



eiopa
EUROPEAN INSURANCE
AND OCCUPATIONAL PENSIONS AUTHORITY

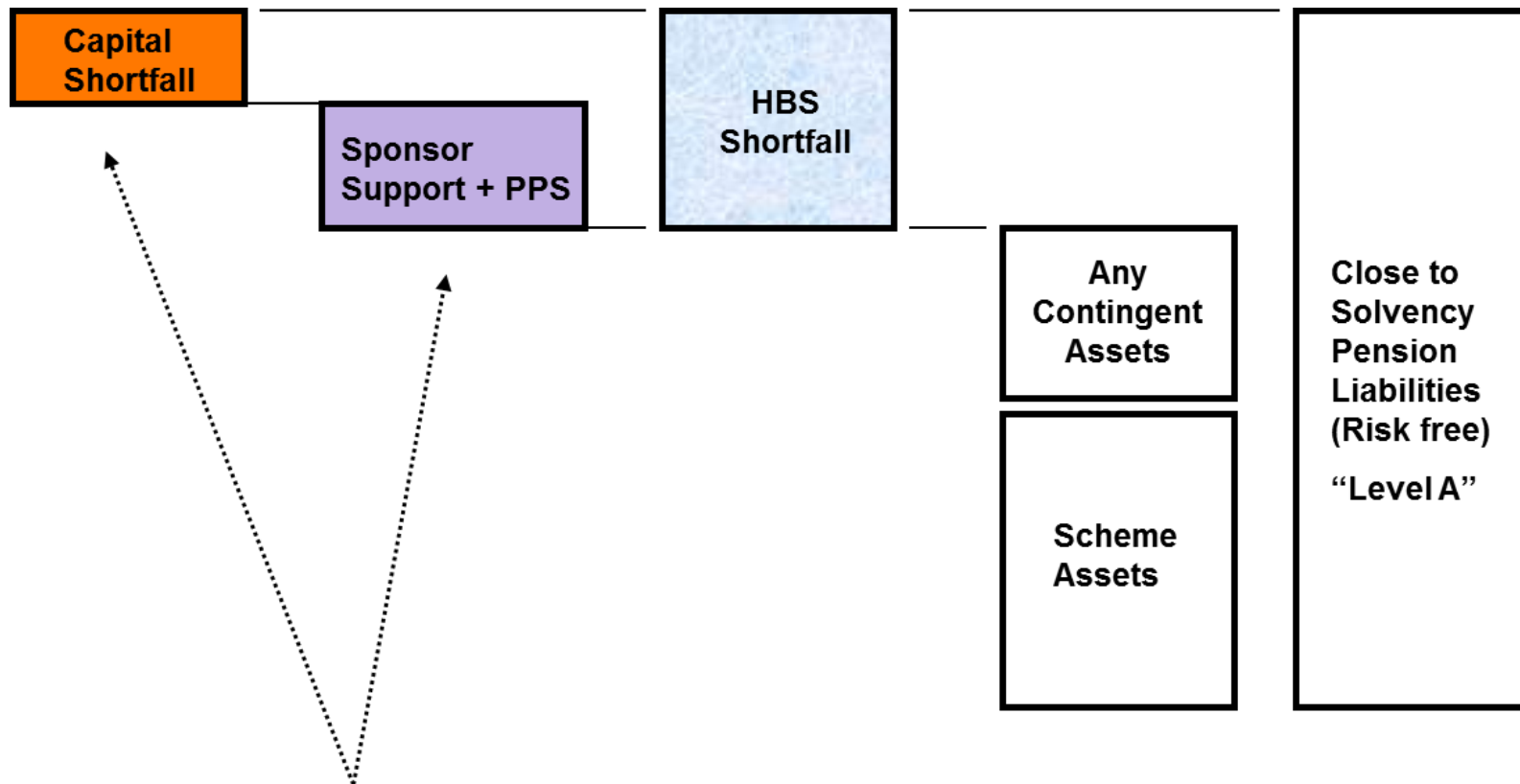
Valuing Sponsor Support Alternative Simplified Approach

