



Executive summary

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1

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This is the fourth edition of the Pensions Universe Risk Profile (The Purple Book), a joint annual publication by the Pension Protection Fund (the PPF) and the Pensions Regulator (the regulator) which focuses on the risks faced by defined benefit (DB) pension schemes, predominantly in the private sector.

1. Introduction

The recession raises risks for DB schemes

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 previous year. The economic and financial market environment deteriorated dramatically over the 12 months to 31 March 2009, not just for the UK but for most major economies, leading to heightened risks for DB pension schemes:


- The UK economy went into recession in the second quarter of 2008 and by the first quarter of 2009 GDP had fallen by 5.0 per cent, with further declines in the second and third quarters.
- The Insolvency Services' company liquidation rate rose from 0.6 per cent in the 12 months to the first quarter of 2008 to 0.8 per cent in the 12 months to the first quarter of 2009 with a further rise to 0.9 per cent by the third quarter.
- Equity markets saw large declines over the year to 31 March 2009 with the FTSE all share index down by 29 per cent and the S&P 500 down 40 per cent.
- Government bond yields fell sharply, 10 year gilt yields falling from 4.4 per cent to 3.2 per cent while 10 year AA corporate bond yields declined from 5.6 per cent to 4.8 per cent.
- The Bank of England reduced its policy rate from 5.25 per cent to 0.5 per cent, the lowest for 300 years and embarked on quantitative easing.

Table 1.1 | Economic and financial environment

	End of March 2006	End of March 2007	End of March 2008	End of March 2009	End of October 2009
GDP growth year-on-year	3.2%	2.4%	2.2%	-5.0%	-5.1%*
Insolvency rate – in 12 months to	0.70%	0.60%	0.60%	0.80%	0.9%*
FTSE All-share	3,487	3,848	3,550	2,509	3,342
10 year gilt yield	4.4%	5.0%	4.4%	3.2%	3.7%
10 year AA corporate bond yield	4.9%	5.5%	5.6%	4.8%	4.7%
Bank of England policy rate	4.5%	5.25%	5.25%	0.5%	0.5%

Source: Office for National Statistics, the Insolvency Service, Bloomberg

*Figures are for Q3 2009



The recession increased the risk of insolvency for companies sponsoring DB schemes while financial market movements worsened scheme funding.

The position of markets at 31 March 2009 was only a little better than the lows for equity markets and gilt yields seen on 3 March 2009. Since 31 March 2009, growth has returned to a number of economies, equity markets have seen strong recoveries and gilt yields have also risen.

Purple 2009 covers almost all eligible schemes

Much of the analysis of the 2009 Purple Book ('Purple 2009') is based on new information from scheme returns issued in December 2008 and January 2009 and returned to the regulator by 31 March 2009. This data covers 6,885 PPF-eligible DB schemes - some 97 per cent of the total number and some 99 per cent of estimated total liabilities. The 2009 dataset is similar in size to that used for the Purple Book 2008 and significantly larger than the datasets used in the first two Purple books (5,772 and 5,892 respectively). The availability of a larger dataset reflects, among other factors, improvements to the design of the scheme return intended to permit better data validation procedures.

Comparisons are made not only with the Purple Books for 2006, 2007, and 2008 but also with the extended Purple 2006, 2007, and 2008 datasets, covering 7,751, 7,542 and 7,262 schemes respectively. These extended datasets more fully reflect the universe of PPF-eligible schemes in each year. Their construction became possible each year following the submission and cleaning of further scheme information as part of the PPF levy invoicing and collection processes. The decline in the eligible universe reflects such factors as scheme mergers, schemes transferring into the PPF and better information on eligibility. Purple 2009 also includes comparisons of the funding position of DB schemes in the 2009 dataset at 31 March 2009, 31 March 2008, 30 March 2007 and 31 March 2006. The publication puts all of this information into context by using other data sources to look at trends in key variables.

The Purple Books have been based on the most comprehensive datasets extracted from the DB pensions' universe to date, representing a step change in available information, particularly for small and medium-sized schemes. The publications 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. The main focus of this publication is risk as at 31 March 2009. Since then risks will have eased somewhat given the impact of improving financial markets and signs of insolvencies falling back. As time goes on, the Purple data will provide important information on trends in DB pension schemes. Comments and suggestions for improvement of the Purple Book are again welcome.

