

EXAMPLES OF LEVY CALCULATIONS

The following examples illustrate how to calculate a scheme's levy. Examples (a) – (d) are a repetition of those that are included in the Pension Protection Fund factsheet entitled "How to calculate a scheme's Levy" which can be found on the risk based levy section of the Pension Protection Fund website. Examples (e) – (n) have been added to illustrate the levy calculation for a number of additional scenarios.

General points

The total levy is the sum of a scheme based levy and a risk based levy.

The **scheme based** levy is equal to Pension Protection Fund liabilities multiplied by a factor (M). For the 2006/07 levy year M will be equal to 0.014%.

The **risk based** levy is equal to underfunding risk x insolvency risk x 80% x levy scaling factor.

The underfunding risk is $1.05 \times \text{liabilities} - \text{assets}$, except where the assets exceed 104% of the Pension Protection Fund liabilities, when the formula is different. The assets include allowance for any contingent assets and special contributions paid to the scheme since the last valuation.

For the 2006/07 levy year the levy scaling factor will be 0.53.

For ease of reference, the following table sets out a brief description of the examples that you will find below.

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|-------------|--|
| Example (a) | Single employer scheme with a Pension Protection Fund funding level of < 104%. |
| Example (b) | Single employer scheme with a Pension Protection Fund funding level of < 104%, special contributions and security over real estate. |
| Example (c) | Single employer scheme with a Pension Protection Fund funding level of < 104% and a UK parent company guarantee for 105% of the Section 179 liabilities. |
| Example (d) | Associated, last man standing multi-employer scheme which has not been sectionalised, with a Pension Protection Fund funding level of < 104%. |
| Example (e) | Single employer scheme with a Pension Protection Fund funding level of 110%. |
| Example (f) | Single employer scheme with a Pension Protection funding level of > 125%. |
| Example (g) | Multi-employer scheme with the option to segregate on cessation of participation of an employer, with a Pension Protection Fund funding level of < 104%. |
| Example (h) | Non-associated multi-employer scheme, with a Pension Protection Fund funding level of < 104%. |

- Example (i) Multi-employer scheme where the scheme has not provided information to the Pension Protection Fund on the structure of the multi-employer arrangement, with a Pension Protection Fund funding level of < 104%.
- Example (j) Multi-employer scheme with a requirement to segregate on cessation of participation of an employer, where the largest employer by number of members is not the employer with the most employees, and with a Pension Protection Fund funding level of < 104%.
- Example (k) Multi-employer scheme with security over real estate which takes the total Pension Protection Fund funding level over 125%.
- Example (l) Single employer scheme with a Pension Protection Fund funding level of < 104%, a French parent company guarantee and special contributions.
- Example (m) Single employer scheme with special contributions which take the Pension Protection Fund funding level over 104% and a UK parent company guarantee for at least 105% of the liabilities.
- Example (n) Single employer scheme with special contributions, after which the funding level is < 104%, and a UK parent company guarantee for 105% of the liabilities.

Example (a)

Scheme A has one participating employer with a D&B failure score of 95, which corresponds to an insolvency risk of 0.3033%. It has Pension Protection Fund liabilities of £100 million and assets of £80 million, and so a Pension Protection Fund funding level of 80%.

The **scheme based levy** = liabilities x 0.014%
 = £100m x 0.014%
 = **£14,000**

Underfunding risk = 1.05 x liabilities – assets
 = 1.05 x £100m – £80m
 = £25m

The **risk based levy** = underfunding risk x insolvency risk x 80% x scaling factor
 = £25m x 0.3033% x 80% x 0.53
 = **£32,150**

The risk based levy is subject to a cap of 0.5% of the Pension Protection Fund liabilities, i.e. £500,000. So the cap does not bite in this example.

