other dependants, and members within the PPF current pensioner population

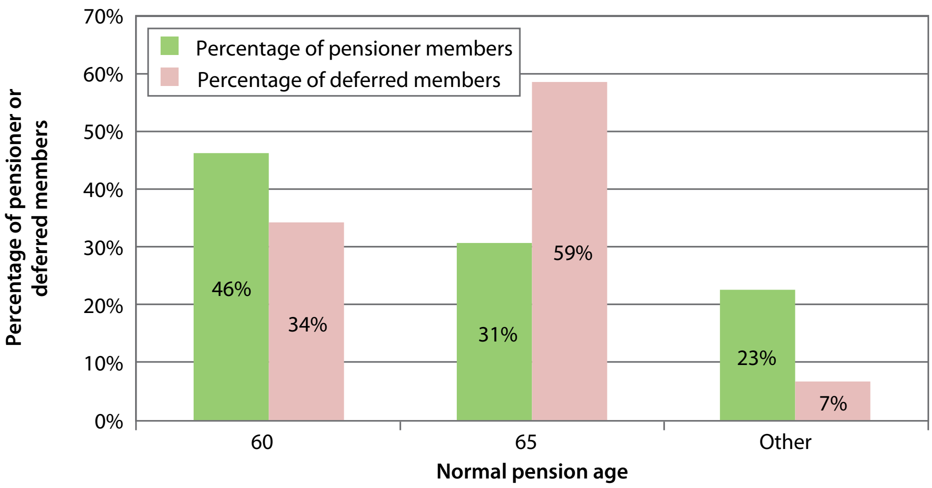
	Number within pensioner population	Percentage of total population	Annualised compensation (£m, pa)	Percentage of total annualised compensation
Dependants	18,520	15%	53	11%
Members	102,539	85%	451	89%
Total	121,059	100%	504	100%

Source: PPF

The great majority of compensation is payable from a Normal Pension Age of 60 or 65

11.6 Normal Pension Age (NPA)

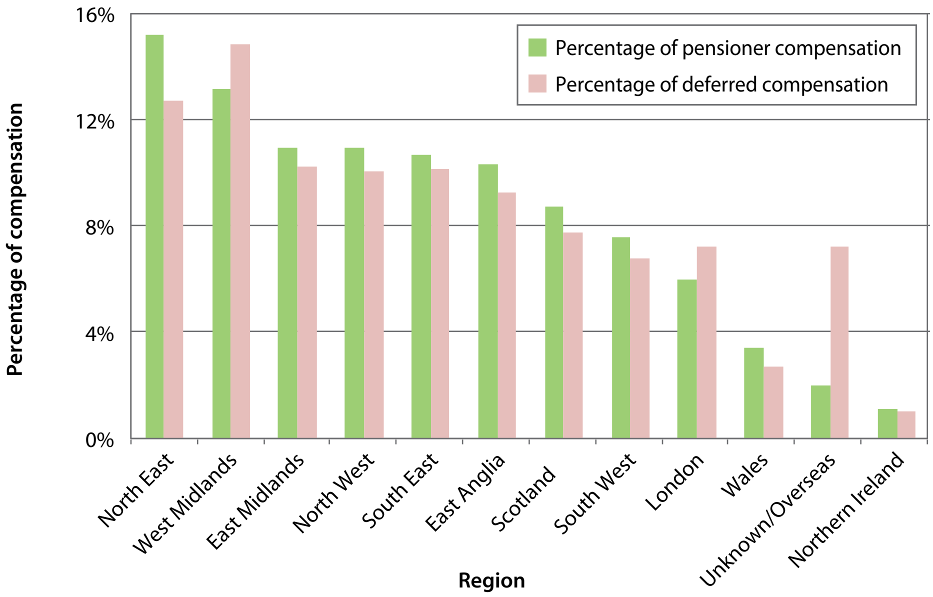
Figure 11.6 | Distribution of pensioner and deferred members by NPA



Source: PPF

11.7 Geography

Figure 11.7 | Pensioner and deferred member annualised compensation by UK region



Source: PPF

The largest shares of compensation goes to the North East and West Midlands

11.8 Period of service

Figure 11.8 | Pre-6 and post-5 April 1997 annualised compensation for pensioners and deferred pensioner members

	Pensioners		Deferred pensioners	
	Compensation (£m pa)	%	Compensation (£m pa)	%
Pre-April 1997	368	73%	169	46%
Post-April 1997	136	27%	195	54%
Total	504	100%	364	100%

Source: PPF

Almost three quarters of compensation for pensioners was accrued before 6 April 1997.

