

Combined Annex

The Pension Protection Levy – A New Framework

Contents

<u>Annex A: Impact Analysis</u>	3
1. Overview	3
2. Impact Analysis: Levy Year 2010/11.....	6
3. Impact Analysis: Levy Year 2011/12.....	10
4. Description of the Dataset.....	13
<u>Annex B: Comparing the Current and New Formulae</u>	18
1. Key Features of the Current and New Formulae.....	18
2. Profile of the Levy under the Current and New Formulae	18
<u>Annex C: Levy Stability</u>	22
1. Stability of the Aggregate Levy	22
2. Stability at the Individual Scheme Level	22
<u>Annex D: Illustrative Example of the Risk-Based Levy</u>	
<u>Calculation</u>	24
1. Description	24
2. Scheme Data	24
3. Market Data.....	25
4. Calculating Underfunding	25
5. Calculating Insolvency Risk	28
6. Risk-Based Levy Calculation	28

Annex A: Impact Analysis

We have carried out an analysis based on prior years' data in order to show the impact that the new levy framework can be expected to have on individual scheme levies. This analysis calculates levies on the current and new formulae for schemes based on scheme data used for the 2010/11 and 2011/12 levy years.

To make the two cases comparable, we have set scaling factors under the new levy framework to raise the same amount in total as the levy estimate in each year, rather than holding it fixed for a period. This means that both the new framework and current formula are set to collect £720 million for 2010/11, and £600 million for 2011/12.

We have compared levies generated under the two formulae for two years because the volatility of bills under the current formula means that a single year's comparison could be unreliable. Nevertheless, the analysis below shows that the broad patterns of levy increases and decreases for schemes with certain characteristics are consistent across the two years.

A key point to note is that the levy rates applied in the new formula are higher than the insolvency probabilities assumed in the current formula and, as a result, the scaling factor used is proportionately lower.

A number of simplifying assumptions have been made in modelling the impact of the new framework. These include the following:

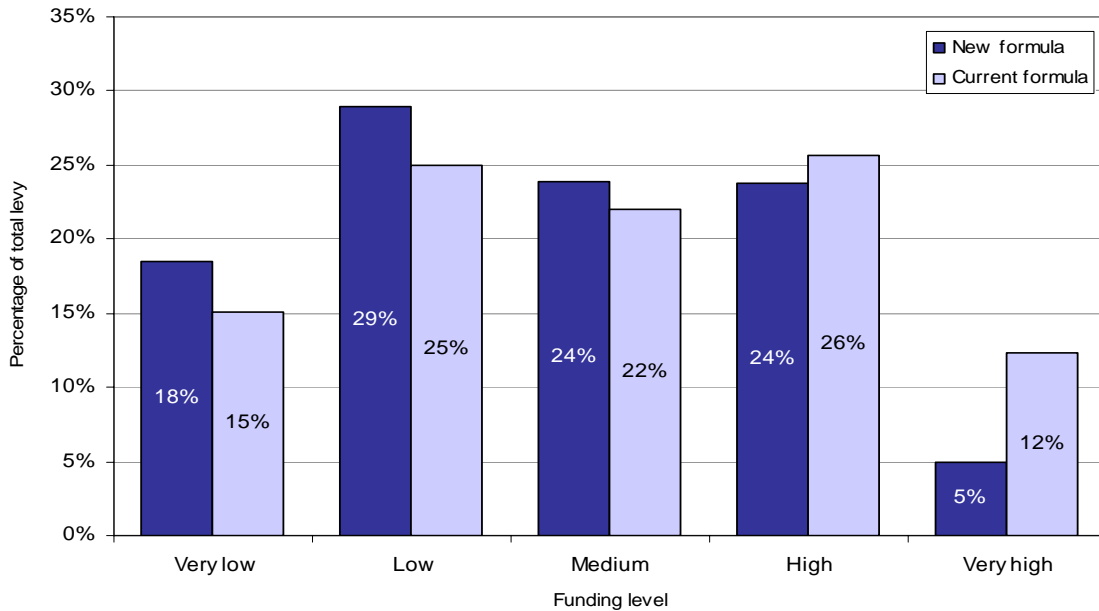
- Deficit reduction contributions and contingent assets are not considered in the calculation of scheme levies.
- Assessments of scheme investment risk under the new formula have been made on the basis of the standard method using investment allocation data supplied via Exchange; no bespoke investment risk appraisals have been attempted.
- Scheme Failure Scores used in levy calculations have not been constructed from annual averages of monthly data. Instead, Failure Scores are taken for each scheme on 31 March of the relevant year.

The analysis looks at the proportion of the levy that would have been paid by schemes with different levels of funding and covenant strength. It assesses the change in levy in cash terms, as a percentage of the current levy, and as a proportion of liabilities.

1. Overview

Figure A1 shows the share of total levy paid by groups of schemes defined according to their level of funding. Schemes are grouped into quintiles (i.e. 20 per cent of the total number of schemes in each group) according to their level of funding adjusted for investment risk (see Table A6). Figure A1 shows that the contribution to total levy from the groups with 'High' and 'Very high' funding would decline under the new formula. In particular, the overall levy collected from schemes with the highest funding will more than halve compared to the current formula. Conversely, as funding level weakens from medium to very low, the proportion of total levy under the new formula exceeds that of the current formula.

Figure A1: Distribution of Total Levy by Funding Level Group for 2011/12



The range of levy rates applied in the new formula is narrower than the range of insolvency probabilities assumed in the current formula. Therefore schemes with higher insolvency risk will tend to pay less as a result of the change to the formula and schemes with lower insolvency risk will tend to pay more. This is shown in Figure A2, which shows the proportion of the levy that is paid by schemes in each of the 10 insolvency risk bands (defined in Table A5). It is worth noting that the levy bands are not deciles. Band 1, representing the set of lowest risk schemes, constitutes 31 per cent of schemes and 56 per cent of aggregate liabilities.

Figure A2: Distribution of Total Levy by Levy Band for 2011/12

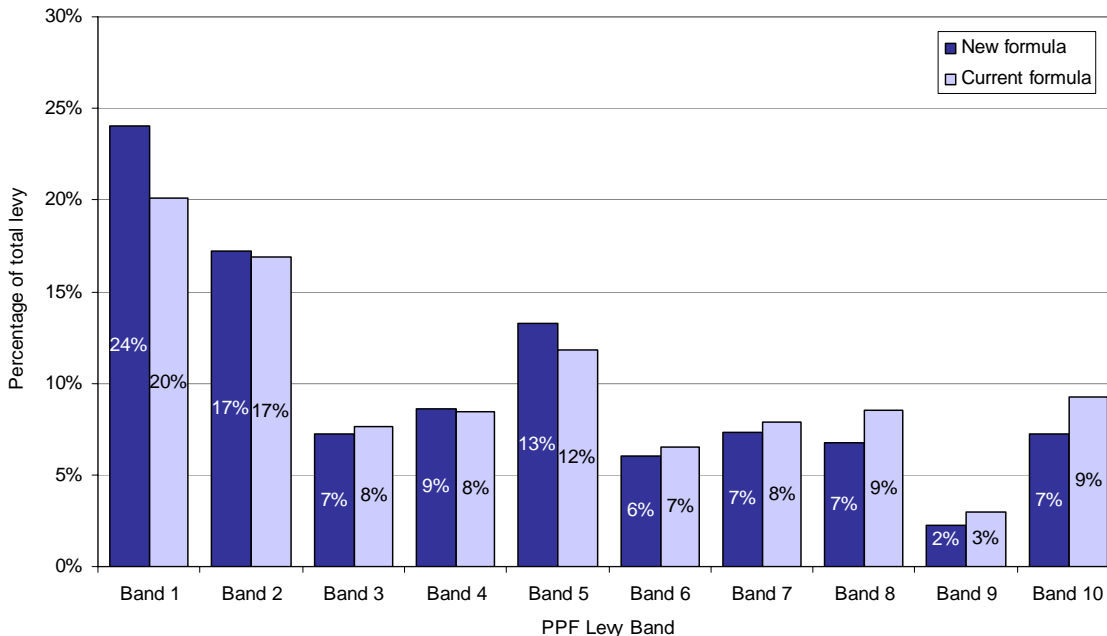


Figure A3 shows the proportion of levy paid by schemes split by the size of their liabilities under the new and current frameworks. It shows that the distribution of levy by size of schemes is broadly unchanged.

Figure A3: Distribution of Levy under the Current and New Formulae by Size of Liabilities 2011/12

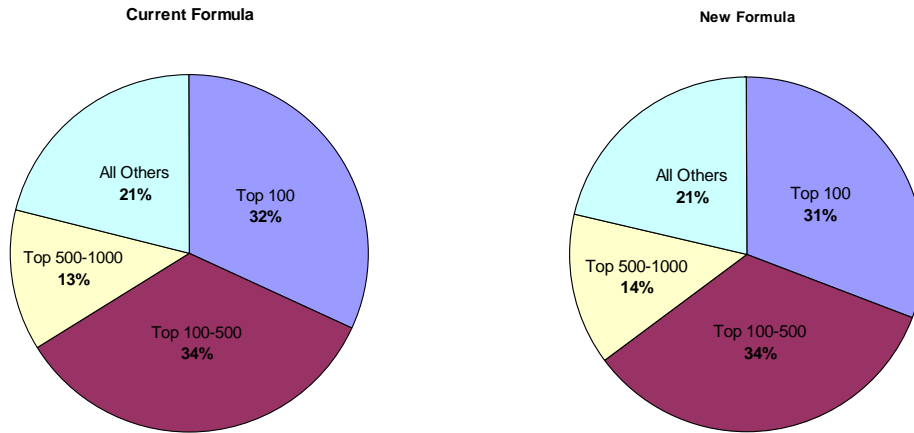


Figure A4 shows the distribution of schemes by percentage change in their levy. 16 per cent of schemes see their levy more than halve, while 10 per cent of schemes see their levy bill more than double. Those in the latter category are generally schemes with poor, or very poor, funding, that see a substantial increase in their levy under the new formula. Many of these schemes also have a high level of investment risk and pay a very low levy under the current formula; more than half of the cases in this group have a levy under the current formula of less than £6,000.