The total levy is then the sum of the scheme based levy and the risk based levy
 = £14,000 + £32,150 = **£46,150**

Example (b)

Scheme B has one participating employer with a D&B failure score of 87, which corresponds to an insolvency risk of 0.6370%. It has Pension Protection Fund liabilities of £150 million and assets of £130 million. The employer has paid 'deficit repair' contributions of £10 million to the scheme and provided a contingent asset in the form of security over real estate valued at £14 million.

$$\begin{aligned} \text{The **scheme based levy**} &= \text{liabilities} \times 0.014\% \\ &= £150\text{m} \times 0.014\% \\ &= \mathbf{£21,000} \end{aligned}$$

$$\begin{aligned} \text{Assets} &= \text{scheme assets} + \text{special contributions} + \text{contingent assets} \\ &= £130\text{m} + £10\text{m} + £14\text{m} \\ &= £154\text{m} \end{aligned}$$

$$\begin{aligned} \text{Funding level} &= \text{assets} / \text{liabilities} \times 100\% \\ &= £154\text{m} / £150\text{m} \times 100\% \\ &= 102.7\% \end{aligned}$$

The scheme's funding level is less than 104%, so the underfunding risk is calculated as:

$$\begin{aligned} \text{Underfunding risk} &= 1.05 \times \text{liabilities} - \text{assets} \\ &= 1.05 \times £150\text{m} - £154\text{m} \\ &= £3.5\text{m} \end{aligned}$$

$$\begin{aligned} \text{The **risk based levy**} &= \text{underfunding risk} \times \text{insolvency risk} \times 80\% \times \text{scaling factor} \\ &= £3.5\text{m} \times 0.6370\% \times 80\% \times 0.53 \\ &= \mathbf{£9,453} \end{aligned}$$

The risk based levy cap of 0.5% of liabilities, i.e. £750,000, does not bite in this example.

$$\begin{aligned} \text{Total levy} &= \text{scheme based levy} + \text{risk based levy} \\ &= £21,000 + £9,453 \\ &= \mathbf{£30,453} \end{aligned}$$

Example (c)

Scheme C has one participating employer with a D&B failure score of 22, corresponding to an insolvency risk of 2.5844%. The scheme has a guarantee from a UK parent company for the shortfall in the scheme relative to 105% of the Pension Protection Fund liability on a Section 179 basis. This parent company has a D&B failure score of 100, which corresponds to an insolvency risk of 0.0740%. The scheme has Pension Protection Fund liabilities of £100 million and assets of £80 million, so the parent company is guaranteeing £25 million.

$$\begin{aligned} \text{The **scheme based levy**} &= \text{liabilities} \times 0.014\% \\ &= £100\text{m} \times 0.014\% \\ &= \mathbf{£14,000} \end{aligned}$$

The scheme has liabilities of £100m and assets of £80m. So the underfunding risk is $1.05 \times £100\text{m} - £80\text{m} = £25\text{m}$. However, the parent company guarantees £25m. The risk based levy is therefore calculated using an underfunding risk which has been adjusted to reflect the parent guarantee of £25m. Hence we adjust the underfunding risk by:
 $(1 - \text{insolvency risk of guarantor} / \text{insolvency risk of participating employer}) \times £25\text{m}$.

$$\begin{aligned} \text{The **Risk based levy**} &= \text{underfunding risk} \times \text{insolvency risk} \times 80\% \times \text{scaling factor} \\ &= (1.05 \times £100\text{m} - £80\text{m} - ((1 - 0.0740\% / 2.5844\%) \times £25\text{m})) \times \\ &\quad 2.5844\% \times 80\% \times 0.53 \\ &= (£25\text{m} - (1 - 0.0286333) \times £25\text{m}) \times 2.5844\% \times 80\% \times 0.53 \\ &= (£25\text{m} - £24.28417\text{m}) \times 2.5844\% \times 80\% \times 0.53 \\ &= \mathbf{£7,844} \end{aligned}$$

The risk based levy cap of 0.5% of liabilities, i.e. £500,000, does not bite in this example.

Total levy = scheme based levy + risk based levy
= £14,000 + £7,844
= **£21,844**

Example (d)

Scheme D has three participating employers, all part of the same company group. The scheme cannot be partially wound up on the insolvency of any one employer – it is an associated last man standing scheme which is not sectionalised. The scheme has provided information to the Pension Protection Fund on the structure of the multi-employer arrangement to be taken into consideration when calculating the insolvency risk for the scheme. The scheme has Pension Protection Fund liabilities of £150 million and assets of £140 million.

The **scheme based levy** = liabilities x 0.014%
= £150m x 0.014%
= **£21,000**

The scheme has a funding level of £140m / £150 x 100% = 93.3%, so the underfunding risk is 1.05 x £150m – £140m = £17.5m.