Adain O'Mahony
The Pensions Regulator / EIOPA Sponsor Support Working Group
Sponsor Support Event
Frankfurt, 17 October 2013

1. Sponsor Support in the HBS – Aide memoire
2. EIOPA Technical Specifications for the QIS
3. EIOPA Further Work on Sponsor Support
4. EIOPA Sponsor Support Discussion Paper
5. Alternative Simplified Approach
6. Alternative Simplified Approach – Main Benefits and Problems

1. Sponsor Support in the HBS

– Aide memoire
(Simplification)



Quantify Sponsor Support to Estimate Capital Shortfall

2013 QIS Liabilities (€bn)



	Liabilities under current regime	Liabilities under Benchmark	Increase
Netherlands	786	972	+24%
German (Pensionskassen)	116	162	+40%
Germany (Pensionfonds)	22	33	+48%
Ireland	58	100	+72%
Belgium	14	17	+27%
Norway	13	13	+5%
Sweden	10	10	-1%
UK	1,542	2,155	+40%
TOTAL	2,561	3,462	+35%

Source: EIOPA QIS Preliminary Results for the European Commission, April 2013

2013 QIS Results (€bn)



	Financial Assets	Sponsor Support	Benchmark Liabilities	Shortfall (before SCR)	Assets (excl sponsor) as % Liabilities
Netherlands	804	74	972	185	83%
Germany (Pensionskassen)	130	26	162	6	80%
Germany (Pensionfonds)	26	7	33	0	80%
Ireland	42	0	100	58	42%
Belgium	15	0	17	2	88%
Norway	14	0	13	(1)	106%
Sweden	13	0	10	(3)	127%
UK	1,205	657	2,155	293	56%
TOTAL	2,249	764	3,462	449	65%

Source: EIOPA QIS Preliminary Results for the European Commission, April 2013

Holistic Balance Sheet – EIOPA Tech Specs



HBS.6.41 This delivers the following output:

M_{ss} = Maximum value of sponsor support without credit risk
 $M_{ss\ cr}$ = Maximum value of sponsor support with credit risk

Calculation

HBS.6.42 The formula to be used for this QIS to derive the maximum value is as follows. In carrying out this calculation a spreadsheet is provided by EIOPA meaning that only the inputs will be required from IORPs.

Maximum value of sponsor support taking account of credit risk

$$M_{ss\ cr} = \text{Min} (\text{Lim} M_{ss}; \sum_{t=1}^d i^t * (1 - P_{def})^t * EC_t + (\xi * z + y))$$

Maximum value of sponsor support without taking account of credit risk

$$M_{ss} = \text{Min} (\text{Lim} M_{ss}; \sum_{t=1}^d i^t * EC_t + (\xi * z + y))$$

Duration of sponsor support

33% of Expected future sponsor cash flows

Use 50% of Shareholders Funds

Maximum Sponsor Support - Difficult bits:

1. Credit risk (Pd) – Need credit ratings (but very few available)
2. d = duration of sponsor support (big guesstimate)
3. EC = Expected sponsor future “cash flow” in year t (need access to accurate forecasts) + current recovery plan

Holistic Balance Sheet – EIOPA Tech Specs



Valuation of Sponsor Support - Stochastic Approach

$$SS_{fv} = SS_{exp} \cdot Adj_{def}$$

where

$$SS_{exp} = \mu_{ss} + Adj_{exp}$$

$$\mu_{ss} = TP - A$$

$$\sigma_{ss} = \sqrt{(\sigma_A \cdot A)^2 + (\sigma_{TP} \cdot TP)^2 - 2\rho \cdot A \cdot TP \cdot \sigma_A \cdot \sigma_{TP}}$$

