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Executive summary

1. Introduction

This is the third 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.

The key aim of this publication is to increase knowledge and help understanding of DB schemes in the UK and the ways in which they are changing.

Much of the analysis of the Purple Book 2008 ('Purple 2008') is based on new information from scheme returns provided to the regulator and issued in December 2007 and January 2008. This data covers 6,898 PPF-eligible DB schemes - some 93.2 per cent of the total number and 97.4 per cent of estimated total liabilities. The 2008 dataset is larger than those used in the 2006 and 2007 Purple books (covering 5,772 and 5,892 schemes respectively). The availability of a larger data set reflects, among other factors, improvements to the design of the scheme return intended to permit better PPF validation procedures.

Comparisons are made not only with the Purple Books of 2006 and 2007, but also with the extended Purple 2006 and Purple 2007 datasets, covering 7,751 and 7,542 schemes respectively. These extended datasets more fully reflect the universe of PPF-eligible schemes in each year. Construction of these datasets was possible in the wake of the Purple Book publication following the submission and cleaning of further scheme information as part of the PPF levy invoicing and collection process. The declines in the eligible universe reflect such factors as scheme mergers, schemes transferring into the PPF compensation scheme and better information on eligibility. Purple 2008 also includes comparisons of the position of DB schemes in the 2008 dataset at 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. Much of Purple looks at the position at 31 March 2008. Since then, risks will have increased given the effect of adverse market movements on scheme funding and the impact of the recession on insolvency risk.

This annual publication is evolving over time. Purple 2008 includes new chapters on PPF compensation payments (Chapter 11) and on risk reduction (Chapter 12). These are in addition to the extra chapters on PPF levy payments (Chapter 9) and schemes in the PPF assessment process (Chapter 10) introduced in Purple 2007. The latest scheme returns also include more detailed information on asset allocation (Chapter 7). The scheme funding chapter (Chapter 4) includes, for the first time, information on Technical Provisions (a prudent measure of liabilities used in the scheme specific funding regime introduced by the Pensions Act 2004). Chapter 3 on scheme demographics includes more accurate information on scheme status, as the result of an improved treatment of hybrid schemes. 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 2007, the PPF-eligible defined benefit (DB) universe was estimated to be 7,800, while the analysis covered a sample of 5,892 PPF-eligible schemes.
- The set of 5,892 schemes has now been augmented to produce an extended Purple 2007 sample, covering a total of 7,542 schemes. This gives a best estimate of the eligible universe for the 2007/08 levy year of approximately 7,500 schemes.
- Comparisons of some of the key analyses using the Purple 2007 and extended Purple 2007 datasets show that most of the findings using aggregate and weighted averages are little affected.
- In Purple 2008, we have been able to use a dataset of 6,898 PPF-eligible schemes, covering 93.2 per cent of the universe of schemes and 97.4 per cent of estimated liabilities (comparable figures for the Purple 2007 dataset are 76 per cent and 90 per cent).
- 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 (available on the PPF's website) covering items such as deficit reduction contributions and contingent assets.
- The scheme return valuation data and electronic returns have been used by the PPF actuaries to produce estimates of section 179 (s179) funding at common dates (31 March 2006, 30 March 2007 and 31 March 2008) for comparability purposes. 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 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 indicate 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 open schemes continues to decline.
- Open schemes constitute only 31 per cent of the Purple 2008 sample compared with 36 per cent in 2007.
- Forty-four per cent of scheme members were members of open schemes in March 2008, down seven percentage points from March 2007.
- Scheme memberships for the Purple 2008 sample totalled 12.4 million. The largest category of scheme memberships is deferred (42 per cent). Thirty-six per cent are current pensioner memberships, and 22 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 memberships of a scheme to increase.
- Schemes sponsored by firms in the manufacturing sector continue to dominate the Purple sample, constituting more than 35 per cent of schemes and s179 liabilities compared with the sector's 13 per cent share of economic output.