Figure A4: Distribution of Schemes by Change in Total Levy for 2011/12

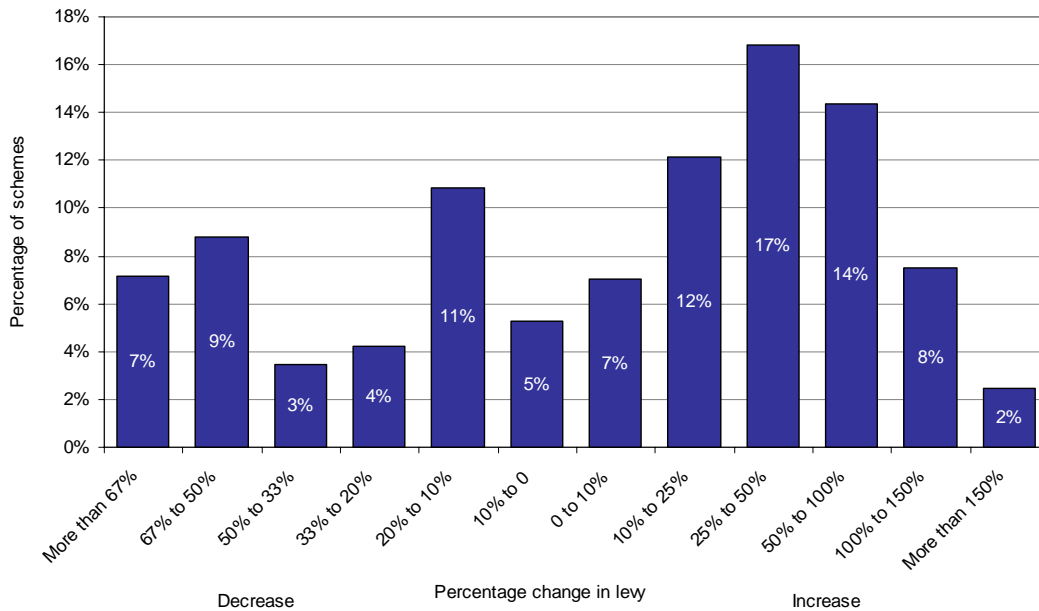
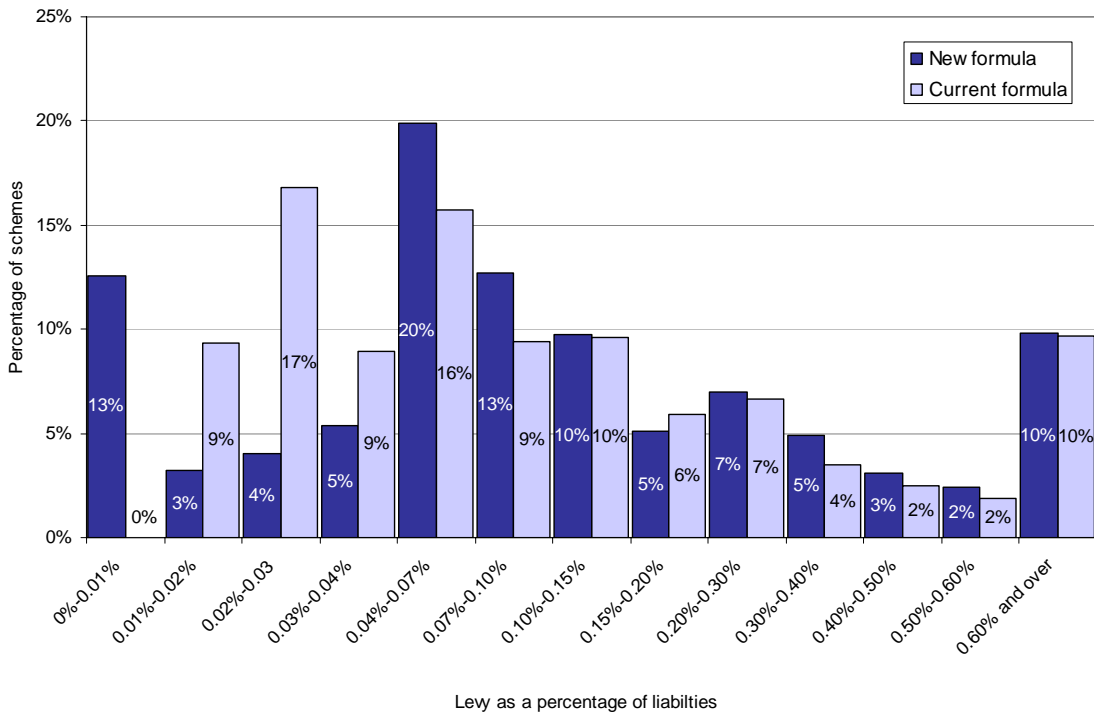


Figure A5 shows the distribution of levy paid as a proportion of liabilities under the current and new formulae for 2011/12. The levy is capped at 0.75 per cent of liabilities. The 13 per cent of schemes paying a levy representing between 0 and 0.01 per cent of their liabilities under the new formula are schemes paying no risk-based levy thanks to strong funding. Under the current formula, 3 per cent of schemes pay no risk-based levy and all schemes pay a higher scheme-based levy.

Figure A5: Distribution of Schemes by Total Levy as a Percentage of Liabilities for 2011/12



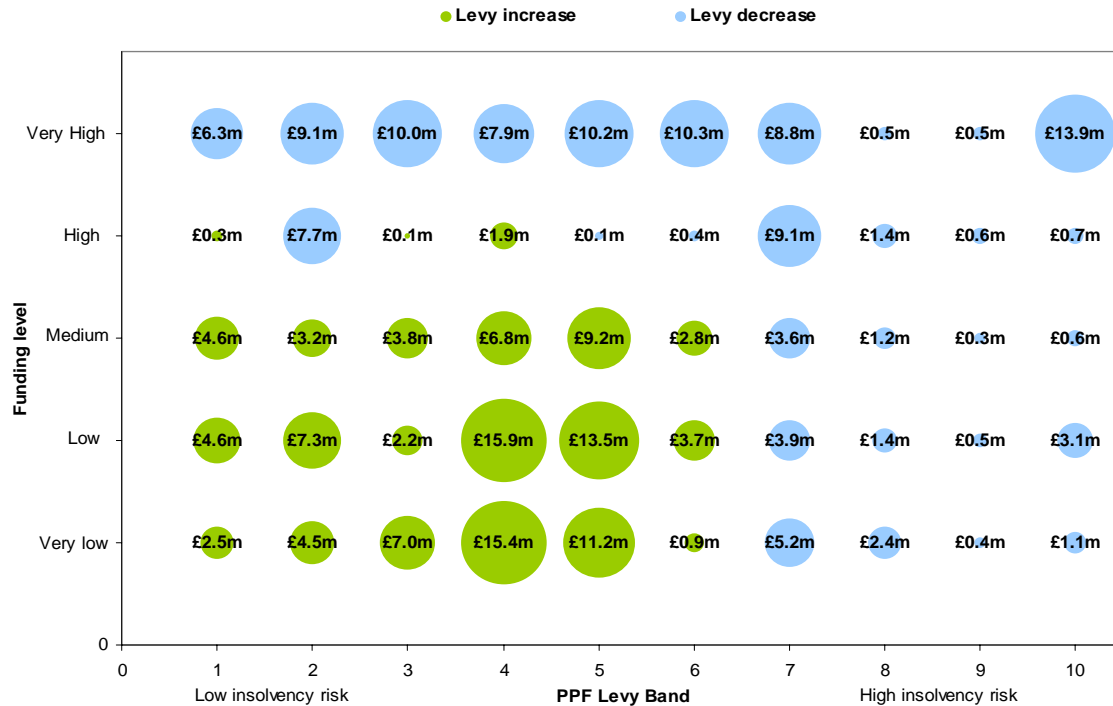
2. Impact Analysis: Levy Year 2010/11

Figures A6 to A8 summarise the results of impact analysis based on data as at 31 March 2009, the collection date for scheme data used in the calculation of the 2010/11 levy.

In general, schemes with strong funding levels tend to gain from the implementation of the new formula. This is shown in Figure A6, where the 'Very High' funding level category sees a levy decrease across all PPF levy bands.

Schemes in levy bands 7 to 10 also tend to pay less under the new levy formula, mainly because the range of levy rates is narrower and hence the insolvency probabilities applied to these categories are closer to those used for lower levy bands. This contributes to the overall result that the new levy formula is more sensitive to funding and less sensitive to variations in covenant strength.

Figure A6: Change in Levy by Funding and Levy Band, 2010/11 (£million)



Tables A1 and A2 below show the amount of total levy paid by each group of schemes, defined by PPF levy band and scheme funding level, under the current and new formulae as applied to 31 March 2009 data. Very well-funded schemes would pay £43.9 million in total under the new formula compared with £121.6 million under the current formula. These figures are both calculated on the basis of a total levy collection of £720 million.