12 Risk Reduction

12.1 Summary

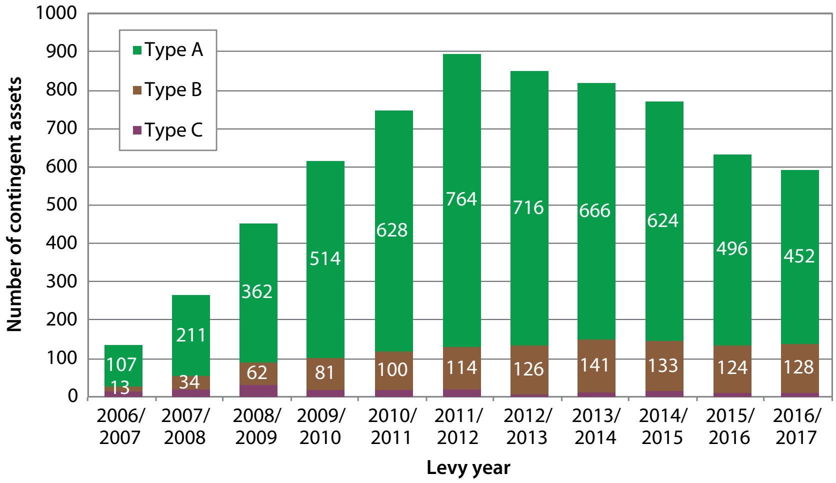
- The total number of Contingent Assets submitted to the PPF for the 2016/17 levy year was 591, compared with 632 in 2015/16. This mainly reflected a fall in the number of Type A contingent assets (company guarantees), which is 40 per cent below the level in 2011/12. The fall in the number of Type A contingent assets reflects the change in the certification requirements.
- Data from the Office for National Statistics (ONS) covering 350 large pension schemes (including 100 local authorities and some DC schemes) show that in 2015 employers made £11.3 billion in special contributions (i.e. those in excess of regular annual contributions) to DB schemes, compared with £12.2 billion in 2014. In the first half of 2016, employers made £10.5 billion in special contributions.
- Analysis of The Pensions Regulator's latest technical provisions and recovery plan data shows that in Tranche 9[19] , the average recovery plan length was 8.0 years, 0.2 years longer than that of Tranche 6 (comparable given the three year valuation cycle).
- The average funding ratio as measured by assets divided by technical provisions was 88.9 per cent in Tranche 9, 0.7 per cent higher than Tranche 6.
- Technical provisions as a percentage of s179 liabilities dropped to 102.2 per cent from 108.4 per cent in Tranche 6[20] The fall in technical provisions as a percentage of buy-out liabilities was smaller, from 72.4 per cent to 71.6 per cent.
- Total risk transfer business covering buy-outs, buy-ins and longevity hedges amounted to £120 billion between the end of 2007 and the first quarter of 2016. Just under half of these deals were longevity hedges.

[19]Tranche 9 covers schemes with valuation dates between 22 September 2013 and 21 September 2014. **http://www.thepensionsregulator.gov.uk/docs/scheme-funding-appendix-2016.pdf**

[20]Note that the average funding ratio and the ratio of TPs to s179 liabilities only covers schemes which were in deficit on their TP basis.

12.2 Contingent assets

Figure 12.1 | Contingent assets by type



Source: PPF/ The Pensions Regulator

Type A contingent assets are guarantees provided by the parent/group companies to fund the scheme, most commonly, to a pre-arranged percentage of liabilities.