$$Adj_{exp} = - \left[(\mu_{ss} - M_{ss}) \cdot \left(1 - \Phi \left(\frac{M_{ss} - \mu_{ss}}{\sigma_{ss}} \right) \right) + \sigma_{ss} \cdot \varphi \left(\frac{M_{ss} - \mu_{ss}}{\sigma_{ss}} \right) \right] \\ - \left[\mu_{ss} \cdot \Phi \left(-\frac{\mu_{ss}}{\sigma_{ss}} \right) - \sigma_{ss} \cdot \varphi \left(\frac{\mu_{ss}}{\sigma_{ss}} \right) \right]$$

and

$$Adj_{def} = \frac{1}{d} \left[(1 - RR)(1 - p_{def}) \left(\frac{1 - (1 - p_{def})^d}{p_{def}} \right) + d \cdot RR \right]$$

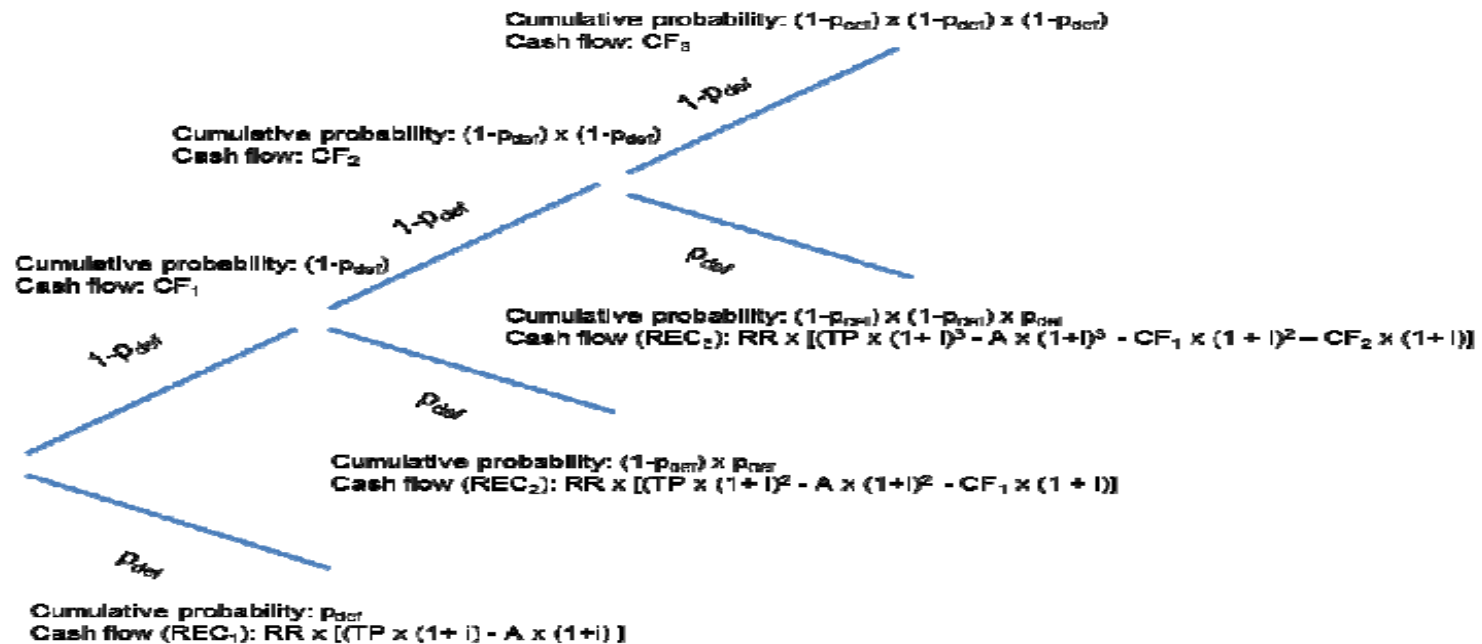
Φ and φ are respectively the cumulative and non-cumulative Gaussian distribution functions with average 0 and variance 1.