The information available for the three participating employers is as follows:

- Employer 1 is the largest employer in terms of the number of active, deferred and pensioner members. It has a failure score of 80 which corresponds to an assumed insolvency probability of 0.9047% (q_1). Employer 1 has 250 employees.
- Employer 2 has a failure score of 95 which corresponds to an assumed insolvency probability of 0.3033% (q_2) and has 100 employees.
- Employer 3 has a failure score of 85 which corresponds to an assumed insolvency probability of 0.7241% (q_3) and has 50 employees.

Total number of employees = 250 + 100 + 50 = 400

As the scheme has provided information on the structure of the multi-employer arrangement, the Pension Protection Fund will carry out two calculations (calculation A and calculation B) for insolvency risk and use the lower of these two values to determine the levy payable.

Calculation A is the assumed insolvency probability of the largest employer. This is 0.9047%.

Calculation B takes the insolvency probability of each participating employer, labelled q_1 , q_2 and q_3 , above, and calculates the weighted average insolvency risk.

The weights used are the ratios of employees for each participating employer divided by the total number of employees. These weights are calculated as follows:

Weight for Employer 1 = $w_1 = 250 / 400 = 0.625$

Weight for Employer 2 = $w_2 = 100 / 400 = 0.25$

Weight for Employer 3 = $w_3 = 50 / 400 = 0.125$

The weighted average insolvency risk is then:

$w_1 \times q_1 + w_2 \times q_2 + w_3 \times q_3 = 0.625 \times 0.9047\% + 0.25 \times 0.3033\% + 0.125 \times 0.7241\%$
= 0.7318%

Once we have calculated the weighted average insolvency risk, we multiply this number by a factor which reflects the reduced insolvency risk for a particular type of multi-employer arrangement. For this example the scheme is an associated last man standing scheme and so the factor is 0.9.

$$\begin{aligned}
\text{Calculation B} &= \text{weighted average insolvency risk} \times 0.9 \\
&= 0.7318\% \times 0.9 \\
&= 0.6586\%
\end{aligned}$$

As calculation B is less than calculation A, calculation B is used for the insolvency risk for the levy calculation.

$$\begin{aligned}
\text{The risk based levy} &= \text{underfunding risk} \times \text{insolvency risk} \times 80\% \times \text{levy scaling factor} \\
&= £17.5\text{m} \times 0.6586\% \times 80\% \times 0.53 \\
&= \mathbf{£48,868}
\end{aligned}$$

The risk based levy cap of 0.5% of liabilities, i.e. £750,000, does not bite in this example.

$$\begin{aligned}
\text{Total levy} &= \text{scheme based levy} + \text{risk based levy} \\
&= £21,000 + £48,868 \\
&= \mathbf{£69,868}
\end{aligned}$$

Example (e)

Scheme E has one participating employer with a D&B failure score of 90, which corresponds to an insolvency risk of 0.5133%. It has Pension Protection Fund liabilities of £100 million and assets of £110 million, and so a funding level of 110%.

$$\begin{aligned}
\text{The scheme based levy} &= \text{liabilities} \times 0.014\% \\
&= £100\text{m} \times 0.014\% \\
&= \mathbf{£14,000}
\end{aligned}$$

The scheme's funding level is greater than 104% but less than 111%, so the underfunding risk is calculated as:

$$\begin{aligned}
\text{Underfunding risk} &= 0.0075 \times \text{liabilities} \\
&= 0.0075 \times £100\text{m} \\
&= £750,000
\end{aligned}$$

$$\begin{aligned}
\text{The risk based levy} &= \text{underfunding risk} \times \text{insolvency risk} \times 80\% \times \text{scaling factor} \\
&= £750,000 \times 0.5133\% \times 80\% \times 0.53 \\
&= \mathbf{£1,632}
\end{aligned}$$

The risk based levy cap of 0.5% of liabilities, i.e. £500,000, does not bite in this example.

$$\begin{aligned}
\text{Total levy} &= \text{scheme based levy} + \text{risk based levy} \\
&= £14,000 + £1,632 \\
&= \mathbf{£15,632}
\end{aligned}$$

Example (f)

Scheme F has one participating employer. It has Pension Protection Fund liabilities of £100 million and assets of £125.5 million, and so a funding level of 125.5%.

$$\begin{aligned}
\text{The scheme based levy} &= \text{liabilities} \times 0.014\% \\
&= £100\text{m} \times 0.014\% \\
&= \mathbf{£14,000}
\end{aligned}$$

The scheme's funding level is greater than 125%, so the **risk based levy** will be zero.

$$\begin{aligned}
\text{Total levy} &= \text{scheme based levy} + \text{risk based levy} \\
&= \mathbf{£14,000}
\end{aligned}$$

Example (g)

Scheme G has four participating employers. It is a multi-employer scheme with the option to segregate on cessation of participation of an employer. The scheme has provided information to the Pension Protection Fund on the structure of the multi-employer arrangement to be taken into consideration when calculating the insolvency risk for the scheme. The scheme has Pension Protection Fund liabilities of £100 million and assets of £90 million.