Table A1: Total Levy paid by Funding and Levy Band groups for 2010/11, current formula (£million)

Funding level	PPF Levy Band										Total
	1	2	3	4	5	6	7	8	9	10	
Very high	12.5	15.9	18.9	13.5	19.7	13.5	11.0	0.7	0.8	15.1	121.6
High	26.7	43.3	9.2	26.2	40.5	5.1	28.3	3.2	2.3	2.7	187.4
Medium	16.2	12.2	13.6	20.5	34.0	13.4	33.4	4.9	1.0	2.4	151.7
Low	7.2	15.5	5.3	32.7	34.8	14.0	32.7	5.1	2.0	11.7	160.9
Very low	3.8	7.9	9.0	16.6	19.8	5.1	22.0	8.6	1.4	4.2	98.4
Total	66.5	94.7	56.1	109.6	148.8	51.1	127.3	22.4	7.5	36.1	720.0

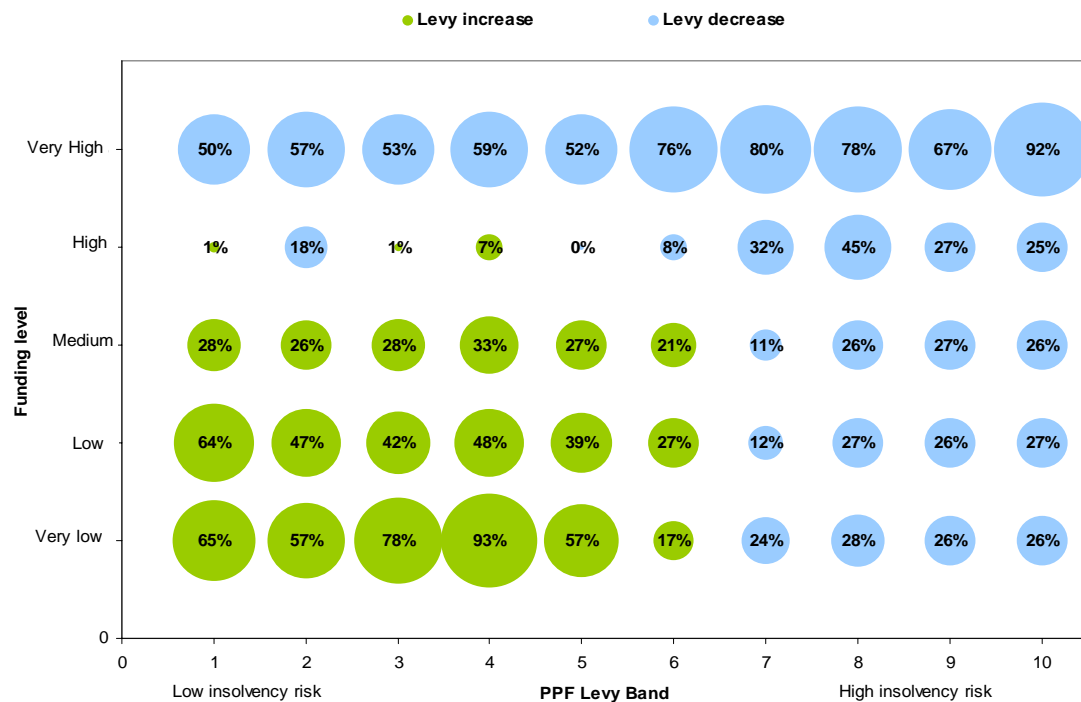
Table A2: Total Levy paid by Funding and Levy Band groups for 2010/11, new formula (£million)

Funding level	PPF Levy Band										Total
	1	2	3	4	5	6	7	8	9	10	
Very high	6.3	6.7	8.9	5.5	9.5	3.2	2.2	0.2	0.3	1.2	43.9
High	27.1	35.6	9.3	28.1	40.3	4.7	19.2	1.7	1.7	2.0	169.7
Medium	20.8	15.4	17.5	27.3	43.2	16.2	29.7	3.6	0.7	1.8	176.2
Low	11.9	22.8	7.5	48.6	48.3	17.7	28.8	3.8	1.4	8.5	199.3
Very low	6.4	12.4	16.1	32.0	31.0	5.9	16.8	6.2	1.0	3.1	130.9
Total	72.3	92.9	59.2	141.5	172.4	47.7	96.7	15.5	5.2	16.6	720.0

Figure A7 below shows the percentage change in total levy paid by different groups of schemes under the new formula when compared with the current formula in 2010/11.

Within each levy band, well-funded schemes tend to benefit from the new formula in comparison to poorly-funded schemes. This can be seen for levy bands 1 to 6, where poorly-funded schemes experience increases in their levy while their well-funded counterparts experience reductions.

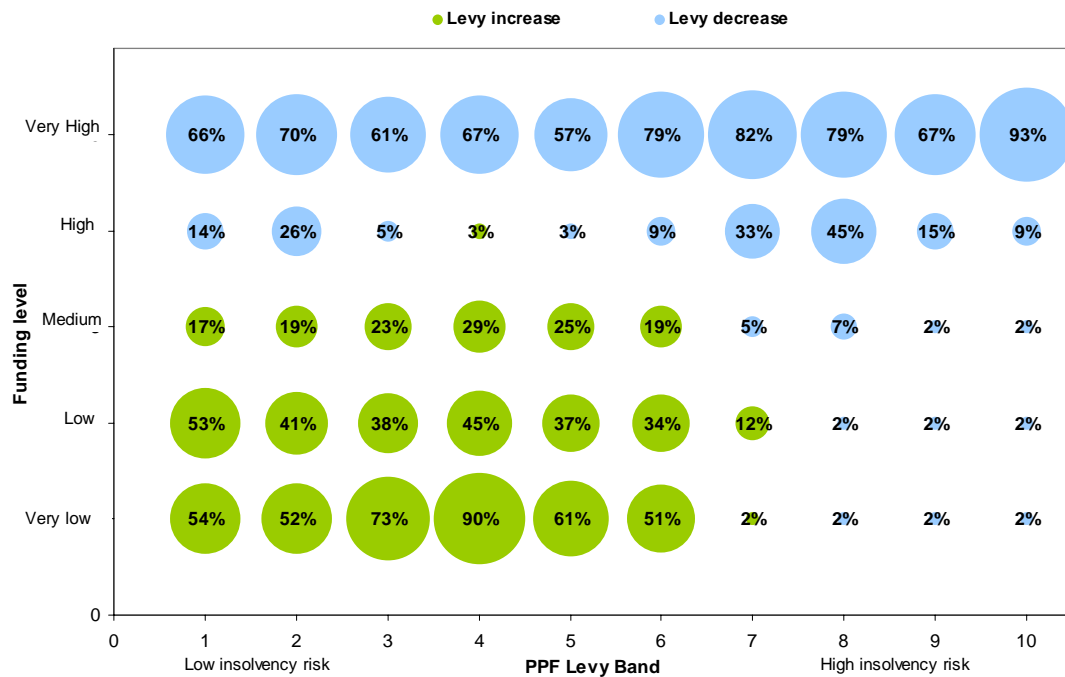
Figure A7: Percentage Change in Levy by Funding and Levy Band, 2010/11



The largest decrease in levy is experienced by the best-funded schemes in levy band 10. This group would have paid 92 per cent less than under the current formula in 2010/11: £1.2 million under the new formula instead of £15.1 million under the current.

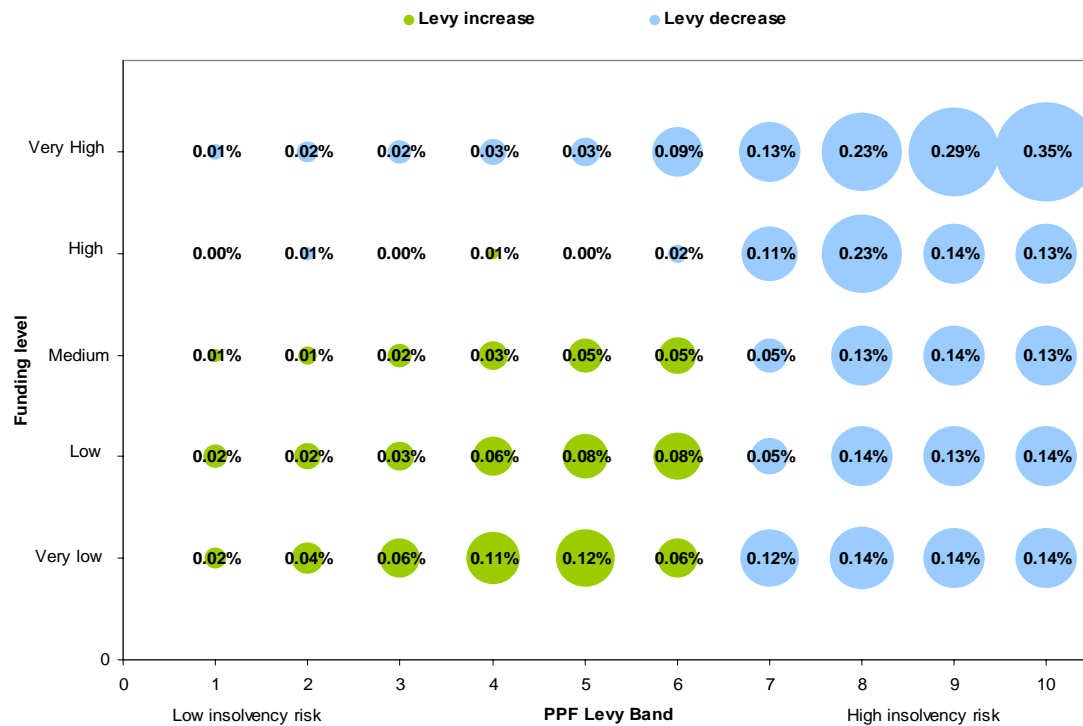
Figure A7 shows that poorly-funded schemes in levy bands 7 to 10 also gain, though less than their better funded equivalents. Many schemes in levy bands 7 to 10 are likely to be capped under both the current and new levy formulae. Capping under the new formula is based on smoothed liabilities whereas, for the current formula, it is based on a point-in-time measure. For 2010/11 (and to a lesser extent 2011/12), smoothed liabilities were lower than the point-in-time equivalent, so schemes will have been capped at a relatively low cash amount under the new formula. At a future date, the reverse may be true, as there is no reason to believe that smoothed liabilities will on average be higher or lower than point-in-time liabilities. Basing the cap on smoothed liabilities has the effect of reducing the volatility of levies for capped schemes over time. This can be seen in Figure A7a, which shows the impact of applying the levy cap to the liability valued on a point-in-time basis under both the new and current formula. Schemes with high insolvency risk and 'Medium' to 'Very low' funding categories experience only a marginal reduction in levy, caused by the reduction in scheme-based levy.

Figure A7a: Percentage Change in Levy by Funding and Levy Band (New Formula Levy Cap Applied to Point-in-Time Liabilities), 2010/11



The change in levy expressed as a proportion of scheme liabilities is shown in Figure A8. The changes in levy for scheme in bands 1 to 3, though sometimes large in cash terms or as a proportion of the levy currently charged, are generally small relative to the size of the scheme. In comparison, for schemes in levy bands 8, 9 or 10, reductions in levy can be more significant.