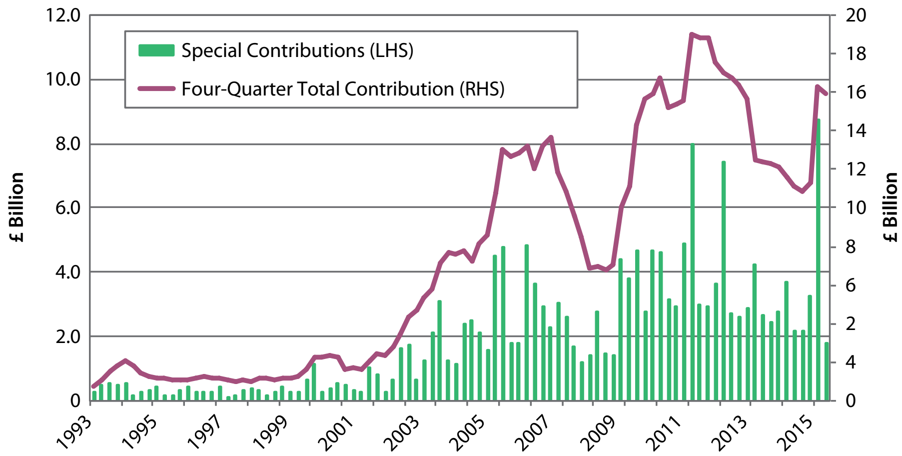
Type B contingent assets comprise security over holdings of cash, real estate and/or securities.

Type C contingent assets consist of letters of credit and bank guarantees.

The number of recognised contingent assets has fallen markedly since 2011/12.

12.3 Special contributions

Figure 12.2 | Special contributions



Source: MQ5, 'Investment by Insurance Companies. Pension Funds and Trusts', ONS

ONS data covering 350 large pension schemes shows that employers made £11.3 billion in special contributions (to DB schemes) in 2015, lower than the £12.2 billion paid in 2014.

In the first half of 2016, employers made £10.5 billion in special contributions.

In tranche 9, the average recovery period was 8.0 years, 0.2 years longer than Tranche 6 (comparable given the three year valuation cycle).

12.4 The scheme funding regime

Figure 12.3 | Technical Provisions and Recovery Plan lengths (unweighted)

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	Techinical Provisions as a percenatge of buy-out liabilities
1	2005-06	2,127	8.1	84.2%	103.4%	67.7%
2	2006-07	1,888	7.7	87.3%	111.5%	71.0%
3	2007-08	1,840	8.6	86.3%	109.0%	74.6%
4	2008-09	2,048	9.7	74.0%	100.8%	72.8%
5	2009-10	1,937	8.5	82.5%	111.6%	73.8%
6	2010-11	1,652	7.8	88.2%	108.4%	72.4%
7	2011-12	1,770	8.5	81.0%	99.0%	71.2%
8	2012-13	1,726	8.5	82.4%	98.5%	71.3%
9	2013-14	1,439	8.0	88.9%	102.2%	71.6%

Source: "Scheme funding statistics, Appendix" The Pensions Regulator, May 2016
Notes: (1) Valuation dates run from 22 September to 21 September.
(2) 86% of schemes with Tranche 9 valuations reported in respect of Tranche 6 and Tranche 3.

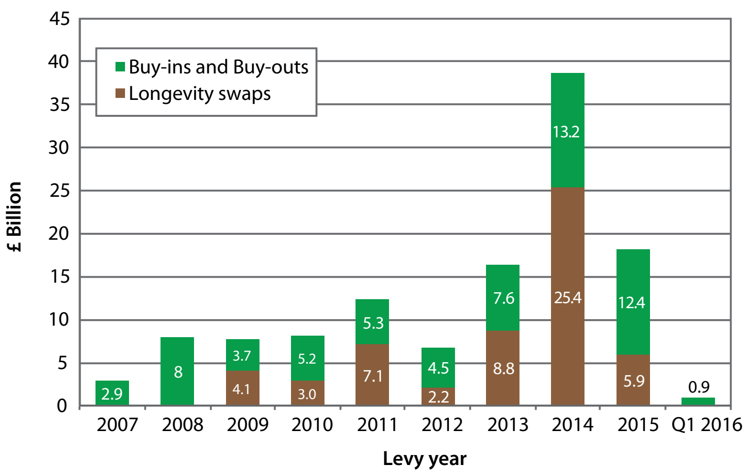
12.5 Buy-out, buy-in and longevity hedging

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 cashflows that vary in accordance with the longevity experience of a reference population (either the named scheme members or a wider sample).

The value of risk transfer deals since 2007 totals £120 billion. Just under half the value of these deals were longevity swaps.