4. Scheme funding

- The s179 information for the Purple 2008 dataset of 6,898 schemes has been rolled back to 31 March 2006 and 30 March 2007, and rolled forward from the date given in the scheme return to 31 March 2008. Movements in financial markets have resulted in marked changes in funding between the three dates.
- The aggregate funding position on a s179 basis has deteriorated from a surplus of £74.2 billion (a funding level of 109.7 per cent) at 30 March 2007 to a deficit of £5.1 billion (a funding level of 99.4 per cent) at 31 March 2008. At 31 March 2006 there was an aggregate deficit of £10.2 billion, a funding level of 98.7 per cent.
- As at 31 March 2008, on a s179 basis, 68.4 per cent of schemes in the Purple 2008 sample were in deficit with a total deficit of £67.7 billion and 31.6 per cent were in surplus with a total surplus of £62.6 billion.
- The comparable figures for 30 March 2007 are: 54.4 per cent of schemes were in deficit with a total deficit of £31.0 billion and 45.6 per cent of schemes were in surplus with a total surplus of £105.2 billion.
- The average full buy-out funding level has decreased from 69.0 per cent at 30 March 2007 to 61.7 per cent in 2008.
- Funding on the accountancy (FRS17) basis, however, has shown a large improvement, reflecting the impact of higher corporate bond yields on discount rates. The aggregate FRS17 funding level was 86.7 per cent in March 2007, climbing to 98.5 per cent in March 2008.
- For the first time in the Purple Book, liabilities and deficits have been estimated using the Technical Provisions measure.
- The deficit on this basis was £148.3 billion at 31 March 2008, up from £55.7 billion at 31 March 2007. This reflects the negative impact of financial conditions. The Technical Provisions measures 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.
- Previously, FRS17 measures generally approximated Technical Provisions, whereas more recently they have risen to levels nearer that of s179 measures.
- 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 also show higher funding levels.

5. Funding sensitivities

- Changes in estimated market conditions since October 2002 have caused the monthly aggregate funding position of pension schemes measured on a s179 basis to vary by around £260 billion (with the greatest deficit in February 2003 at £109.2 billion and the greatest surplus in June 2007 at £148.9 billion).
- Funding can also exhibit considerable variation on a daily basis. During October 2008 the aggregate deficit rose from £46.9 billion to £145.7 billion over the space of two weeks.
- Market movements between 31 March and 30 October 2008 have resulted in deterioration in scheme funding of around £70 billion.

- The number of schemes in deficit on a s179 basis for the Purple 2008 dataset peaked in February 2003 at around 5,600 schemes (around 81 per cent of the dataset) and troughed in June 2007 at around 2,700 schemes (around 39 per cent).
- An increase in longevity such that experienced mortality is now equivalent to that of an individual two years younger would increase schemes' liabilities by around five per cent, or £38.0 billion.
- If the assumed rate of inflation increases by 0.1 per cent then the s179 liabilities for schemes increases by approximately 1.5 per cent or £12.4 billion, when a year ago this resulted in a 1.0 per cent increase in liabilities. This is as a result, for example, of a higher proportion of liabilities being due to deferred rather than current members.
- A 0.1 per cent (10 basis point) reduction or increase in nominal gilt yields increases or reduces scheme funding by around £15 billion; a 2.5 per cent increase or decrease in the market value of equities will increase or reduce scheme funding by £11 billion.
- Therefore, a 1 percentage point (100 basis point) change in gilt yields is broadly equivalent in its impact to a 34 per cent change in equity prices (compared with 25 per cent in Purple 2007). The greater relative sensitivity to changes in gilt yields in Purple 2008 reflects the rise in the gilt share and the fall in equity share in overall asset allocation.
- On 31 March 2008, the FTSE All Share Index stood at 2,927.05 (end-March 2007 at 3,283, end-March 2006 at 3,048), while the 10-year gilt yield was 4.4 per cent (end-March 2007 at 5.0 per cent, end-March 2006 at 4.5 per cent).
- A 2.5 per cent fall in equity markets and 0.1 percentage point fall in bond yields would result in a worsening of the aggregate deficit from £5 billion to £31 billion.