Holistic Balance Sheet – EIOPA Tech Specs



Valuation of Sponsor Support – Deterministic Approach

$$SS_{FV} = (TP - A) \sum_{t=1}^d (1 - p_{def})^t \frac{1}{d} + (1 - p_{def})^{t-1} p_{def} RR \left[1 - \frac{t-1}{d} \right]$$



QIS Sponsor Support Tech Specs – Issues



1. Little guidance on performing stochastic valuation
 2. Calculations are too complex for small / medium IORPs and Maximum SS calculations not appropriate for some IORPs.
 3. Arbitrariness of some assumptions (e.g. use 50% of shareholders' funds)
 4. EC = Expected sponsor cash flow in year t (need access to accurate forecasts)
 5. Legally enforceable Sponsor Support?
 6. Credit risk (Pd) – Need credit ratings (but very few European sponsor rated)
 7. d = duration of sponsor support (guesstimate)
- Q – Is there an easier/simplified approach to estimating the value of sponsor support – especially for small/medium-sized IORPs?

3. EIOPA Further Work on Sponsor Support



EIOPA initiated further work in early 2013 in response to address these issues

1. Consider how to improve QIS methodology
2. Consider new approaches to sponsor support

=> Alternative Simplified Approach

4. EIOPA Sponsor Support Discussion Paper



- Publication 4th July 2013 alongside the QIS final report
- Discussion paper on Sponsor Support
- Collecting comments and views until end October 2013

5. EIOPA Sponsor Support Alternative Simplified Approach



- Purpose = alternative (simplified) approach for small and medium sized IORPs
- Principle = market consistency (same as QIS), but easier to use / understand
- Methodology = use credit ratios to determine the strength of the sponsor (“strong” to “weak”) and then use a series of look-up tables to quantify sponsor support
- Can be adapted for more complex arrangements (group entities, not-for-profits)
- Enables sensitivity analysis to be carried out on key assumptions
- Allows the use of judgement (with appropriate justification)

Alternative Simplified Approach – Stage 1

Sponsor strength is the key parameter - Estimated using 2 standard credit ratios:

- 1. Income cover (\sim interest cover) = $\text{Income} / \text{servicing cost of financial obligations}$ (e.g. $\text{PBIT} / (\text{Interest} + \text{Leases} + \text{current Deficit Repair Contributions})$)*
- 2. Asset cover (\sim gearing) = $\text{Balance sheet cover of pension deficit}$ (e.g. $\text{Net assets} / \text{HBS Level A pension deficit}$)*

Simplified Illustration

Asset Cover	5x	Med/Strong	Med/Strong	Strong
	3x	Medium	Med/Strong	Med/Strong
	1x	Weak	Medium	Med/Strong
		1x	3x	5x
		Income Cover		

Judgement allowed to derive more appropriate credit ratios

Where do the Credit Ratios Come From?

Rating Agency Illustration – Source S&P

Adjusted Key Industrial Financial Ratios, Long-Term Debt--Europe, Middle East, Africa

Median three-year (2009 to 2011) averages

	AA	A	BBB	BB	B
Oper. income (bef. D&A)/revenues (%)	19.2	17.9	16.8	17.2	15.1
Return on capital (%)	18.9	17.0	11.8	8.1	7.9
EBIT interest coverage (x)	17.2	7.8	4.0	2.4	1.3
EBITDA interest coverage (x)	20.1	11.0	6.3	4.2	2.0
FFO/debt (%)	64.9	49.0	33.3	22.6	10.8
Free oper. cash flow/debt (%)	53.8	32.4	17.5	9.3	0.2
Disc. cash flow/debt (%)	22.5	17.9	8.3	5.7	(1.3)
Debt/EBITDA (x)	1.0	1.6	2.4	3.4	5.6
Debt/debt plus equity (%)	26.3	31.9	41.4	51.5	75.7
No. of companies	7	51	117	66	65

Where do the Credit Ratios Come From?