Figure 12.4 | Value of risk transfer deals since 2007



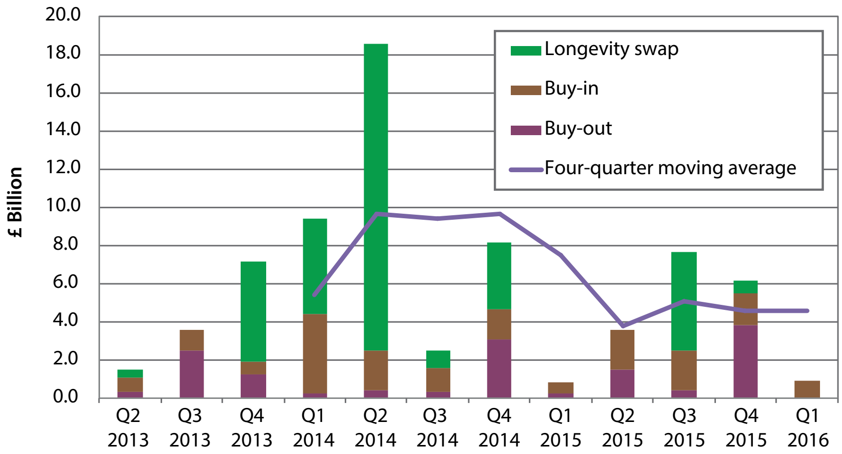
Source: Hymans Robertson, "Buy-outs, buy-ins and longevity hedging"

Figure 12.5 | Number of risk transfer deals since 2010

	2010	2011	2012	2013	2014	2015	2016
Buy-in/Buy-out	174	171	167	219	177	176	5
Longevity swap	1	5	2	10	5	4	0

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

Figure 12.6 | Value of risk transfer deals since Q2 2013



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

Over the year to Q1 2016, the total value of transfer deals was £18.4 billion, down from £30 billion in the year to Q1 2015.

32 per cent were longevity swaps, 37 per cent were buy-ins, and 31 per cent were buy-outs.

Appendix – note on historical datasets

For each edition of the Purple Book, a dataset is collated 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:

- Purple 2006 and 2007 - extended dataset
- Purple 2008 to 2014 - original dataset

Scheme status

Scheme status in this 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 future accruals, 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 Defined Contribution (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 Purple 2006, 40 per cent of memberships were in the open category and 25 per cent were categorised as 'part open'. It was noted that the 'part open' category included a significant number of hybrids for which the DB element was closed. In Purple 2007, the 'part open' category was removed and the percentage of schemes classified as open increased in comparison with Purple 2006. Many hybrid schemes which had previously identified themselves as 'part open' now identified themselves as 'open'. In Purple 2008 and Purple 2009, the Pensions Regulator analysed the largest 100 schemes (by membership) in the hybrid category separately so as to adjust the information provided in the scheme return 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 Purple 2010 the Pensions Regulator is 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 defined benefit accruing members are categorised as 'closed to new members'. In addition, where those schemes have no active defined benefit membership it is assumed that the scheme is closed to future accrual. In 2015, 264 open hybrid schemes with approximately 1.3 million members were reclassified as closed to new members and a further 116 open hybrid schemes with approximately 321,000 members had their status amended to closed to future 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.

Acronyms

LDI

Liability-driven investment

ONS

Office for National Statistics

Administration

See Company: trading status.

Aggregate funding position

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

Assessment period

The time when a scheme is being assessed to see if the Pension Protection Fund can assume responsibility for it.

Asset-Backed Contribution (ABC)

A contractual arrangement between trustees and one or more entities within the sponsoring employer's group. ABCs involve regular payments to the scheme for the duration of the arrangement. The payment stream derives from an underlying asset. For more information see **www.pensionprotectionfund.org.uk/levy/Pages/1516_Levy_Determination.aspx**

Closed (to new members)

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

Company: business types

Limited liability partnerships

These are a type of alternative corporate business vehicle that gives the benefits of limited liability but allows its members the flexibility of organising their internal structure as a traditional partnership.

Partnership

The relationship that exists between individuals who run a business together with a view to making a profit. The rights of each partner are governed by a partnership agreement or the Partnership Act 1980.