The **scheme based levy** = liabilities x 0.014%
= £100m x 0.014%
= **£14,000**

The scheme has a funding level of £90m / £100 x 100% = 90%, so the underfunding risk is 1.05 x £100m – £90m = £15m.

The information available for the four participating employers is as follows:

- Employer 1 is the largest employer in terms of the number of active, deferred and pensioner members. It has a failure score of 95 which corresponds to an assumed insolvency probability of 0.3033% (q_1). Employer 1 has 200 employees.
- Employer 2 has a failure score of 90 which corresponds to an assumed insolvency probability of 0.5133% (q_2) and has 100 employees.
- Employer 3 has a failure score of 97 which corresponds to an assumed insolvency probability of 0.2216% (q_3) and has 100 employees.
- Employer 4 has a failure score of 85 which corresponds to an assumed insolvency probability of 0.7241% (q_4) and has 50 employees.

Total number of employees = 200 + 100 + 100 + 50 = 450

As the scheme has provided information on the structure of the multi-employer arrangement, the Pension Protection Fund will carry out two calculations (calculation A and calculation B) for insolvency risk and use the lower of these two values to determine the levy payable.

Calculation A is the assumed insolvency probability of the largest employer. This is 0.3033%.

Calculation B takes the insolvency probability of each participating employer, labelled q_1 , q_2 , q_3 and q_4 , above, and calculates the weighted average insolvency risk.

The weights used are the ratios of employees for each participating employer divided by the total number of employees. These weights are calculated as follows:

Weight for Employer 1 = $w_1 = 200 / 450 = 0.44444$

Weight for Employer 2 = $w_2 = 100 / 450 = 0.22222$

Weight for Employer 3 = $w_3 = 100 / 450 = 0.22222$

Weight for Employer 4 = $w_4 = 50 / 450 = 0.11111$

The weighted average insolvency risk is then:

$w_1 \times q_1 + w_2 \times q_2 + w_3 \times q_3 + w_4 \times q_4$
= $0.44444 \times 0.3033\% + 0.22222 \times 0.5133\% + 0.22222 \times 0.2216\% + 0.11111 \times 0.7241\%$
= 0.3786%

Once we have calculated the weighted average insolvency risk, we multiply this number by a factor which reflects, where relevant, the reduced insolvency risk for a particular type of multi-employer arrangement. For this example, the scheme is a multi-employer scheme with the option to segregate on cessation of participation of an employer and so the factor is 1. Calculation B is therefore 0.3786%.

As calculation A is less than calculation B, calculation A is used for the insolvency risk.

The **risk based levy** = underfunding risk x insolvency risk x 80% x scaling factor
= £15m x 0.3033% x 80% x 0.53
= **£19,290**

The risk based levy cap of 0.5% of liabilities, i.e. £500,000, does not bite in this example.

Total levy = scheme based levy + risk based levy
= £14,000 + £19,290
= **£33,290**

Example (h)

Scheme H has three participating employers. It is a non associated multi-employer scheme which is not sectionalised. The scheme has provided information to the Pension Protection Fund on the structure of the multi-employer arrangement to be taken into consideration when calculating the insolvency risk for the scheme. The scheme has Pension Protection Fund liabilities of £150 million and assets of £120 million.

The **scheme based levy** = liabilities x 0.014%
= £150m x 0.014%
= **£21,000**

The scheme has a funding level of £120m / £150 x 100% = 80%, so the underfunding risk is 1.05 x £150m – £120m = £37.5m.

The information available for the three participating employers is as follows:

- Employer 1 is the largest employer in terms of the number of active, deferred and pensioner members, with 300 members. Employer 1 has a failure score of 80 which corresponds to an assumed insolvency probability of 0.9047% (q_1). Employer 1 has 200 employees.
- Employer 2 has a failure score of 85 which corresponds to an assumed insolvency probability of 0.7241% (q_2) and has 100 employees.
- Employer 3 has a failure score of 90 which corresponds to an assumed insolvency probability of 0.5133% (q_3) and has 50 employees.