2. The data

- In Purple 2008, the PPF-eligible defined benefit (DB) universe was estimated to be 7,400, while the analysis covered a sample of 6,898 PPF-eligible schemes.
- The set of 6,898 schemes has now been augmented to produce an extended Purple 2008 dataset, covering a total of 7,262 schemes. This gives a best estimate of the eligible universe for the 2008/09 levy year of approximately 7,300 schemes.
- Comparisons of some of the key analyses using the Purple 2008 and the extended Purple 2008 datasets show that most of the findings are little affected.
- In Purple 2009 we have been able to use a dataset of 6,885 PPF-eligible schemes, covering around 97 per cent of the universe of schemes and 99 per cent of estimated liabilities. This is a similar sample to that used in Purple 2008 and much larger than the samples used in Purple 2007 and Purple 2006 (comparable figures for the Purple 2007 dataset are 76 per cent of schemes and 90 per cent of estimated liabilities).
- The scheme return data for these schemes include valuation information on scheme assets and liabilities, asset allocation, the participating employers, scheme type and status, membership details, the trustees and their advisers.
- Further information has come from electronic forms completed on the regulator's Exchange system covering items such as deficit reduction contributions (DRCs) and contingent assets.
- The scheme return valuation data has been used to produce estimates of section 179 (s179) funding for the Purple 2009 dataset at common dates (31 March 2006, 30 March 2007, 31 March 2008 and 31 March 2009) for comparison.
- Because of different datasets, the figures shown for funding levels as at 31 March 2008 in Purple 2009 are different from those shown for the same date in Purple 2008.
- Liabilities on a s179 basis are, broadly speaking, what would have to be paid to an insurance company to take on the risk of paying PPF compensation in the event of employer insolvency.
- Although both the PPF and the regulator use many measures of insolvency risk for analysis and modelling, the main focus in Purple is on the insolvency failure scores supplied by Dun & Bradstreet (D&B). The failure scores are designed to predict the likelihood of a company ceasing operations without paying all creditors over the next 12 months. D&B failure scores are used in the PPF's risk-based levy calculations.

3. Scheme demographics

- The proportion of schemes open to new membership and new accrual continues to decline. Open schemes constitute 27 per cent of the Purple 2009 sample, down from 31 per cent in 2008 and 36 per cent in 2007.
- Thirty seven per cent of scheme members were members of open schemes at 31 March 2009, down from 44 per cent at 31 March 2008 and 50 per cent at 30 March 2007.

- Scheme memberships for the Purple 2009 sample totalled 12.4 million. The largest category of scheme memberships is deferred (43 per cent). Thirty-six per cent are current pensioner memberships, and 21 per cent are members actively employed by the sponsor of their pension scheme.
- As scheme size increases, there is a tendency for the proportion of pensioner members of a scheme to increase.
- Schemes sponsored by firms in the manufacturing sector continue to dominate the Purple sample, constituting 27 per cent of s179 liabilities compared with the sector's 12 per cent share of economic output.

4. Scheme funding

- The s179 information for the Purple 2009 dataset of 6,885 schemes is rolled forward from the dates given in the scheme return to 31 March 2009 and rolled back to 31 March 2008, 30 March 2007, and 31 March 2006.
- Movements in financial markets have resulted in large changes in funding between the four dates.
- The aggregate funding position on a s179 basis has deteriorated from a surplus of £12.3 billion (a funding level of 101.5 per cent) at 31 March 2008 to a deficit of £200.6 billion (a funding level of 79.5 per cent) at 31 March 2009. At 30 March 2007, there was an aggregate surplus of £87.4 billion, a funding level of 111.4 per cent.
- The average full buy-out funding level has decreased from 62.9 per cent at 31 March 2008 to 57.7 per cent at 31 March 2009.
- Funding on the accounting (FRS17) basis has also deteriorated from 100.9 per cent at 31 March 2008 to 93.5 per cent at 31 March 2009.
- As in Purple 2008, liabilities and deficits have also been estimated using the Technical Provisions (TP) measure. These are the deficits that pension schemes must remove as part of the scheme funding process.
- The deficit on the TP basis was £329 billion at 31 March 2009, up from £98 billion at 31 March 2008, with the funding ratio falling from 89.7 per cent to 70.3 per cent. The TP estimates should, however, be taken as illustrative since they are largely based on relevant ratios of TPs to s179 liabilities for sub-samples of the Purple dataset.
- Each of the four funding measures deteriorated between 31 March 2008 and 31 March 2009. This was not the case between 30 March 2007 and 31 March 2008 when funding on the FRS17 measure improved while the three others deteriorated. The improvement on the FRS17 measure reflected the impact of higher corporate bond yields, as a result of the financial crisis, on discount rates.
- Size of scheme remains an important indicator of funding level, with very large and very small schemes by number of members showing materially higher levels of funding than those of intermediate sizes.
- Mature schemes (those with a higher proportion of liabilities relating to pensioners) also show higher funding levels.