Private company

A company registered under the Companies Act 1985 that is not a public limited company. A private company may be registered as a limited or unlimited liability company. It must have at least one member and at least one director. There is no minimum share capital requirement.

Public limited company

A company registered under the Companies Act 1985. It must have at least two members and two directors and a share capital that complies with the authorised minimum amounts. It can offer its shares to the public and may be among the public companies that trade on the Stock Exchange.

Registered charity

An institution (corporate or not) which is established for exclusively charitable purposes and which is registered with the Charity Commission.

Sole trader

An individual who carries on a business on his or her own account. The individual is fully liable for any losses of the business and pays income tax on any taxable profits of the business.

Company: trading status

Active/currently trading

The company is continuing to trade.

Administration

One of the main corporate insolvency rescue procedures. It can be a precursor to a company voluntary arrangement under which the company is restructured and passed back to its directors. In an administration, the insolvency practitioner, as officer of the court, takes over powers of management of the business (but is able to delegate these back to management) with the objective of rescuing the company or (if that is not possible, or if the result would be better for creditors) rescuing the business as a going concern and providing protection from actions by creditors while doing so. A partnership can also be subject to administration as a prelude to a partnership voluntary arrangement.

Dissolved

The company has ceased trading. All assets of the company have been disposed of and/ or it has been taken off the register at Companies House.

Dormant
The company is not currently trading but remains a corporate entity and/or remains on the register at Companies House.

In liquidation
Either a creditor or the company can apply to the courts to put the company into liquidation. It is the process which eventually brings a company's existence to an end after distributing its assets to creditors/shareholders.

Liquidated
Following the liquidation process, the company has ceased trading. All assets of the company have been disposed of and/or it has been taken off the register at Companies House.

Receivership
(Also known as administrative receivership or Law of Property Act (LPA) 1925 receivership.) Non-court procedure whereby an insolvency practitioner takes control of the whole of a company's assets under the terms of a charge or mortgage.

Other

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.

Default risk
The risk that the borrower will be unable to satisfy the terms of its borrowing obligations with respect to the timely payment of interest and repayment of the amount borrowed.

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.

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

Defined benefit
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
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.

Dun & Bradstreet (D&B)
A provider of insolvency scores. This was used in the levy calculations before levy year 2015/16.

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

Gilt yield

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

Hybrid scheme or partial defined benefit scheme

A scheme that can provide defined benefits and defined contribution benefits. A scheme providing benefits on a defined contribution basis but that is or was contracted out of the state scheme on either a GMP or Reference Scheme test basis is a common example of a hybrid scheme.

Insolvency events

These are the insolvency triggers set out in the Pension Protection Fund legislation.

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. This is a more extreme event than a default. See also Insolvency events.

Insurance company

Insurance companies provide a range of services to pension schemes, including:

- asset investment;
- asset management;
- investment advice and expertise;
- custodian facilities; and
- scheme administration services.

Insurance managed funds

A unitised fund invested in multiple investment categories managed by an insurance company.

Insurance policy

Investment class: an annuity or a deposit administration contract purchased from an insurance company.

LTRM

The Pension Protection Fund's Long-Term Risk Model, which is based on stochastic simulations of economic scenarios and their respective impacts on assets and liabilities of pension schemes under coverage and the credit quality of the sponsoring employers.

MQ5 data

The data from the ONS MQ5 enquiry is based on a sample of 350 pension schemes. This is comprised of around 100 local authorities and 250 public and private corporations (the PPF database excludes local authorities and public corporations). The sample has total assets of £1,100 billion, which is much higher than the PPF database. All schemes with more than 20,000 members are automatically included and schemes with less than 20,000 members are randomly selected. The sample is made up of what are known as 'superannuation and self-administered pension funds'. A self-administered pension fund is defined as an occupational pension scheme with units invested in one or more managed schemes or unit trusts; a superannuation pension fund is defined as an organisational pension programme created by a company for the benefit of its employees. The sample may also contain defined contribution schemes.

Open

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

Paid up (or frozen)

All contributions to the scheme have stopped and no further pensionable service accrues. Members' benefits for earlier service continue to be held and invested in the scheme.

Part 3 Valuation or scheme funding valuation

An actuarial valuation meeting the requirements of Part 3 of the Pensions Act 2004 concerning the funding of DB, which apply to any actuarial valuation received by trustees (on or after 30 December 2005) that is based on an effective date of 22 September 2005 or later.