Rating Agency Illustration – Source Moody's

FACTOR 5

Coverage and Leverage (35%)

Sub-Factor	Sub-factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
EBITA/Interest	10%	≥18x	11x to 18x	6x to 11x	4x to 6x	2.5x to 4x	1.5x to 2.5x	0.5x to 1.5x	<0.5x
RCF / Net Debt	5%	≥ 90%	65% to 90%	45% to 65%	25% to 45%	15% to 25%	10% to 15%	5% to 10%	<5%
Debt / EBITDA	10%	< 0.5x	0.5x to 1x	1x to 1.5x	1.5x to 2.5x	2.5x to 3.5x	3.5x to 5.5x	5.5x to 7.5x	≥7.5x
Net Debt / Net Capitalization	10%	<7.5%	7.5% to 15%	15% to 25%	25% to 35%	35% to 55%	55% to 75%	75% to 100%	≥100%

Example 1

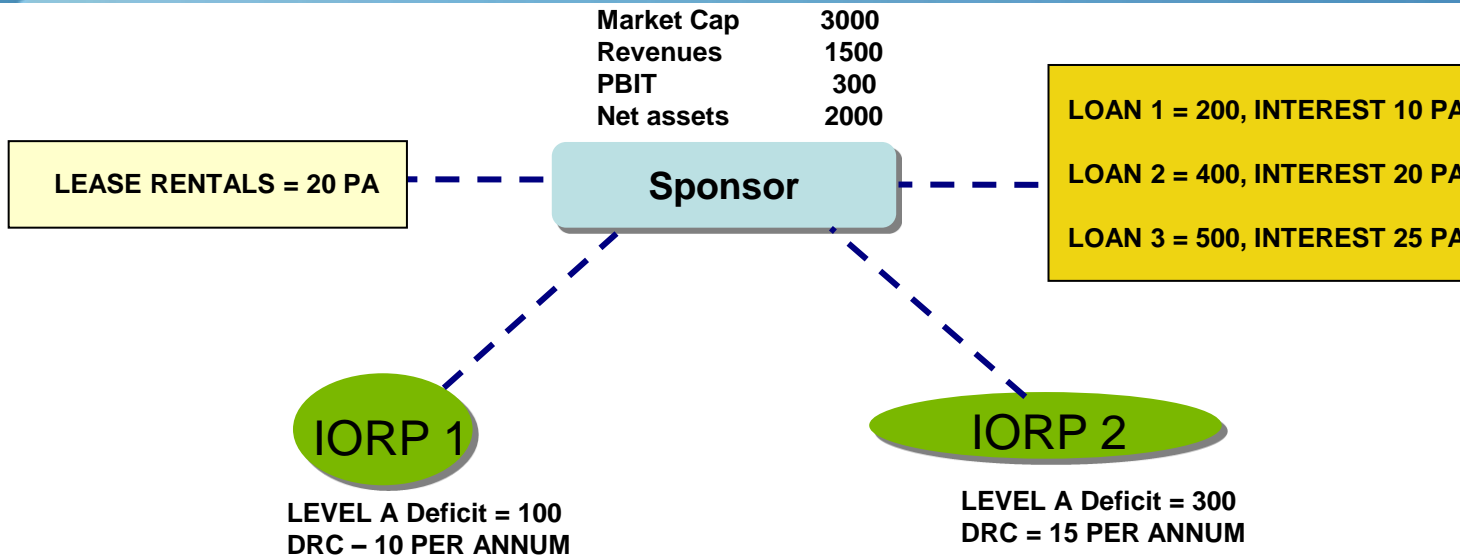


Consider three sponsors with the same EBITDA / operating income (300 units) and net assets (1,000 units) but different levels of HBS pension deficits and debt

	EBITDA (or Op Income)	Net Assets	HBS Pension Deficit	Debt Service Cost	Income Cover	Asset Cover	Sponsor Strength
Sponsor 1	300	1,000	200	60	5x	5x	Strong
Sponsor 2	300	1,000	300	60	5x	3x	Med/Strong
Sponsor 3	300	1,000	1000	300	1x	1x	Weak