Figure A8: Change in Levy as a Percentage of Liabilities by Funding and Levy Band, 2010/11



3. Impact Analysis: Levy Year 2011/12

The impact analysis with reference to 2011/12 levy data is summarised in Figures A9 to A11. These charts and tables exhibit broadly similar features to those highlighted for the 2010/11 year:

- In general, schemes with strong funding levels tend to gain from the implementation of the new formula.
- Schemes in levy bands 7 to 10 tend to pay less under the new levy formula.
- Levy reductions as a proportion of scheme liability are in general more significant than levy increases and typically benefit the weakest employers.

There are, however, differences of detail in the results. These differences are largely the result of the volatility of bills under the current formula whereas the new framework charges similar amounts in 2010/11 and 2011/12.

Figure A9: Change in Levy by Funding and Levy Band, 2011/12 (£million)

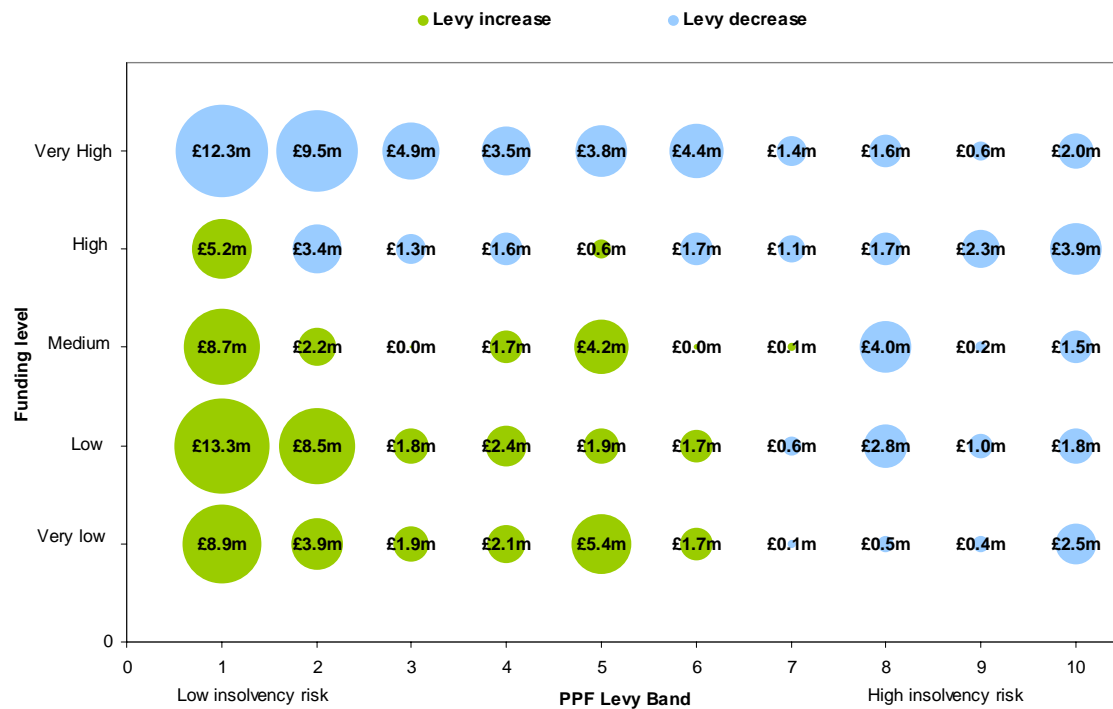


Table A3: Total Levy paid by Funding and Levy Band groups for 2011/12, current formula (£million)

Funding level	PPF Levy Band										Total
	1	2	3	4	5	6	7	8	9	10	
Very high	25.6	16.0	6.9	6.6	4.7	5.7	2.6	2.0	0.8	2.8	73.7
High	46.5	24.0	12.7	10.4	14.4	16.4	5.9	3.4	5.2	14.8	153.7
Medium	24.8	23.3	10.6	11.1	14.3	2.5	11.7	20.4	2.9	10.6	132.2
Low	13.1	24.3	10.4	16.0	25.2	8.5	11.9	22.4	6.6	11.9	150.1
Very low	10.5	13.7	5.2	6.4	12.6	5.9	15.1	3.1	2.5	15.3	90.2
Total	120.5	101.4	45.9	50.5	71.1	39.0	47.1	51.3	17.9	55.3	600.0

Table A4: Total Levy paid by Funding and Levy Band groups for 2011/12, new formula (£million)

Funding level	PPF Levy Band										Total
	1	2	3	4	5	6	7	8	9	10	
Very high	13.3	6.6	2.0	3.1	0.9	1.2	1.2	0.5	0.2	0.7	29.7
High	51.7	20.6	11.4	8.8	15.0	14.7	4.8	1.7	2.9	10.8	142.5
Medium	33.5	25.5	10.6	12.8	18.6	2.6	11.8	16.4	2.7	9.1	143.5
Low	26.3	32.8	12.2	18.4	27.1	10.2	11.3	19.6	5.6	10.1	173.6
Very low	19.4	17.7	7.1	8.5	18.0	7.6	14.9	2.6	2.1	12.8	110.7
Total	144.2	103.2	43.3	51.6	79.5	36.4	44.0	40.7	13.5	43.6	600.0

Figure A10: Percentage Change in Levy by Funding and Levy Band, 2011/12

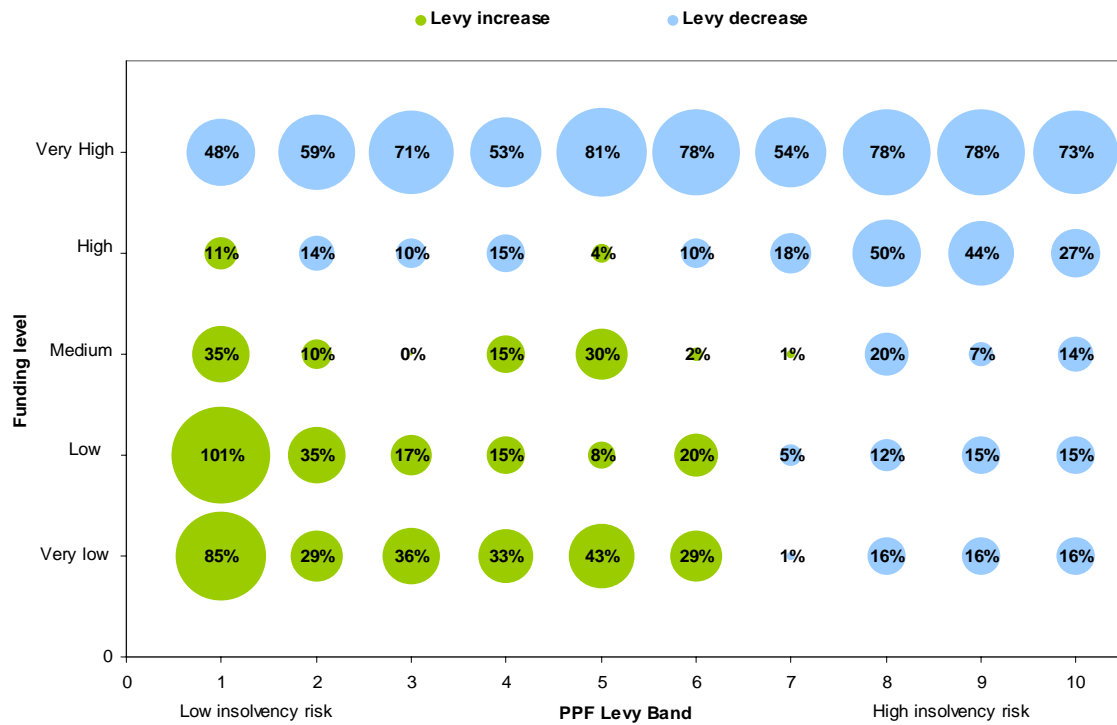
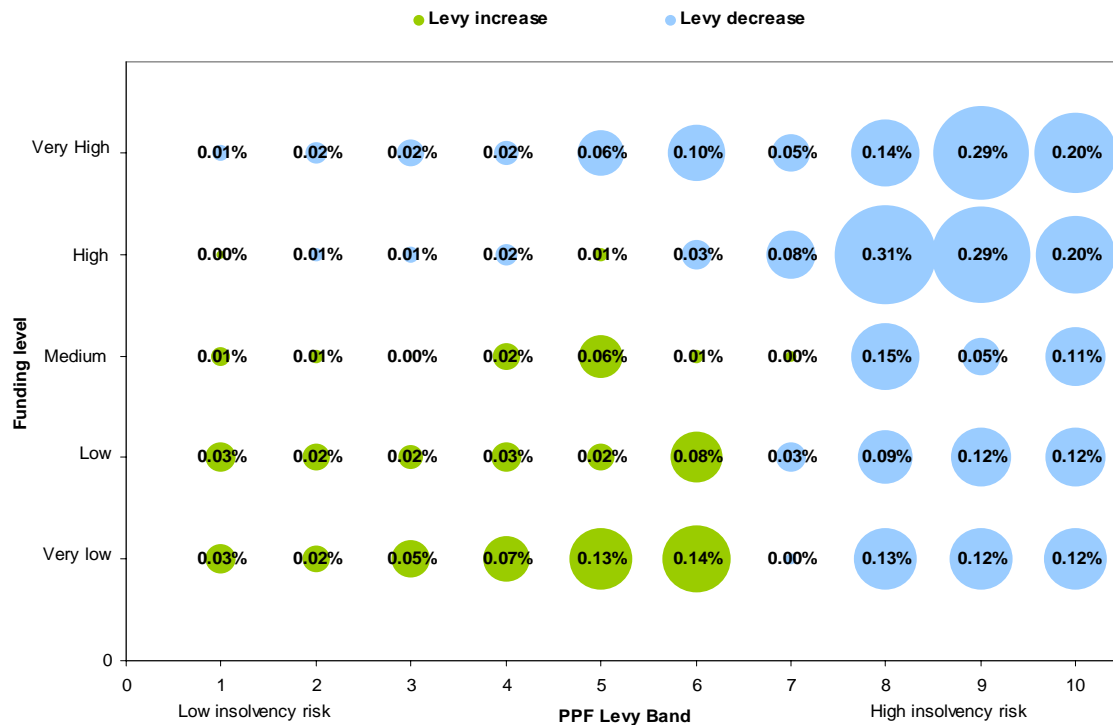