Total number of employees = 200 + 100 + 50 = 350

The total number of active, deferred and pensioner members in the scheme is 600.

As the scheme provided information on the structure of the multi-employer arrangement, the Pension Protection Fund will carry out two calculations (calculation A and calculation B) for insolvency risk and use the lower of these two values to determine the levy payable.

Calculation A is the assumed insolvency probability of the largest employer. This is 0.9047%.

Calculation B takes the insolvency probability of each participating employer, labelled q_1 , q_2 and q_3 , above, and calculates the weighted average insolvency risk,.

The weights used are the ratios of employees for each participating employer divided by the total number of employees. These weights are calculated as follows:

Weight for Employer 1 = $w_1 = 200 / 350 = 0.5714$

Weight for Employer 2 = $w_2 = 100 / 350 = 0.2857$

Weight for Employer 3 = $w_3 = 50 / 350 = 0.1429$

The weighted average insolvency risk is then:

$w_1 \times q_1 + w_2 \times q_2 + w_3 \times q_3$

$$= 0.5714 \times 0.9047\% + 0.2857 \times 0.7241\% + 0.1429 \times 0.5133\%$$

$$= 0.7972\%$$

Once we have calculated the weighted average insolvency risk, we multiply this number by a factor which reflects the reduced insolvency risk for a particular type of multi-employer arrangement. For this example the scheme is a non associated multi-employer arrangement. The factor is therefore calculated as the number of members of the largest employer divided by the number of members for the entire scheme = $300 / 600 = 0.5$.

$$\text{Calculation B} = \text{weighted average insolvency risk} \times 0.5$$

$$= 0.7972\% \times 0.5$$

$$= 0.3986\%$$

As calculation B is less than calculation A, calculation B is used for the insolvency risk for the levy calculation.

$$\text{The risk based levy} = \text{underfunding risk} \times \text{insolvency risk} \times 80\% \times \text{scaling factor}$$

$$= £37.5\text{m} \times 0.3986\% \times 80\% \times 0.53$$

$$= \text{£63,377}$$

The risk based levy cap of 0.5% of liabilities, i.e. £750,000, does not bite in this example.

$$\text{Total levy} = \text{scheme based levy} + \text{risk based levy}$$

$$= £21,000 + £63,377$$

$$= \text{£84,377}$$

Example (i)

Scheme I has four participating employers. It is a multi-employer scheme but the scheme has *not* provided information to the Pension Protection Fund on the structure of the multi-employer arrangement. It has Pension Protection Fund liabilities of £150 million and assets of £130 million.

$$\text{The scheme based levy} = \text{liabilities} \times 0.014\%$$

$$= £150 \text{ million} \times 0.014\%$$

$$= \text{£21,000}$$

The scheme has a funding level of $£130\text{m} / £150 \times 100\% = 86.7\%$, so the underfunding risk is $1.05 \times £150\text{m} - £130\text{m} = £27.5\text{m}$.

Although the scheme has four participating employers, the scheme has not provided information on the structure of the multi-employer arrangement to the Pension Protection Fund and so only calculation A will be carried out and this will be used as the insolvency risk for the scheme.

Calculation A is the assumed insolvency probability of the largest employer. The largest participating employer in terms of number of active, deferred and pensioner members has a D&B failure score of 85, which corresponds to an insolvency risk of 0.7241%.

$$\text{The risk based levy} = \text{underfunding risk} \times \text{insolvency risk} \times 80\% \times \text{scaling factor}$$

$$= £27.5 \times 0.7241\% \times 80\% \times 0.53$$

$$= \text{£84,430}$$

The risk based levy cap of 0.5% of liabilities, i.e. £750,000, does not bite in this example.

$$\text{Total levy} = \text{SBL} + \text{RBL}$$

$$= £21,000 + £84,430$$

$$= \text{£105,430}$$

Example (j)

Scheme J has two participating employers. The scheme is not sectionalised and has a requirement to segregate on cessation of participation of an employer. The scheme has provided information to the Pension Protection Fund on the structure of the multi-employer arrangement to be taken into consideration when calculating the insolvency risk for the scheme. The largest participating employer by number of active, deferred and pensioner members is not the employer with the most employees. The scheme has Pension Protection Fund liabilities of £100 million and assets of £80 million. In addition, the employers have paid special contributions of £10 million into the scheme.