- Operating income equals EBITDA (averaged over the last 3 years),
- Net Assets equals Shareholder Funds (taken from the latest set of financial accounts). To avoid double-counting, the Net Assets should be adjusted to add back any provisions (or remove any assets) the sponsor has included in respect of its obligations towards the IORP in its financial accounts
- IORP Shortfall equals full value of Level A technical provisions less financial assets and contingent assets on the Holistic Balance Sheet (subject to a minimum of zero)
- Debt equals net debt of the sponsor including bank/intra-group loans
- Debt Service Cost equals annual interest payments on the Debt plus and lease rentals plus any existing contributions to fund any shortfall in the IORP;
- Income Cover equals a sponsor's operating income (note 1) divided debt service cost (note 5)
- Asset Cover equals Net Assets (note 2) divided by IORP Shortfall (note 3)

Example 2 – Sponsor with Multiple IORPs



Income cover (~interest cover) = Income / servicing cost of financial obligations (eg PBIT / (Interest + Leases + current Deficit Repair Contributions) = 300 / (55 interest + 20 lease rental + 25 existing DRC) = 3x

Asset cover (~gearing) = Balance sheet cover of pension deficit (eg Net assets / HBS Level A pension deficit)

= 2000 / (100 + 300) = 5x

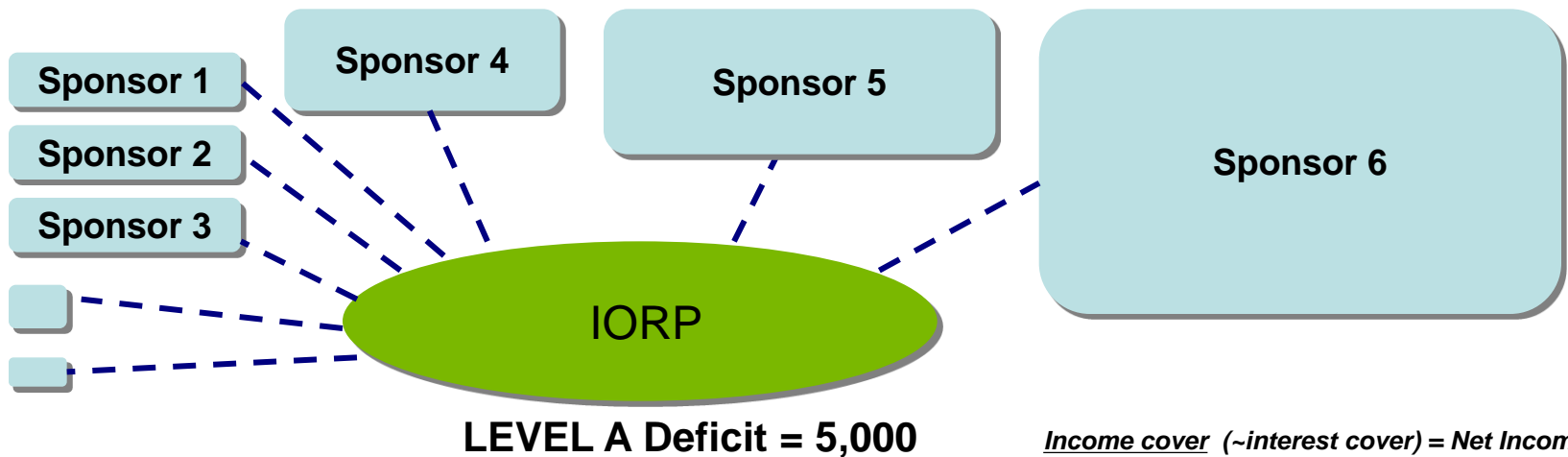
Asset Cover	5x	Med/Strong	Med/Strong	Strong
	3x	Medium	Med/Strong	Med/Strong
	1x	Weak	Medium	Med/Strong
		1x	3x	5x
		Income Cover		

=> Med/Strong

Example 3 – Multi Employer IORPs

eg Industry-wide Schemes

Industry wide revenues = €25,000, net income = €500, and net assets = €10,000



Q – Ring fenced assets & liabilities or Shared risk ?