6. Insolvency risk

- The weighted average one-year ahead insolvency probability for the Purple 2008 dataset, derived from D&B failures scores, was 0.23 per cent as at March 2008.
- Comparisons with earlier years are difficult because of changes in D&B rating methodology.
- Corporate insolvencies for the economy as a whole rose in the second and third quarters of 2008 when they were 26 per cent higher than a year earlier. The insolvency rate is likely to rise significantly in 2009 given the economic downturn.
- By mid-December, the increase in insolvencies had not translated into increased claims on the PPF, with the number of s120 notices for PPF-eligible schemes yet to show a significant increase. This is probably the result of the universe of companies sponsoring PPF-eligible schemes consisting of older and larger companies than the universe of companies for the economy as a whole.

7. Asset allocation

- Equities and securities in the gilts and fixed interest category 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 89.1 per cent in 2007 and 87.0 per cent in 2008.



- In 2008, the share of gilts and fixed interest increased to 33.1 per cent from 29.6 per cent in 2007 and 28.3 per cent in 2006. Meanwhile, the equity share dropped to 53.9 per cent in 2008 from 59.5 per cent in 2007 and 61.1 per cent in 2006.
- Part of the changes in asset allocation is likely to be a valuation effect. However, flow data from the Office of National Statistics show a continuing disinvestment in equities and continuing investment in bonds.
- As in Purple 2006 and 2007, more mature schemes tend to invest more heavily in gilts and fixed interest and less in equities.
- The new scheme returns underlying Purple 2008 include a more detailed breakdown of assets than in the previous two years.
- A bigger share of total scheme equity holdings is in overseas equities (52 per cent) than in UK equities (48 per cent).
- Total scheme holdings of gilts and fixed interest are spread fairly evenly between government (33.2 per cent), corporate (32.6 per cent) and index-linked (33.9 per cent).
- Looking at simple averages, the share of UK equities is considerably bigger (60.4 per cent) than that for overseas equities (39.6 per cent), while the share of government fixed interest securities is considerably higher (47.2 per cent) than the index-linked average (19.8 per cent).
- Smaller schemes have a greater slant within equities to UK equities, and within bonds to conventional government bonds.

8. Long-term risk and short-term risk concentration

- A large proportion of short-term risk emanates from schemes with the highest insolvency probabilities (those in insolvency Group 10 with an insolvency probability of more than 3.5 per cent). This group alone accounts for 36.1 per cent of short-term risk, with an average insolvency probability of 12.5 per cent.
- The PPF is currently consulting on the inclusion of long-term unexpected risk in the formula used to calculate individual levy bills.
- The proposed new levy formula is designed to calculate individual levies so that they more accurately reflect the degree of long-term risk each scheme poses to the PPF.
- The limited increase in the levy estimate for 2009/10 takes account of the more difficult operating conditions facing scheme sponsors.

9. Levy payments to the PPF

- The PPF is expecting to collect £585 million in respect of the levy in the 2007/08 levy year. This is £90 million less than the levy estimate of £675 million set out by the PPF in December 2006.¹
- The amount collected for 2007/08 differed to the estimate due to deficit reduction contributions, contingent assets and schemes or sponsoring employers challenging their insolvency probabilities.
- The under-collection for 2007/08 is much lower than that in 2006/07 (£304 million).

¹ The 2007/08 Pension Protection Levy Estimate Consultation Document, December 2006.

The 2006/07 under-collection had mainly reflected the impact of better data becoming available.

- The number of schemes paying no risk-based levy increased from 414 to 630 in the 2007/08 levy year (representing 8.8 per cent of the total number of schemes and 11.9 per cent of total liabilities).
- The top 10 levy payers paid a smaller proportion of total levy in 2007/08, 11 per cent (£59.9 million) compared with 14 per cent (£35.2 million) in 2006/07.
- Levy paid in 2007/08 represented 0.08 per cent of scheme assets up from 0.04 per cent in 2006/07, reflecting improved collection.
- Schemes in the manufacturing sector experienced the largest increase in levy payments from £75.4 million to £178.9 million, around 30 per cent of the total levy. This is similar to the sector's share of the 2006/07 levy and its share of total PPF liabilities.
- In 2007/08, the risk-based levy was capped at 1.25 per cent of a scheme's s179 liabilities compared with 0.5 per cent in 2006/07.
- Four hundred and eleven schemes had their risk-based levy capped in 2007/08, six per cent of the total. The liabilities of those capped schemes totalled £7.4 billion or one per cent of total liabilities.