The **scheme based levy** = liabilities x 0.014%
 = £100m x 0.014%
 = **£14,000**

Assets = scheme assets + special contributions
 = £80m + £10m
 = £90m

The scheme has a funding level of £90m / £100m x 100% = 90%, so the underfunding risk is 1.05 x £100m - £90m = £15m.

The information available for the two participating employers is as follows:

- Employer 1 is the largest employer by number of active, deferred and pensioner members, with 400 members. It has a failure score of 88 which corresponds to an assumed insolvency probability of 0.5943% (q_1). Employer 1 has 200 employees.
- Employer 2 has 350 members. Employer 2 has a failure score of 92 which corresponds to an assumed insolvency probability of 0.4286% (q_2) and has 300 employees.

Total number of employees = 200 + 300 = 500

The total number of active, deferred and pensioner members is 400 + 350 = 750.

As the scheme has provided information on the structure of the multi-employer arrangement, the Pension Protection Fund will carry out two calculations (calculation A and calculation B) for insolvency risk and use the lower of these two values to determine the levy payable.

Calculation A is the assumed insolvency probability of Employer 1, the largest employer by number of members. This is 0.5943%.

Calculation B takes the insolvency probability of each participating employer, labelled q_1 and q_2 , above, and calculates the weighted average insolvency risk.

As the scheme has provided information on the number of members for each employer, the weights used to calculate the weighted average insolvency risk will be based on the number of members for each participating employer, rather than the number of employees. The weights used are the ratios of members for each participating employer divided by the total number of members. The weights are calculated as follows:

Weight for Employer 1 = $w_1 = 400 / 750 = 0.5333$

Weight for Employer 2 = $w_2 = 350 / 750 = 0.4667$

The weighted average insolvency risk is then:

$$w_1 \times q_1 + w_2 \times q_2 = 0.5333 \times 0.5943\% + 0.4667 \times 0.4286\% = 0.5170\%$$

Once we have calculated the weighted average insolvency risk, we multiply this by a factor which reflects, where relevant, the reduced insolvency risk for a particular type of multi-employer arrangement. For this example, the scheme is a multi-employer scheme with a requirement to segregate on cessation of participation of an employer and so the factor is 1. Calculation B is therefore 0.5170%.

As calculation B is less than calculation A, calculation B is used for the insolvency risk calculation.

$$\begin{aligned} \text{The risk based levy} &= \text{underfunding risk} \times \text{insolvency risk} \times 80\% \times \text{scaling factor} \\ &= \text{£15m} \times 0.5170\% \times 80\% \times 0.53 \\ &= \text{£32,881} \end{aligned}$$

The risk based levy cap of 0.5% of liabilities, i.e. £500,000, does not bite in this example.

$$\begin{aligned} \text{Total levy} &= \text{scheme based levy} + \text{risk based levy} \\ &= \text{£14,000} + \text{£32,881} \\ &= \text{£46,881} \end{aligned}$$

Example (k)

Scheme K has two participating employers. It is an associated, last man standing multi-employer scheme, which is not sectionalised. The scheme has provided information to the Pension Protection Fund on the structure of the multi-employer arrangement to be taken into consideration when calculating the insolvency risk for the scheme. The scheme has Pension Protection Fund liabilities of £100 million and assets of £95 million. It has security over real estate valued at £50 million, which takes the total assets over the cap of 125% of the Pension Protection Fund liabilities.

$$\begin{aligned} \text{The scheme based levy} &= \text{liabilities} \times 0.014\% \\ &= \text{£100m} \times 0.014\% \\ &= \text{£14,000} \end{aligned}$$

The funding level of the scheme is > 125% and so the **risk based levy** will be zero.

$$\begin{aligned} \text{Total levy} &= \text{scheme based levy} + \text{risk based levy} \\ &= \text{£14,000} \end{aligned}$$

Example (l)

Scheme L has one participating employer with a D&B failure score of 90, which corresponds to an insolvency risk of 0.5133%. It has Pension Protection Fund liabilities of £150 million and assets of £100 million. The scheme has a guarantee from a French parent company, valued at £10 million. This French parent company has a D&B failure score of 100, which corresponds to an insolvency risk of 0.06%¹. In addition, the employer has paid 'deficit repair' contributions of £15 million to the scheme.

$$\begin{aligned} \text{The scheme based levy} &= \text{liabilities} \times 0.014\% \\ &= \text{£150m} \times 0.014\% \\ &= \text{£21,000} \end{aligned}$$

¹ The insolvency probability associated with the failure score for a French company is not the same as for a UK company. The insolvency probability for a French company with a failure score of 100 would be 0.06%

The scheme's funding level (which is determined without including type A contingent assets) is $\frac{£100m + £15million}{£150m} \times 100\% = 76.7\%$ and so the underfunding risk is $1.05 \times £150m - £123,831,093 = £33,668,907$.