If Shared risk, look at Industry-wide revenue, net income and net assets and compare to Level A deficit, respectively. If no information available, all approaches are invalid !

Income cover (~interest cover) = Net Income / Level A deficit = 500 / 5,000 = 10% or 10 years to repair Level A deficit

Asset cover (~gearing) = Net assets / HBS Level A pension deficit = 10,000 / 5,000 = 2x

=> Medium/Weak

Alternative Simplified Approach – Stage 1



Sponsor strength estimated on a 6 step scale

Credit step	Definition	Code	<i>Credit Rating Equivalent</i>
1	Very Strong	VS	AAA/AA
2	Strong	S	A
3	Medium Strong	M+	BBB
4	Medium	M	BB
5	Weak	W	B
6	Very Weak	VW	CCC

Alternative Simplified Approach – Stage 2A & 2B

A. Look Up: Determine the period over which sponsors can afford contributions

Sponsor strength	Short period (years)	Medium period (years)	Long period (years)
Very strong	1	3	5
Strong	1	3	5
Medium strong	3	5	10
Medium	5	10	20
Weak	10	20	30
Very weak	20	30	50

B. Look up: Determine the annual probabilities of default & survival

Sponsor strength	Annual probability of default	Annual probability of survival
Very strong	0.1%	99.9%
Strong	0.2%	99.8%
Medium strong	0.5%	99.5%
Medium	1.6%	98.4%
Weak	4.5%	95.5%
Very weak	26.8%	73.2%

Note exponential scale

Alternative Simplified Approach – Stage 3

Annual contributions needed to meet shortfall (assuming no default) – Using an illustrative 3% Present Value discount rate

Credit strength	Period to meet shortfall (years):			Annual contributions (% of shortfall):		
	Short	Middle	Long	Short	Middle	Long
Very strong	1	3	5	101.5%	34.8%	21.5%
Strong	1	3	5	101.5%	34.8%	21.5%
Medium strong	3	5	10	34.8%	21.5%	11.6%
Medium	5	10	20	21.5%	11.6%	6.6%
Weak	10	20	30	11.6%	6.6%	5.0%
Very weak	20	30	50	6.6%	5.0%	3.8%

For example, if the credit strength of a sponsor is “weak”, then annual deficit repair payments of €6.6m are required to repair a €100m deficit over 20 years – all other things being equal