5. Funding sensitivities

- All the funding sensitivities in this chapter are on a s179 basis.
- Changes in estimated market conditions and financial and demographic assumptions since January 2003 have caused the monthly aggregate funding position of pension schemes to vary by around £375 billion (with the greatest surplus in June 2007 at £173.4 billion and the greatest deficit in March 2009 at £200.6 billion).
- The estimated number of schemes in deficit was at its lowest point in June 2007 at around 3,000 schemes (around 43 per cent of the dataset) and peaked in March 2009 at around 5,900 (around 85 per cent).
- Since March 2009, a recovery in equity markets and rising bond yields have resulted in an improvement in aggregate scheme funding of £77.6 billion by the end of October. In addition, the change in actuarial assumptions which took effect at the end of October improved the estimated funding position by a further £70.5 billion¹. These together meant that the aggregate deficit fell to £52.5 billion.
- An increase in longevity, such that the experienced mortality is now equivalent to that of an individual two years younger, would increase schemes' liabilities by around five per cent (£51 billion).
- If the assumed rate of inflation increases by 0.1 per cent, with nominal interest rates unchanged, then the s179 liabilities for schemes increase by approximately 0.9 per cent or £9 billion.
- A 0.1 per cent (10 basis points) reduction in gilt yields raises scheme liabilities by 2 per cent and raises scheme assets by 0.4 per cent. A 2.5 per cent rise in equity markets raises scheme assets by 1 per cent.
- Broadly a 0.1 per cent change in gilt yields is equivalent in its impact on scheme funding at 31 March 2009 to a 6.4 per cent change in equity prices compared with 3.4 per cent at 31 March 2008 in Purple 2008.
- The increased sensitivity to changes in gilt yields reflects the fact that at the end of March 2009 the aggregate deficit was much larger together with the low absolute level of bond yields (so that a 10 basis point change is a bigger percentage change in bond yields).
- The sensitivities do not take into account any possible hedging of interest rates, inflation, equities or longevity.

6. Insolvency risk

- The UK recession, which started in the second quarter of 2008, resulted in a steep rise in the level of corporate liquidations.
- The level of liquidations in the third quarter of 2009 was over 50 per cent higher than at the low-point in 2007. In the twelve months ending in September 2009 approximately 0.9 per cent of companies went into liquidation compared with a low point of 0.6 per cent in 2007.
- Although company liquidations rose over the first two quarters of 2009 the rate of increase dropped considerably. In the third quarter company liquidations fell by 4.7 per cent quarter-on-quarter compared with quarter-on-quarter increases of over 10 per cent during 2008.

¹ For more details see the November PPF 7800 release: http://www.pensionprotectionfund.org.uk/DocumentLibrary/Documents/PPF_7800_November_09.pdf.

- The rate of company liquidations to date has not been as severe as in other comparable periods of recession such as the early 1990s.
- The estimated number of schemes entering into the PPF assessment period rose in the fourth quarter of 2008 and first quarter of 2009. Since then it has fallen, in a similar way to the decline in company liquidations for the whole economy.
- The weighted average one-year ahead insolvency probability, derived from Dun & Bradstreet (D&B) failures scores, was 0.4 per cent as at 31 March 2009. Comparisons with earlier years are difficult because of changes in D&B rating methodology.