10. Schemes in the PPF assessment process

- There were 217 schemes (123,000 members) in a PPF assessment period as at 31 March 2008, compared with 179 (115,000 members) a year earlier.
- The rise in schemes in assessment reflects 93 new schemes entering and remaining in assessment, 32 schemes transferring into the PPF and 23 being rescued, deemed to be ineligible or withdrawn.
- Where the industry is known, just under half the schemes in assessment came from manufacturing (48.1 per cent) while 15.3 per cent came from services.
- As at 31 March 2008, on a s179 basis, the aggregate assets of schemes in assessment totalled £4.2 billion and aggregate liabilities £5.4 billion. Liabilities averaged £24.8 million per scheme and assets averaged £19.4 million.
- Over 40 per cent of the schemes in assessment have liabilities below £5 million, although schemes this small make up only 30 per cent of the Purple 2008 dataset.
- The aggregate funding level (total assets divided by total liabilities) of the schemes in assessment as at 31 March 2008 was 78.3 per cent. This is below both the aggregate funding levels of the schemes in the Purple 2008 dataset (99.4 per cent) and the aggregate funding level of the schemes in assessment at 30 March 2007 of 84.6 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 84.5 per cent. Those with less than £50 million in assets have an average funding level of 72.0 per cent.
- The asset allocation of schemes in assessment (taken from the scheme return prior to



their entering the assessment period) is weighted towards equities (43 per cent) and gilts and fixed interest assets (29 per cent). This equity share is lower than the figure of 54 per cent of assets for the Purple 2008 sample. Once in assessment, schemes tend to follow an investment strategy that is more oriented towards gilts and fixed interest holdings.

- Between end-March and end-September 2008, 20 schemes in the schemes in assessment dataset had transferred into the PPF, out of a total of 61 transferred since April 2005.

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.
- Over the financial year 2007/08, 3,596 members received PPF compensation. Average compensation in payment stood at £4,609 per annum. The number of members with compensation not yet in payment (deferred members) as at 31 March 2008 totalled 8,577. In these cases, the average compensation accrued was £4,648 per annum.
- As at 31 March 2008, males constitute more than 75 per cent of both pensioner and deferred members and receive more than 85 per cent of compensation in both categories.
- Spouses and dependents account for 13 per cent of those currently in receipt of compensation, receiving eight per cent of compensation in payment.
- More than 85 per cent of compensation is attributable to former employees of the manufacturing sector.
- As at 31 March 2008, only nine pensioners were affected by the compensation cap (£27,770.72 per annum for age 65 in 2008/09 after the 90 per cent scaling).
- The vast majority of members are in receipt of (or have accrued) compensation of less than 25 per cent of the compensation cap.

12. Risk reduction

- The total number of contingent assets in place has risen by approximately 75 per cent, from around 260 for the 2007/08 levy year to around 450 for 2008/09.
- Schemes in the Purple 2008 dataset had certified approximately £16.6 billion of special contributions to reduce deficits by 7 April 2008.
- They were submitted for the purpose of enabling a more up-to-date assessment of the scheme funding position and, hence, mitigate their levy bills.
- The deficit reduction contributions were not only paid by companies sponsoring the largest schemes; around 53 per cent was paid by employers sponsoring schemes with fewer than 10,000 members.
- The scheme specific funding regime introduced by the Pensions Act 2004 plays a key role in DB risk reduction and is taken into account in the PPF's long-term risk modelling.
- Schemes are reducing investment risk through diversification (moving into alternative asset classes such as insurance, private equity and hedge funds), 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 are becoming increasingly popular. National Association of Pension Funds (NAPF) survey data indicate that 23 per cent of schemes had implemented an LDI strategy on or before 2008, up from 17 per cent in 2006.