Alternative Simplified Approach – Stage 4

Sponsor Support = discounted value of future risk adjusted cash flow payments

Example using 3% as the risk free rate + appropriate sponsor credit spread

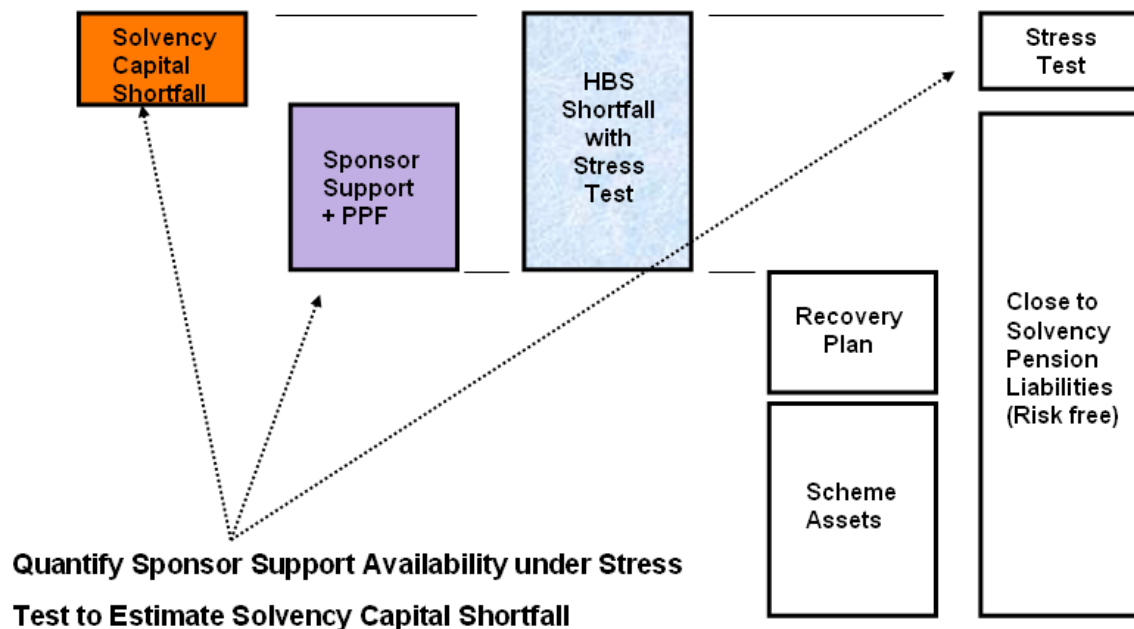
Sponsor strength	Net discount rate for sponsor support calculation	Short	Middle	Long
Very strong	3.10%	100.00%	99.90%	99.80%
Strong	3.20%	99.90%	99.70%	99.60%
Medium strong	3.50%	99.30%	98.80%	97.70%
Medium	4.60%	96.30%	92.90%	87.10%
Weak	7.80%	81.10%	68.40%	59.70%
Very weak	40.80%	19.40%	14.70%	11.20%

For example, if the credit strength of a sponsor is weak and a 20 year recovery period deemed appropriate, then sponsor support would account for 68% of the Level A deficit (ie shortfall = 32%)

Alternative Simplified Approach – Stages 5 and 6

IORPs may need to continue to stages 5 and 6 if following circumstances apply:

- Stage 5 - Group companies or parent company guarantees. Consider impact before and after parental support (final outcome may be a judgement call)
- Stage 6 - Loss absorbing capacity under stress tests (SCR)



Alternative Simplified Approach – Stage 7 - Sensitivity Analysis



- Sponsor strength in Stages 2-5 = one or two levels lower than that calculated in Stage 1 (e.g. very strong companies are treated as strong or medium strong)
- Sponsor strength in Stages 2-5 = one level higher than that calculated in Stage 1 (e.g. very weak sponsors are treated as weak).
- Payment periods in Stage 2 = each of the three periods shown (i.e. short, medium, long)
- Annual probabilities of default in Stage 4 are multiplied by 1.5x and 2.0x
- Discount rate - relevant risk free rates plus/minus 1% and 1.5%

6. Main Benefits of Alternative Simplified Approach



1. Easy to understand, intuitive, standard credit analysis approach used by banks and other creditors - Suitable for small and medium sized IORPs
2. Uses existing financial information – no need for subjective forecasts
3. IORPs do not have to calculate maximum sponsor support
4. No reliance on external credit ratings (generate your own)
5. Allowance for use of judgement to derive some assumptions

EIOPA is not ruling out any other approaches or other simplifications from the QIS technical specifications at this stage of the work

Main Challenges of Alternative Simplified Approach



1. Currently just a concept – needs more refinement, feedback, market testing...
2. Too simplistic ? Can you really calculate Sponsor Support from 2 credit ratios?
3. How do you calibration of credit ratios for different industrial sectors?
4. Are the outputs market consistent ?
5. Will it work for sponsors with more than one IORP, multi-employer IORPs and Industry IORPs ?
6. Still reliant on Credit Rating Agencies for credit ratio data / default rates



eiopa
EUROPEAN INSURANCE

AND OCCUPATIONAL PENSIONS AUTHORITY

Thank you

EIOPA
www.eiopa.europa.eu