Figure A11: Change in Levy as a Percentage of Liabilities by Funding and Levy Band, 2011/12



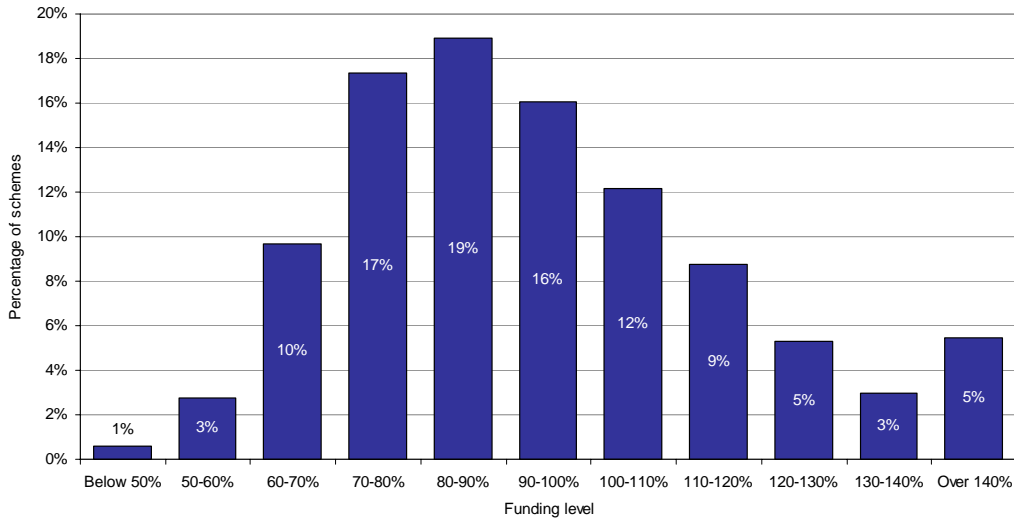
4. Description of the Dataset

The dataset used in section 3 was used to set the parameters (in particular the levy scaling factor) of the 2011/12 levy. It includes schemes' liabilities, assets and asset allocation. Scheme funding calculations are performed on a s179 basis and exclude contingent assets and deficit-reduction contributions. All scheme data are taken as at 31 March 2010.

Figure A12 shows the distribution of schemes by funding level on an unstressed and unsmoothed basis at 31 March 2010.

As shown by Figure A12, more than half of the schemes were between 70 and 100 per cent funded and almost one fifth of schemes (19 per cent) were 80 to 90 per cent funded. The median funding level was around 80 per cent.

Figure A12: Distribution of Schemes by Funding Level at 31 March 2010



Larger schemes tend to be better funded than small schemes. Figure A13 shows the distribution of liabilities by funding level on an unstressed and unsmoothed basis at 31 March 2010. When schemes are weighted by liability, the median funding ratio is greater than 100 per cent.

Figure A13: Distribution of Liabilities by Funding Level at 31 March 2010

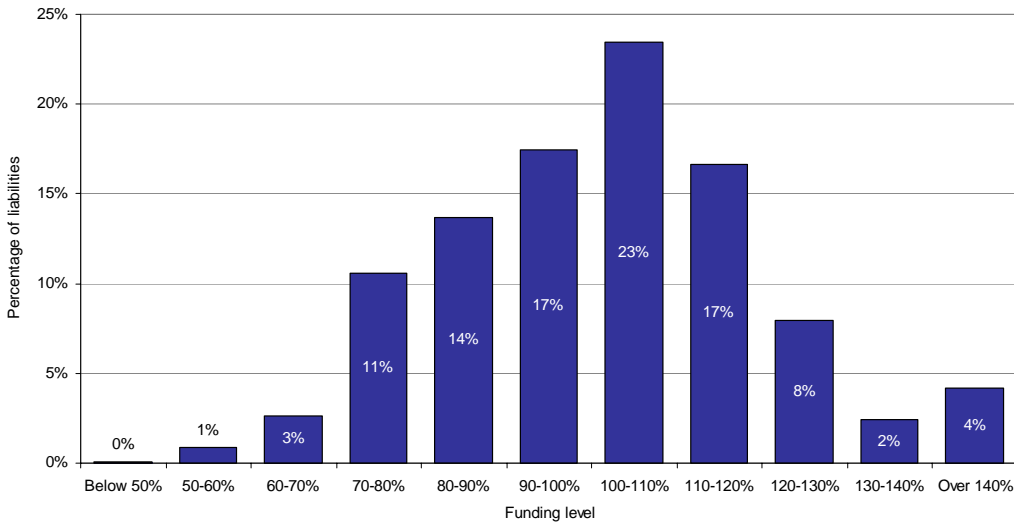


Table A5 shows how the Failure Scores are translated into levy rates under the new framework:

- There are 10 bands with 10 levy rates.
- The range of the levy rates of the new formula is narrower than the range of assumed probabilities of insolvency (API) in the current formula. From levy

bands 10 to 1, the levy rate is increased by a factor of 22. Under the current formula, the (capped) API relating to a Failure Score of 1 is 100 times greater than that for a Failure Score of 100.

Table A5: Definition of PPF Levy Bands

PPF Levy Band	D&B Failure Score		API (2011/12)		PPF Levy Rate
	<i>Maximum</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Minimum</i>	
1	100	99	<0.09%	0.03%	0.18%
2	98	96	<0.17%	≥0.09%	0.28%
3	95	92	<0.25%	≥0.17%	0.44%
4	91	87	<0.35%	≥0.25%	0.69%
5	86	73	<0.68%	≥0.35%	1.10%
6	72	66	<0.87%	≥0.68%	1.60%
7	65	46	<1.46%	≥0.87%	2.01%
8	45	38	<1.77%	≥1.46%	2.60%
9	37	30	<2.20%	≥1.77%	3.06%
10 (capped)	29	1	3.0%	≥2.20%	4.00%

Under the new levy framework, the Failure Score used in the calculation of a scheme's levy rate will be constructed from an average of monthly Failure Scores. Data on monthly Failure Scores was not available for this analysis, and hence point-of-time Failure Scores are taken at 31 March of the relevant year.

Figures A14 and A15 below show the distribution by levy band of schemes and liabilities respectively for the 2011/12 levy year. In applying the new levy formula, levy bands will be assigned to each employer sponsoring a multi-employer scheme and the corresponding levy rates weighted by the proportion of scheme membership relating to each. For the purposes of grouping schemes in Figures A14 and A15, the resultant levy rate is included in the closest levy band.

Figure A14 shows that just under a third of schemes fall into the levy band 1 (composed of schemes with sponsors exhibiting the lowest insolvency risk). Figure A15 shows that while 31 per cent of schemes fall into levy band 1 and together constitute 56 per cent of total liabilities, only seven percent of schemes are in the worst credit band (band 10) and collectively represent just one per cent of total liabilities. This illustrates the point that schemes in band 10 tend to be very small in terms of liabilities compared with schemes in band 1.

Figure A14: Distribution of Schemes by PPF Levy Band

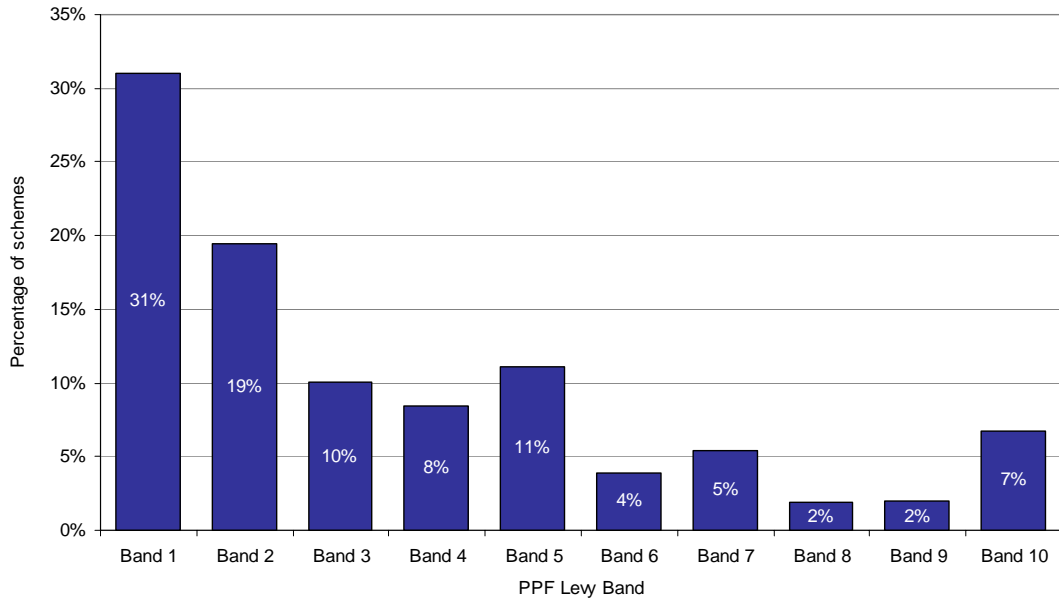
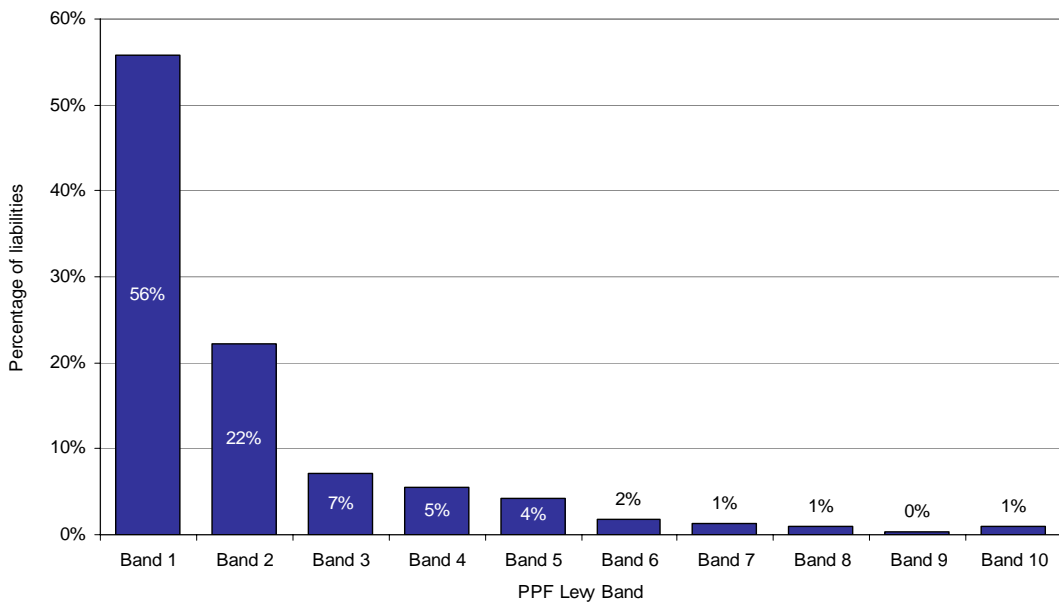


Figure A15: Distribution of Liabilities by PPF Levy Band



The new levy formula is calculated on the basis of stressed funding levels. For the purpose of this impact analysis, schemes' funding levels are ranked according to the funding position measured after the standard stress has been applied to the assets and liabilities. This is essentially a ranking of scheme funding adjusted for investment risk.