7. Asset allocation

- Equities and 'gilts and fixed interest' continue to dominate scheme asset allocation. The joint share of equities and gilts and fixed interest has, however, declined from 89.4 per cent in 2006 to 83.5 per cent in 2009.
- In 2009, the share of gilts and fixed interest increased to 37.1 per cent from 32.9 per cent in Purple 2008. Meanwhile, the equity share dropped to 46.4 per cent in Purple 2009 from 53.6 per cent in Purple 2008.
- In 2009, the share of other investments increased to 6.0 per cent from 3.8 per cent in 2008 and 2.5 per cent in 2007.
- Flow data from the Office for National Statistics (ONS) shows a continuing disinvestment in equities, and more recently, disinvestment in bonds.
- As found in earlier Purple Books, more mature schemes tend to invest more heavily in gilts and fixed interest and less in equities.
- Better funded schemes tend to hold a lower percentage of assets in equities.
- There is no evidence of investment patterns differing by the level of estimated insolvency risk.
- A bigger share of total scheme equity holdings is in overseas equities (53.8 per cent) than in UK equities (44.2 per cent). A small proportion of equities are held in unquoted equities.
- In Purple 2008, total scheme holdings of gilt and fixed interest were spread fairly evenly between government (33.2 per cent), corporate (32.6 per cent) and index-linked (33.9 per cent). In Purple 2009, however, government and index-linked securities fell to 29.0 per cent and 32.6 per cent respectively and corporate bonds saw a large increase to 38.3 per cent.
- Looking at simple averages of each scheme's asset allocation, rather than the shares of each asset class in total assets, gives a rather different picture. The share of UK equities is then considerably bigger (57.6 per cent) than that for overseas equities (41.7 per cent), although the gap has narrowed from Purple 2008. The share of government fixed interest securities is considerably higher (45.6 per cent) than the index-linked average (17.1 per cent).
- A comparison between simple averages and weighted averages indicates that smaller schemes have a greater slant within equities to UK equities, and within bonds to conventional government bonds.

8. Risk developments

- The Long-Term Risk Model (LTRM) is the key tool that the Board of the Pension Protection Fund (PPF) uses to understand and quantify the risks it faces over the long-term. It helps the Board of the PPF assess the level of resources required to meet potential future claims.
- There was a marked rise in long-term risk to the PPF between March 2008 and June 2009.
- The escalation of long-term risk is the result of deteriorating scheme funding, a worsening economic outlook, and rising sponsor insolvency probabilities.
- Total weighted deficit (scheme insolvency probability multiplied by scheme deficit) has risen to £481.5 million in Purple 2009 from £268.4 million in Purple 2008.
- The proportion of weighted deficit attributable to schemes with the weakest insolvency probabilities is 20 per cent, down from 36 per cent in 2008.

9. Levy payments to the PPF

- The PPF is expecting to collect £651 million in respect of the levy in the 2008/09 levy year. This is £24 million less than the levy estimate of £675 million announced in November 2007. The final estimate is closer to the initial estimate than in earlier years because of better data, and changes to the timing of setting the levy scaling factor for the 2008/09 levy year.
- The levy raised in 2008/09 is £66 million more than the previous year and more than double that collected in 2006/07.
- The number of schemes paying no risk-based levy was 608, similar to the 590 in 2007/08 (representing approximately nine per cent of the total number of schemes and 10 per cent of total liabilities).
- The top 10 levy payers paid almost the same proportion, 10 per cent of total levy, in 2008/09 as in the previous year.
- Levy paid as a percentage of assets was unchanged in 2008/09 at 0.08 per cent.
- Schemes with sponsoring employers in manufacturing saw the largest increase in levy payments from £181.6 million to £267.8 million, around 40 per cent of the total levy.
- In 2008/09 the risk-based levy was capped at 1.0 per cent of a scheme's s179 liabilities, compared with 1.25 per cent in 2007/08.
- Five hundred and sixty four schemes had their risk-based levy capped in 2008/09, eight per cent of the total. The liabilities of those capped schemes totalled £9.8 billion or one per cent of total liabilities.