Participating employer

An employer that has some (or all) employees who can join an occupational pension scheme. This term is usually used where there is more than one employer participating in a single scheme.

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.

Pension protection levy

This is the annual amount that a pension scheme is charged by the Pension Protection Fund. It is composed of a Scheme-Based Levy and a Risk-Based Levy. It is similar to an insurance premium.

The Pensions Regulator

The UK regulator of work-based pension schemes, an executive non-departmental public body established under the Pensions Act 2004.

Principal employer

The employer named in the trust deed and rules of the scheme which usually has powers such as those to appoint trustees, amend the scheme rules or wind the scheme up. This is often the employer who set up the scheme, or its successor in business.

Risk-Based Levy

See pension protection levy. Calculated on the basis of a pension scheme's deficit and insolvency risk of the sponsoring employer.

Scheme actuary

The named actuary appointed by the trustees of a defined benefit occupational pension scheme to carry out specific duties set out in the Pensions Act 1995.

Scheme-Based Levy

See pension protection levy. Calculated on the basis of section 179 liabilities.

Scheme funding position

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

Scheme funding valuation

New legislation on scheme funding came into force on 30 December 2005. The new requirements, introduced by the Pensions Act 2004, replaced the minimum funding requirement and apply to occupational pension schemes providing defined benefits.

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 on death are also not included.

Scheme return notice

The Pensions Act 2004 set out the requirement to send occupational pension schemes a scheme return to complete. The information collected in the scheme return will further enable the regulator to perform its new role and responsibilities. The scheme return notice is issued to schemes to inform them that it is time to complete a scheme return.

Sectionalised scheme

A multi-employer scheme which is divided into two or more sections where:

- any contributions payable to the scheme by an employer in relation to the scheme, or by an employee of that employer, are allocated to that employer’s section; and
- a specified proportion of the assets of the scheme is attributable to each section of the scheme and cannot be used for the purposes of any other section.

Some sections open/some sections closed

A scheme that has sections with different status types. For example the scheme may have a defined benefit section closed to new entrants, and a defined contribution section open to new entrants.

Section 179 (s179) valuation

To calculate the risk-based pension protection levy the Pension Protection Fund Board must take account of scheme underfunding. To obtain a consistent basis for determining underfunding, schemes can complete a Pension Protection Fund valuation (section 179). This valuation will be based on the level of assets and liabilities for the scheme. 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 Pension Protection Fund as set out in Schedule 7 of the Pensions Act.

Swap

A contract calling for the exchange of payments over time. Often one payment is fixed in advance and the other is floating based upon the realisation of a price or interest rate.

Technical provisions (TPs)

The funding measure used for the purposes of Part 3 valuations. The TPs are a calculation undertaken by the actuary of the assets needed at any particular time to make provision for benefits already considered accrued under the scheme using assumptions prudently chosen by the trustees – in other words, what is required 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.

Total deficit

Sum of scheme deficits, or sum of scheme funding positions for schemes in deficit only.

Trustees

Corporate trustee (non-professional)

A company usually related to the employer (or the employer itself) set up to act as trustee for a scheme or a series of related or associated schemes.

Member-nominated trustee (MNT)

A person nominated by the members (and sometimes elected) to be a trustee of the scheme. A MNT may be a member of the scheme. A MNT is appointed in accordance with sections 16-21 of the Pensions Act 1995.

Pensioneer trustee

A pensioneer trustee is an individual or a company recognised by HMRC (Inland Revenue) as having pensions expertise.

Professional trustee (including corporate)

A professional trustee not connected with the employer and not a scheme member. The trustee could be a corporate trustee company or an individual. A professional trustee provides trusteeship and trustee services to a number of unrelated and nonassociated pension schemes.

Statutory independent trustee

A trustee appointed to a scheme where an insolvency practitioner has been appointed over an employer in accordance with sections 22-26 of the Pensions Act 1995.

Voluntary form reporting

Electronic forms are available on the Pension Protection Fund's website for pension schemes to provide data regarding sectionalised schemes, contingent assets, participating employers, scheme structure, estimates of pension fund deficits on a section 179 basis, deficit reduction contributions and block transfers.

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 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.

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