As defined in Table A6, each funding level category represents 20 per cent of all schemes. For example, the "very low" scheme funding category corresponds to the bottom 20 per cent of scheme funding ratios under stressed conditions. "Low" corresponds to the next 20 per cent and "very high" to the top 20 per cent. Table A6

shows the ranges of stressed funding for schemes in each of these categories. The right-hand column provides the average funding level for schemes in each category on an unstressed basis at 31 March 2010.

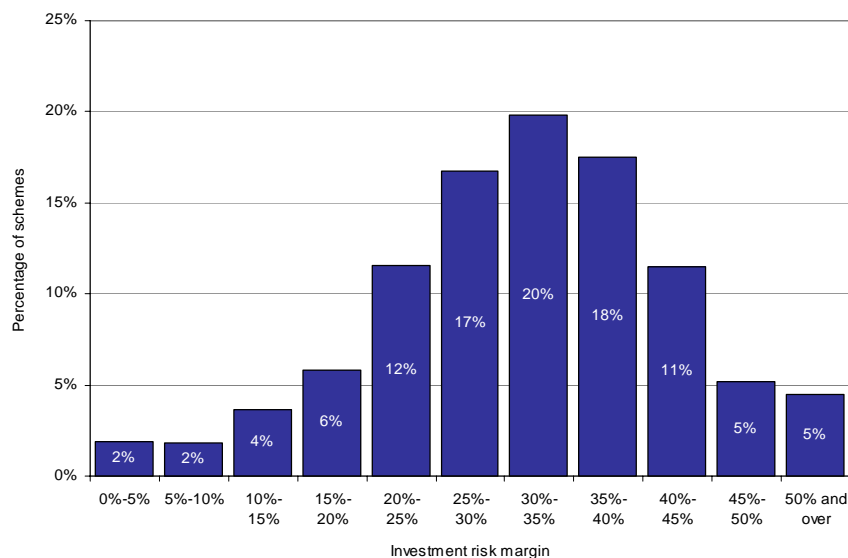
Table A6: Definition of Funding Level Rating

Funding level rating	Range of stressed and smoothed funding levels	Average point-in-time funding level as at 31/03/2010
Very low	Less than 53%	67%
Low	53% to 63%	81%
Medium	63% to 73%	91%
High	73% to 88%	103%
Very high	Greater than 88%	134%

Figure A16 shows the distribution of schemes by investment risk margin, a measure of investment risk derived from the application of the standard stresses to the assets and liabilities. The investment risk margin is measured as a scheme's deficit under stressed funding conditions as a proportion of its unstressed liabilities. It gives an indication of the change in reported funding level schemes may experience when we move to assessing funding level on a stress basis. The highest proportion of schemes (20 per cent) is in the 30 to 35 per cent investment risk margin category, whereas the lowest proportions of schemes are in the extremes.

Investment risk margin calculations are based on asset allocation information provided as part of the annual scheme return. This cannot take account of risk reduction measures that schemes may have put in place, but which are not currently reported through Exchange. To this extent it is likely to overstate the level of investment risk in schemes. The bespoke stress as part of the new levy framework enables a more accurate quantification of investment risk.

Figure A16: Distribution of Schemes by Investment Risk Margin



Annex B: Comparing Current and New Formulae

1. Key Features of the Current and New Formulae

The key features of the two formulae are set out in Table B1 below.

Table B1: Comparison of the key features of the current formula

Feature	Current formula	New formula
Scaling factor (LSF) calculation	The LSF varies, the total amount estimated to be collected is fixed	The LSF is fixed for 3 years and the total amount collected can float
Measurement of funding	Based upon point-in-time values of assets and liabilities	Assets and liabilities smoothed using total return indices over the five years prior to the levy year
Investment risk factor	There is no allowance for scheme specific level of investment risk but liability is increased by the same margin (currently 36%).	Investment risk is measured on an individual scheme basis and allowed for in the levy formula by measuring level of underfunding as the difference between stressed assets and liabilities
Insolvency risk	Measured by 100 Assumed Insolvency Probabilities ranging from 0.03% to 55% but capped at 3%	Measured by levy rates associated with 10 levy bands. The levy rates range from 0.18% to 4%
Scheme-Based-Levy (SBL)	Is currently calculated as a fixed proportion of the liability in order to represent 20% of the total levy	Is calculated as a fixed proportion of the liability and designed to cover the cost of capping. No proportion of the total levy is targeted but it must represent less than 20% and is estimated to represent around 10% of the total levy.

2. Profile of the Levy under the Current and New Formulae

To show how levies will vary as funding changes under the current and new formulae, we have carried out an analysis of example schemes in band 1 (lowest levy rate) and band 10 (highest levy rate). The purpose of these charts is to support

understanding of how levy changes under the new formula and hence help explain the levy movements described in Annex A.

For this particular analysis, the parameters of the current levy formula, in particular the levy scaling factor and tapers, have been set in such a way that the profiles of the current and new levy can be represented on the same graph. The assumptions are set out below:

- The parameters of the new and current formulae have been set so that, based on the same scheme funding data (smoothed over five years) a total levy of £600 million is raised.
- For the current formula, the taper (i.e. the process of calculating underfunding risk using a fixed percentage of liabilities) starts at a funding ratio of 120 per cent. Under the new formula, there is no taper. Instead the level of underfunding is assessed on a stressed basis, i.e. adjusted for investment risk. If a scheme has no deficit on a smoothed or stressed and smoothed basis, it will pay no risk-based levy.
- The levy scaling factors are set at 2.17 for the current formula and 0.69 for the new formula.
- In both cases, the risk-based levy is capped at 0.75 percent of the liability
- The scheme-based levy is a fixed proportion of the liability. In the current formula the coefficient applied to the liability is set so that the total scheme-based levy represents 20 percent of the total levy. In the new levy formula, the scheme-based levy only covers the cost of capping. under the new formula, the Scheme-Based-Levy (SBL) is approximately two and a half times lower than the SBL under the current formula. That is why schemes that are sufficiently well funded to pay only a SBL will always pay a lower levy under the new framework.

Currently, each of the 100 Dun & Bradstreet (D&B) Failure Scores corresponds to a different insolvency probability. The new formula groups these D&B Failure Scores into 10 bands; each employer will be assigned one of 10 possible levy rates. Hence the impact of the new formula on a scheme depends on the position of the sponsor's D&B Failure Score within a band. If, for instance, the scheme's sponsor has a D&B Failure Score towards the bottom of the range covered by a levy band, then the scheme has a better chance of experiencing a reduction in levy under the new formula.

The impact of the new levy formula also depends on the level of scheme investment risk. A scheme with a lower than average level of investment risk, will tend to pay less under the new formula. Whereas a scheme with a higher than average level of investment risk will tend to pay more.

Figures B1 and B2 provide illustrative examples of the levy as a function of funding level, for hypothetical single-employer schemes with liabilities of £100,000. Figure B1 shows the levy profile for this hypothetical scheme in levy band 1 in the new framework (i.e. Failure Score of 100 or 99) and Figure B2 shows the levy profile of a scheme in band 10 (i.e. Failure Score of 29 and below).

For comparison purposes, two hypothetical schemes are shown for the current formula, one at the top and one at the bottom of each insolvency band. These correspond to scores of 100 and 99 in Figure B1, and 29 and a Failure Score corresponding to a capped insolvency probability in Figure B2.

For the new levy formula, two levels of investment risk are considered. The "low investment risk" level corresponds to the tenth percentile of the distribution of investment risk margin. At this level, the stressed funding level is 15 percent lower than the un-stressed one, and a scheme needs to be funded at 116 percent to pay no Risk-Based-Levy (RBL). At the "high investment risk" level, the stressed funding level is 31 percent lower than the un-stressed one and a scheme needs to be funded at 145 percent to pay no RBL.

In the illustrative case of the schemes in band 1 (figure B1), under the new levy formula those which are very well funded (funding over 136 per cent) pay less than under the old formula, irrespective of investment risk and the precise current Failure Score (i.e. green and red lines both below the dashed grey line for funding levels greater than 136 percent).

However, the relationship with funding up to that point varies somewhat according to these two factors. For example, a band 1 scheme with low investment risk would pay less under the new levy formula with a funding ratio over 93 per cent (i.e. the green line is below the dashed grey line for funding level greater than 93 percent). And such a scheme would pay less than one whose sponsor currently has a Failure Score of 99 (i.e. green line always below the solid black line).

In the case of the schemes in Band 10, Figure B2, under the new levy formula those which are extremely well funded (funding over 144 per cent) pay less (both red and green lines below the dashed grey and solid black lines). The relationship with funding varies with investment risk; schemes with low investment risk pay less at all funding levels. But schemes with high level of investment risk pay less only if their funding level is less than 106 per cent or exceeds 144 per cent. The flat areas on the left in Figure B2 show the funding level at which the levy caps apply under the current and new formulae.