The **risk based levy** = underfunding risk x insolvency risk x 80% x scaling factor
= $£33,668,907 \times 0.5133\% \times 80\% \times 0.53$
= **£73,277**

The risk based levy cap of 0.5% of liabilities, i.e. £750,000, does not bite in this example.

Total levy = scheme based levy + risk based levy
= $£21,000 + £73,277$
= **£94,277**

Example (m)

Scheme M has one participating employer with a D&B failure score of 88, which corresponds to an insolvency risk of 0.5943%. It has Pension Protection Fund liabilities of £100 million and assets of £90 million. The scheme has a guarantee from a UK parent company, which covers at least 125% of the liabilities. This parent company has a D&B failure score of 95, which corresponds to an insolvency risk of 0.3033%. In addition, the employer has paid special contributions of £30 million to the scheme.

The **scheme based levy** = liabilities x 0.014%
= $£100m \times 0.014\%$
= **£14,000**

The scheme assets together with the special contributions give a funding level of $(£90m + £30m) / £100m \times 100\% = 120\%$ and so the underfunding risk is calculated as $0.0025 \times$ liabilities.

However, there is a parent company guarantee which covers at least 125% of the liabilities and so the underfunding risk is adjusted by a factor of r which is equal to the probability of insolvency of the guarantor divided by the probability of insolvency of the sponsor.

Underfunding risk = $0.0025 \times$ liabilities x r
= $0.0025 \times £100m \times 0.3033\% / 0.5943\%$
= $£127,587$

The **risk based levy** = underfunding risk x insolvency risk x 80% x scaling factor
= $£127,587 \times 0.5943\% \times 80\% \times 0.53$
= **£321**

Total levy = scheme based levy + risk based levy
= $£14,000 + £321$
= **£14,321**

Example (n)

Scheme N has one participating employer with a D&B failure score of 78, which corresponds to an insolvency risk of 0.9609%. It has Pension Protection Fund liabilities of £150 million and assets of £140 million. The scheme has a guarantee from a UK parent company for 105% of the liabilities. The parent company has a D&B failure score of 98, which corresponds to an insolvency risk of 0.1804%. In addition, the scheme has security over real estate valued at £5million.

$$\begin{aligned}\text{The scheme based levy} &= \text{liabilities} \times 0.014\% \\ &= \text{£150m} \times 0.014\% \\ &= \text{£21,000}\end{aligned}$$

The value of assets before the parent guarantee is taken into consideration is £140m + £5m = £145m. 105% of the liabilities is equal to £157.5m and so the parent guarantee is for the difference between these numbers: £157.5m - £145m = £12.5m.

The parent guarantee is discounted by a factor of $(1 - \text{insolvency risk of guarantor} / \text{insolvency risk of participating employer})$. So, the value of the guarantee is $(1 - 0.1804\% / 0.9609\%) \times \text{£12.5m} = \text{£10,153,242}$.

The value of the total assets is then £145m + £10,153,242 = £155,153,242

The scheme's funding level (which is determined without including type A contingent assets) is £145m / £150m x 100% = 96.7% and so the underfunding risk is $1.05 \times \text{£150m} - \text{£155,153,242} = \text{£2,346,758}$.

$$\begin{aligned}\text{The risk based levy} &= \text{underfunding risk} \times \text{insolvency risk} \times 80\% \times \text{scaling factor} \\ &= \text{£2,346,758} \times 0.9609\% \times 80\% \times 0.53 \\ &= \text{£9,561}\end{aligned}$$

The risk based levy cap of 0.5% of liabilities, i.e. £750,000, does not bite in this example.

$$\begin{aligned}\text{Total levy} &= \text{scheme based levy} + \text{risk based levy} \\ &= \text{£21,000} + \text{£9,561} \\ &= \text{£30,561}\end{aligned}$$