10. Schemes in the PPF assessment process


- There were 240 schemes (201,000 members) in the PPF's assessment period as at 31 March 2009, compared with 217 (123,000 members) a year earlier.
- The rise in schemes in assessment reflects 92 new schemes entering and remaining in assessment, 54 schemes transferring into the PPF and 15 being rescued, deemed to be ineligible or withdrawn.
- Where the sponsoring employer's industry is known, just over half the schemes in assessment came from manufacturing (52 per cent) while 11 per cent came from finance, insurance and real estate, and 11 per cent from services.
- As at 31 March 2009, on a s179 basis, the aggregate assets of schemes in assessment totalled £6.6 billion, and aggregate liabilities £9.4 billion. Liabilities averaged £39.1 million per scheme and assets averaged £27.6 million.
- Thirty eight per cent of the schemes in assessment have liabilities below £5 million although schemes this small make up only 27 per cent of the Purple 2009 dataset.
- The aggregate funding level (total assets divided by total liabilities) of the schemes in assessment at 31 March 2009 was 70.5 per cent. This is below both the aggregate funding level of the schemes in the Purple 2009 dataset (79.6 per cent) and the aggregate funding level of the schemes in assessment a year earlier (78.3 per cent).
- The larger schemes in assessment are, on average, better funded than the smaller schemes. Schemes with over £50 million in assets have an average funding level of 77.5 per cent. Those with less than £50 million in assets have an average funding level of 66.5 per cent.
- The asset allocation of schemes in assessment from the scheme return prior to their entering the assessment period showed the largest shares of their assets in equities (45 per cent) and gilts and fixed interest assets (28 per cent). This equity share is lower than the Purple 2009 dataset share of 47 per cent of assets. Once in assessment, schemes tend to follow an investment strategy that is more oriented towards gilts and fixed interest holdings.

11. PPF compensation

- The PPF made its first compensation payments in the 2006/07 financial year following the first scheme transfer in November 2006. A total of £1.4 million was paid out in 2006/07, rising to £17.3 million in 2007/08, and £37.6 million in 2008/09.
- At 31 March 2009, 12,723 members were in receipt of PPF compensation, up from 3,596 a year earlier. Average compensation in payment stood at £3,765 a year. The number of members with compensation not yet in payment (deferred members) as at 31 March 2009 totalled 18,009. For those members, the average compensation accrued was £3,654 a year.
- At 31 March 2009, males constituted 78 per cent of both pensioner and deferred members and received more than 80 per cent of compensation in both categories.
- Spouses and dependants account for 15 per cent of those currently in receipt of compensation, receiving 10 per cent of compensation in payment.
- More than 75 per cent of compensation is attributable to former employees of the manufacturing sector.
- At 31 March 2009, 29 pensioners were affected by the compensation cap (£28,742.69 a year for age 65 in 2009/10 after the 90 per cent scaling).

12. Risk reduction

- The total number of contingent assets (CAs) in place has risen by 30 per cent, from 452 for the 2008/09 levy year to 587 for 2009/10.
- The CAs in place for 2009/10 reduced the respective schemes' levies by a total of around £100 million.
- Schemes in the Purple 2009 dataset (excluding those schemes which were in a PPF assessment period as at 31 March 2009) had certified approximately £26.5 billion of DRCs by 7 April 2009.
- DRC certificates were submitted by schemes to the PPF in order to mitigate their levy bill by enabling a more up-to-date assessment of the schemes funding position.

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- The DRCs were not only paid by companies sponsoring the largest schemes; some 50 per cent of the £26.5 billion was paid by employers sponsoring schemes with fewer than 10,000 members.
 - MQ5 data from the ONS covering 340 large pension schemes, including 100 local authorities, suggest that special contributions have risen slightly in 2009 following a sharp decline in 2008 from the levels seen in 2006 and 2007.
 - The scheme funding requirements introduced by the Pensions Act 2004 (and regulated by the Pensions Regulator) continue to play a key role in DB risk reduction and this is taken into account in the PPF's long-term risk monitoring.
 - Schemes continue to reduce investment risk through diversification (with a greater proportion of schemes investing in alternative assets), by shifting from equity to fixed income securities, and through the use of derivatives to hedge inflation and interest rate risk.
 - Liability-driven investment (LDI) strategies continue to take root. The National Association of Pension Funds (NAPF) survey data indicate that 26 per cent of schemes had implemented an LDI strategy by 2009, up from 23 per cent in 2008.
 - Quarterly surveys by F&C Asset Management suggest that while inflation hedging activity has grown sharply in the second and third quarters of 2009, interest rate hedging has declined.

All the PPF/TPR sourced statistics in this publication are produced in accordance with the UK Statistics Authority Code for official statistics which came into force in January 2009.

All the information contained in the Purple Book is for general interest only and we would like to draw the attention of the reader to the approximate nature of all calculations of an actuarial nature. For more information please see the detailed descriptions of the calculation methodology in each chapter of the text.