The common conclusion from figures B1 and B2 is that very well funded schemes will pay less under the new formula. This supports the main conclusion of the impact analysis in annex A.

Figure B1: Levy Profile for Schemes with Strong Sponsor (Levy Band 1)

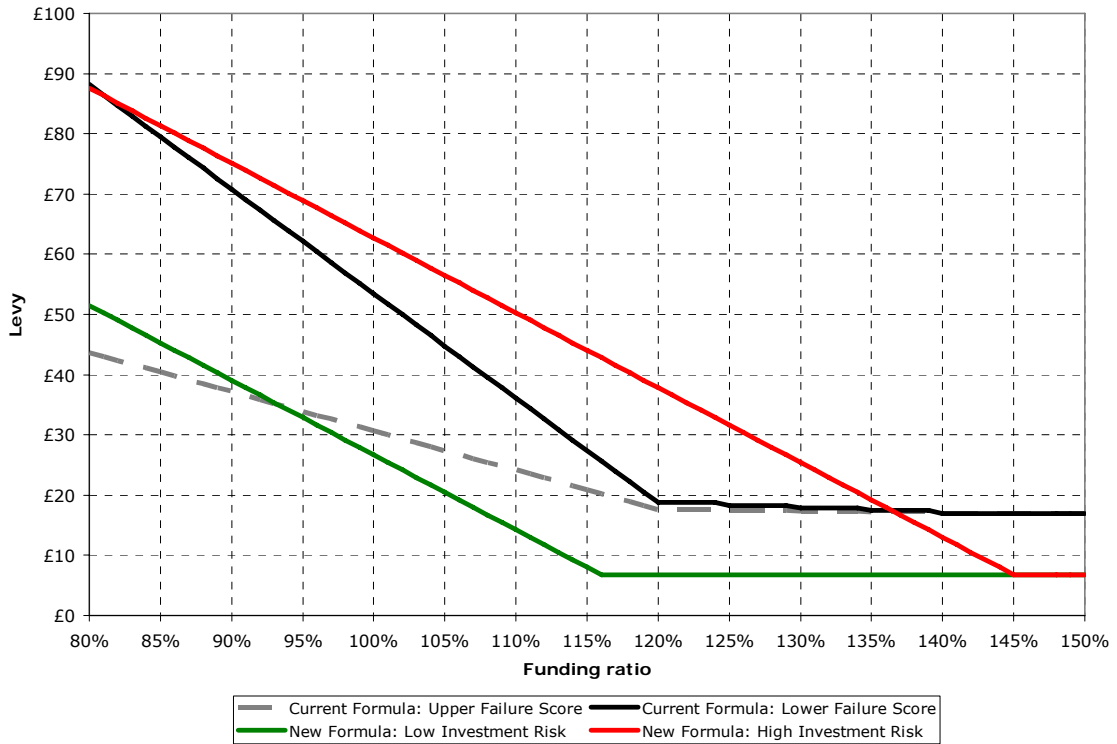
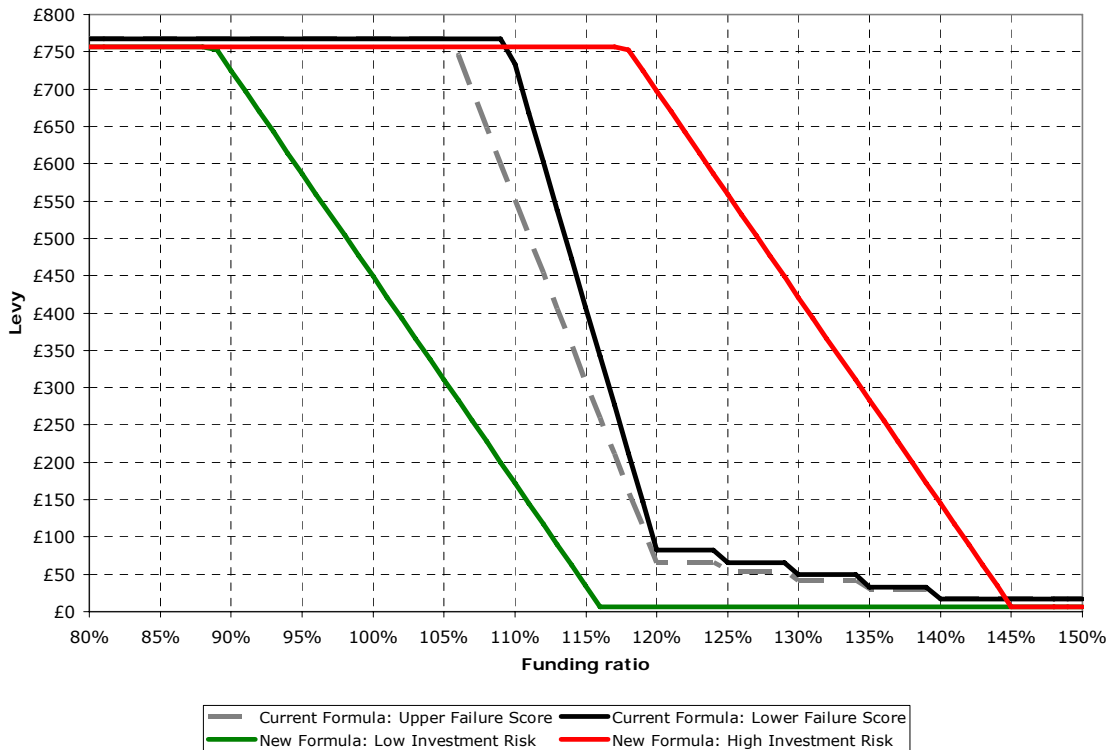


Figure B2: Levy Profile for Schemes with Weak Sponsor (Levy Band 10)



Annex C: Levy Stability

1. Stability of the Aggregate Levy

Table C1 below shows the risk-based levy and total levy generated by applying the new levy formula to scheme data for the relevant years. The levies over a four-year period of 2008/09-2011/12 are shown, calculated on the assumption of fixed scaling factors over the period. The total levy would have declined 13 per cent from 2008/09 to 2009/10, risen by 9 per cent from 2009/10 to 2010/11 and fallen by 19 per cent from 2010/11 to 2011/12.

The fall in levy between the years 2008/09 to 2009/10 was attributable to a change in assumptions guiding the s179 basis (A3 to A4), which acted to strengthen measures of scheme funding (on a smoothed basis). On the other hand, the rise from 2009/10 to 2010/11 was due to a reduction in overall scheme funding, which in turn caused the underfunding factor to increase and the levy to rise.

To a large extent the fall in levy between the years 2010/11 and 2011/12 is explained by a significant improvement in D&B Failure Scores associated with a change in D&B methodology.

Table C1 shows a simulated levy collection for 2011/12 but, in reality, new parameters would have been set for a successive three-year period in March 2011.

Table C1: Fluctuations in the RBL and Total Levy under the New Formula

Year	RBL (£M)	Total Levy (£M)	% Change in Levy
2008/09	622	675	n/a
2009/10	536	589	-13%
2010/11	589	642	9%
2011/12	469	522	-19%

2. Stability at the Individual Scheme Level

The following analysis compares movements in individual levies under the current and new formula between the 2009/10, 2010/11 and 2011/12 levy years.¹ In calculating levies under the current formula, the total collection was fixed at £600 million across the three levy years with the scaling factor varying to accommodate changes in aggregate scheme risk. In order to reflect the bottom-up approach of the new levy formula, levy parameters are set to achieve a total levy collection of £600 million in 2009/10 and then fixed for the three years, with the quantum allowed to vary.

¹ A comparison between 2008/09 – 2009/10 is not shown as the same data were used for these years.

Comparing the new formula to the current one, Figure C1 shows that, at a scheme level, the new formula yields greater stability. It is of particular note that, under the new formula, the majority of schemes are concentrated in the groups with the smallest changes in levy. The mode of the distribution lies in the '0 to 10 per cent' category. This increased stability derives from the use of smoothed funding data and banded insolvency risks.

Figure C1: Increases and Decreases in Levy at Scheme Level for 2009/10-2010/11

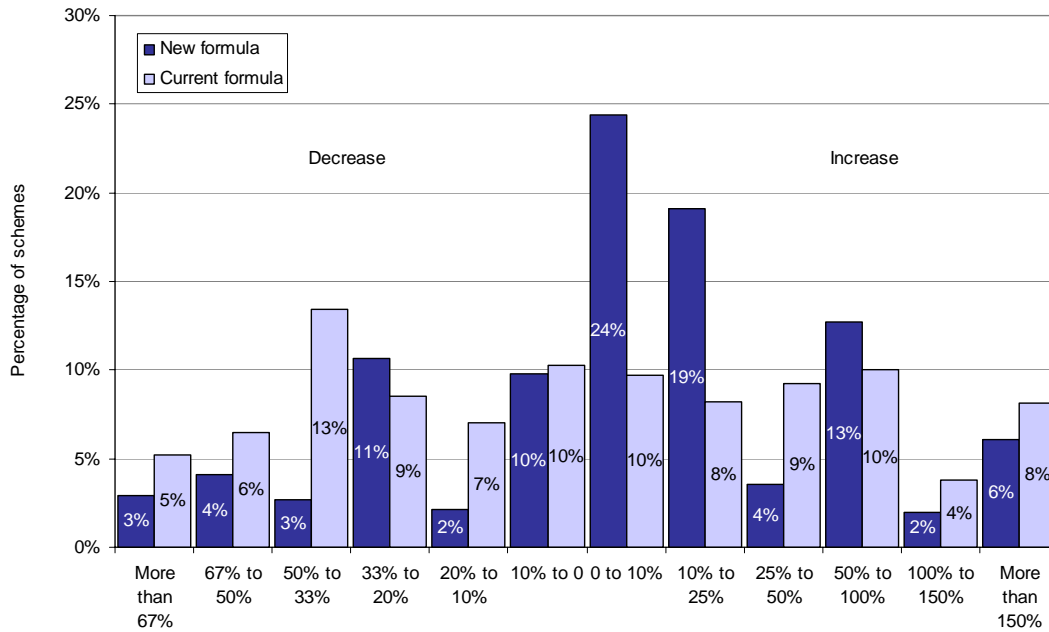
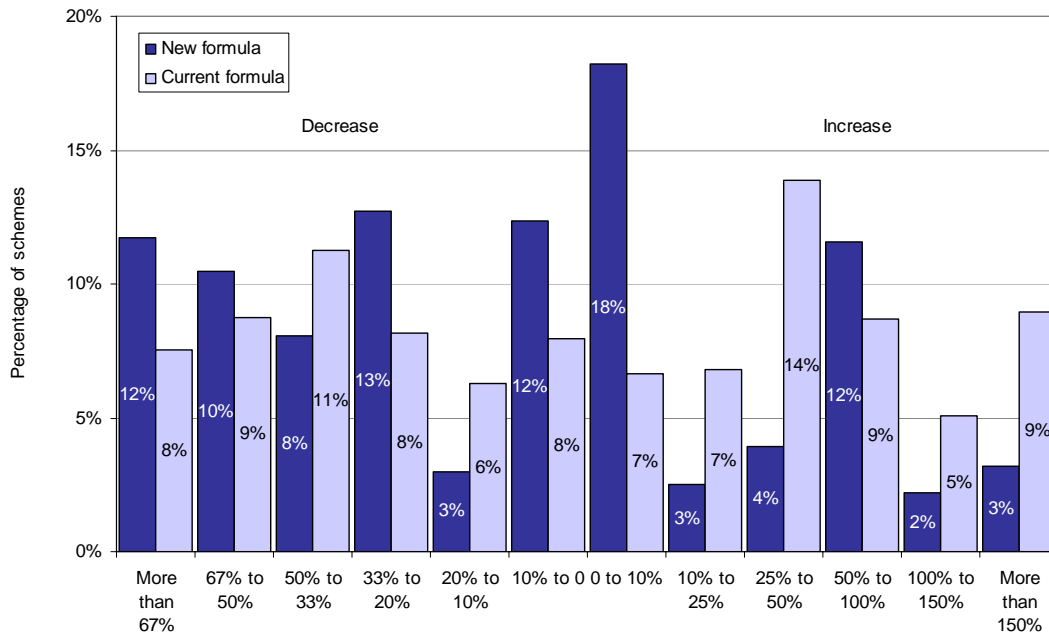


Figure C2: Increases and Decreases in Levy at Scheme Level for 2010/11-2011/12



Annex D: Illustrative Example of the Risk-Based Levy Calculation

1. Description

This example illustrates the calculation of the risk-based levy for 2012/13 under the new levy framework, using hypothetical data for a scheme with the following characteristics:

- multi-employer (comprising three employers);
- associated last man standing scheme;
- 300 members (all pensioners);
- combined liabilities below £1.5bn; and,
- certifies a deficit reduction contribution (DRC) and type C contingent asset.

It should be noted that all yields, index values and annuity factors shown are hypothetical.

2. Scheme Data

At 30 March 2012 the scheme submits the following data on Exchange:

s179 assumptions guidance used for this valuation: A5	
We refer to the hypothetical s179 assumptions guidance as at 31 March 2012 as A2012	
Effective date of latest s179 valuation:	31 December 2009
ASSETS	
Total assets:	£100m
Breakdown of assets:	
• UK equities	25%
• Nominal gilts	25%
• Property	25%
• Index-linked gilts	25%
LIABILITIES	
Liabilities in respect of pensioners:	£110m (all pre-97 service)
Average age of pensioners:	68
Total members:	300
• Employer A	100 pensioner members
• Employer B	100 pensioner members
• Employer C	100 pensioner members.

3. Market Data

	FTSE All-Share TRI	FTSE UK Gilts All Stocks TRI	FTSE All UK Property Gross TRI	S179 post-retirement discount rate
31 December 2009	5,000	2,000	4,000	4.5% per annum (derived by reference to A5)
Five year daily arithmetic average (1 April 2007 to 31 March 2012)	5,250	2,400	4,500	4.25% per annum (derived by reference to A2012)

4. Calculating Underfunding

Assets

Step 1: Smooth assets

Smooth by taking five-year means of relevant indices:

UK equities: £25m x (5,250/5,000) = £26.25m

Index-linked and nominal gilts: £50m x (2,400/2,000) = £60m

Property: £25m x (4,500/4,000) = £28.13m

Smoothed assets as at 31 March 2012

$$(1) = £26.25m + £60m + £28.13m = £114.38m$$

Step 2: Stress smoothed assets using standard stresses²

UK equities: £26.25m x (1- 0.22 (UK equity stress)) = £20.48m

Nominal gilts: £30m x (1+ 0.09 (nominal gilt stress)) = £32.7m

Index-linked gilts: £30m x (1+ 0.16 (index-linked gilt stress)) = £34.8m

Property: £28.13m x (1-0.07 (property stress)) = £26.16m

Smoothed and stressed assets

$$(2) = £20.48m + £32.7m + £34.8m + £26.16m = £114.14m$$

² These are the indicative asset stress values as published in table 1 in the Policy Statement.

Liabilities³

Step 3: Smooth liabilities

Calculate pensioner member liabilities using the following s179 annuity factors at age 68:

Discount rate of 4.5% p.a. and mortality consistent with A5:	14.3
Discount rate of 4.25% p.a. and mortality consistent with A2012:	14.6

Convert the value of the liabilities at the valuation date:

$$£110m \times (14.6/14.3) = £112.31m$$

Step 4: Roll liabilities back from 31 December 2009 to 30 September 2009⁴

As noted in the policy statement, liabilities are rolled forward/back to the midpoint of the 5 year averaging period in order to achieve consistent effective valuation timings between assets and liabilities. The smoothed assets are calculated with reference to five-year mean TRIs for the period to 31 March 2012, and therefore have an effective valuation date of 30 September 2009.

Roll back smoothed liabilities

$$(4) = £112.31m \times 1.0425^{-0.25} = £111.15m$$

Step 5: Stress liabilities using interest rate stress

Calculate pensioner member liabilities using the following s179 annuity factors at age 68:

Discount rate of 4.5% p.a. and mortality consistent with A5:	14.3
Discount rate of 4.25% p.a. and mortality consistent with A2012:	14.6
Assumed nominal drop in interest rate:	0.67%
Stressed s179 post retirement discount rate: 4.25% - 0.67% =	3.58% p.a.
Discount rate of 3.58% p.a. and mortality consistent with A2012:	15.6

Smoothed and stressed liabilities at the valuation date

$$= £110m \times (15.6/14.3) = £120m$$

Smoothed and stressed liabilities rolled-back to 30 September 2009⁴

$$(5) = £120m \times 1.0358^{-0.25} = £118.95m$$

³ For simplicity, we assume in this example that member liabilities are equivalent to total protected liabilities, i.e. nil external liabilities, winding-up costs and payment expenses.

⁴ For simplicity, the appropriate rate for the roll-forward/roll-back is assumed to be the same as the post-retirement discount rate.

Deficits

Step 6: Calculate smoothed deficit

Smoothed deficit equals (4) - (1):

$$(6) = \text{£}111.15\text{m} - \text{£}114.38\text{m} = -\text{£}3.23\text{m} \text{ (a surplus)}$$

Step 7: Calculate smoothed and stressed deficit

Smoothed and stressed deficit equals (5) - (2):

$$(7) = \text{£}118.95\text{m} - \text{£}114.14\text{m} = \text{£}4.81\text{m}$$

Step 8: Assess which deficit to use

Find maximum of smoothed (6) and smoothed and stressed (7) deficits (i.e. the lowest funding position):

$$(8) \text{ Underfunding before risk reduction measures} = \text{Maximum of } -\text{£}3.23\text{m} \text{ and } \text{£}4.81\text{m} = \text{£}4.81\text{m}$$

Step 9: Add deficit reduction contribution

DRC submitted on Exchange with effective valuation date of 31 December 2009.
Value = £1m

Underfunding reduced to allow for DRC

$$= \text{£}4.81\text{m} - \text{£}1\text{m} = \text{£}3.81\text{m}$$

Step 10: Add Type C contingent asset

A type C(i) guarantee is certified, with a fixed value of £1m

Underfunding reduced to allow for DRC and contingent asset

$$= \text{£}4.81\text{m} - \text{£}1\text{m} - \text{£}1\text{m} = \text{£}2.81\text{m}$$

Underfunding used in levy calculation = £2.81m

5. Calculating Insolvency Risk

D&B has assigned the following Failure Scores (FS) to the three employers over the past 12 months:

	28 Apr	31 May	30 Jun	29 Jul	31 Aug	30 Sep	31 Oct	30 Nov	30 Dec	31 Jan	29 Feb	30 Mar	Average
A	99	99	98	99	100	100	100	100	100	100	99	99	99.4
B	98	98	97	97	98	98	99	99	99	97	96	98	97.8
C	66	66	58	70	72	72	70	70	69	70	70	72	68.8

Step 11: Banding average Failure Scores

- Employer A: Average FS is 99, so it is in band 1 with a levy rate of 0.18%
- Employer B: Average FS is 98, so it is in band 2 with a levy rate of 0.28%
- Employer C: Average FS is 69, so it is in band 6 with a levy rate of 1.60%

Step 12: Calculate weighted average levy rate

The three employers each have 100 members therefore the weighted average for each is one third:

- employer A $0.33 \times 0.18\% = 0.06\%$
- employer B $0.33 \times 0.28\% = 0.09\%$
- employer C $0.33 \times 1.60\% = 0.53\%$

Weighted average levy rate

$$(12) = 0.06\% + 0.09\% + 0.53\% = 0.68\%$$

Step 13: Apply the scheme structure factor to the levy rate

As an associated last man standing scheme, we apply a scheme structure factor (SSF) of 0.9 to (12).

Multiply the weighted average levy rate (12) by the relevant scheme structure factor:

$$= 0.68 \times 0.9 = 0.61\%$$

Insolvency Probability used in levy = 0.61%

6. Risk-Based Levy Calculation

Underfunding x Insolvency Rate x Illustrative Scaling Factor

$$= \text{£}2.81\text{m} \times 0.0061 \times 0.6$$

$$= \text{£}10,285$$

