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4 July 2013

**Discussion Paper**  
**On**  
**Sponsor Support**  
**Technical Specifications**

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## **1. Responding to the Discussion Paper**

EIOPA welcomes comments on the Discussion Paper on Sponsor Support Technical Specifications.

The consultation package includes:

- The Discussion Paper
- Template for comments

Please send your comments to EIOPA in the provided template for comments, by email [DP-13-001@eiopa.europa.eu](mailto:DP-13-001@eiopa.europa.eu), by 31 October 2013.

Contributions not provided in the provided template for comments, or sent to a different email address, or after the deadline will not be processed.

EIOPA invites comments on any aspect of this paper and in particular on the specific questions summarised in section 5. Comments are most helpful if they:

- respond to the question stated;
- contain a clear rationale; and
- describe any alternatives EIOPA should consider.

### **Publication of responses**

All contributions received will be published following the close of the consultation, unless you request otherwise in the respective field in the template for comments. A standard confidentiality statement in an email message will not be treated as a request for non-disclosure. A confidential response may be requested from us in accordance with EIOPA's rules on public access to documents. We may consult you if we receive such a request. Any decision we make not to disclose the response is reviewable by EIOPA's Board of Appeal and the European Ombudsman.

### **Data protection**

Information on data protection can be found at [www.eiopa.europa.eu](http://www.eiopa.europa.eu) under the heading 'Legal notice'.

### **Disclaimer**

The views expressed in this discussion paper are preliminary and will not in any way bind EIOPA in the future. They are aimed at gathering the stakeholders' input.

## **2. Executive summary**

### **2.1. Background and aim of the paper**

The Quantitative Impact Study (QIS) on Institutions for Occupational Retirement Provision (IORPs) ran between mid-October and 17 December 2012 in eight member states. The QIS exercise represented a first comprehensive attempt to calculate prudential balance sheet and solvency figures on a common and consistent basis for defined benefit IORPs in Europe. EIOPA published the final report with the outcomes of the QIS, together with this discussion paper.<sup>1</sup>

The QIS exercise was based on the technical specifications, as set out in the European Commission document published on 8 October 2012.<sup>2</sup> This document was largely a reproduction of the draft technical specifications dated 2 October 2012 developed by EIOPA.<sup>3</sup> As part of the preparation of this draft, EIOPA conducted a public consultation between 15 June and 31 July 2012 on the draft technical specifications.

Stakeholders raised a number of issues with the technical specifications during the public consultation that could not be resolved before the start of the QIS exercise. The QIS outcomes largely confirm the issues identified last year, but also show that some additional elements of the technical specifications are in need of further attention.

One of the most significant aspects of the QIS results is the figure for sponsor support. As noted by stakeholders and IORPs in both the public consultation and during the QIS itself, the methodology for valuing sponsor support is subject to considerable practical difficulties. In particular, the maximum amount of sponsor support and the sponsor default probability are difficult to implement for IORPs. As the sponsor support values are highly sensitive to these inputs, EIOPA already stressed last year that further work on the technical specifications “will include revised proposals for, and public consultation on, an improved methodology for the calculation of sponsor support, [..].”<sup>4</sup>

### **Issues with sponsor support specifications**

Respondents to the consultation and QIS participants mentioned the following issues with the QIS technical specifications for calculating sponsor support, giving rise to misstatements of sponsor support values and variation in outcomes between IORPs and member states:

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<sup>1</sup> EIOPA, Report on QIS on IORPs, EIOPA-BOS-13/124, 4 July 2013, Frankfurt.

<sup>2</sup> European Commission, Quantitative Impact Study (QIS) on Institutions for Occupational Retirement Provision (IORPs) – Technical Specifications, Ref. Ares(2012)1182662, 8 October 2012, Brussels.

<sup>3</sup> EIOPA, Draft Technical Specifications QIS of EIOPA’s Advice on the Review of the IORP Directive, EIOPA-BOS-12/085, 2 October 2012, Frankfurt.

<sup>4</sup> Refer to section I.5.25 of EIOPA’s draft technical specifications, referred to in footnote 3.

- IORPs performing the QIS indicated that the security mechanisms section provides little guidance for performing stochastic valuations. As a consequence, many IORPs were compelled to make their own assumptions in doing these stochastic valuations, resulting in variation in outcomes between IORPs.
- The QIS specifications for valuing maximum sponsor support are not suitable for some types of organisations, including not-for-profit organisations, subsidiaries and multi-employer schemes. In addition, it does not deal with complex situations, for example where a single sponsor has several IORPs. The variables and parameters in the calculation of maximum sponsor support are to some extent arbitrary, since they are not explained and are not based on analysis. In addition, input variables like “cash flows” are not clearly defined.
- The determination of sponsor default probabilities is highly dependent on credit ratings, which is unsuitable for various kinds of employers (charities, universities, etc.). IORPs stressed that this is also in conflict with EU policy to reduce mechanical reliance on credit ratings.
- The value of sponsor support depends on the timing of sponsor support payments, but the assumed payment period (i.e. duration of liabilities) is selected in an arbitrary way.
- In practice an IORP may be supported by entities with no legal obligation to do so. For example, sponsor support may be limited conditional, which means that the employer may choose not to provide support. Another example is that a parent company may decide to provide additional support to an IORP, despite the fact that the IORP is legally backed by its subsidiary. Whether allowance should be made for this not legally enforceable sponsor support, for example based on established practice, and if so how, could materially affect the value of sponsor support under the holistic balance sheet approach.

A general observation of participants in the QIS exercise was that the calculations were often very complex and extensive and certainly too costly for small IORPs. This underlines the need for more and better simplifications to enhance participation of small IORPs. The first QIS exercise was to a large extent conducted by either larger IORPs and/or national supervisors.

### **Further work on sponsor support**

In response to these criticisms, EIOPA initiated work to consider how to improve the general sponsor support methodology as set out in the QIS technical specifications, and to look at some new approaches that may be worth investigating. As part of this work, EIOPA considered a number of papers by

specialists in the area of sponsor support valuations that have been published in the public domain around the beginning of this year.<sup>5,6,7</sup>

This discussion paper sets out EIOPA's preliminary thinking on how the general valuation principles for sponsor support in the QIS technical specifications might be improved and presents an alternative, simplified approach for calculating sponsor support. The contents of this paper should be considered a work in progress to collect comments and views from stakeholders. EIOPA intends to carry out further qualitative and quantitative analysis on the proposed simplification and more general methods to assess the impacts on QIS results, to consider the advantages and disadvantages of various approaches, and to gain knowledge about the conditions of applicability and reliability of each approach. This paper is not meant to rule out the use of any simplifications in relation to sponsor support or other issues covered by the technical specifications for the QIS.

The European Commission has announced that its forthcoming legislative proposal for a revised IORP Directive will not cover solvency rules for IORPs and that further technical work in this area is necessary.<sup>8</sup> EIOPA will – in consultation with the Commission – set out a programme of work to better assess and compare IORP solvency, and to contribute to future decisions regarding European initiatives regarding solvency of pension funds. The analysis of sponsor support put forward in this discussion paper will be part of that programme of further technical work.

It should be remembered that commonalities and interdependencies exist between the sponsor support issues and the future work on other items of the holistic balance sheet. The valuation of discretionary benefits is – for instance – linked to the valuation of sponsor support that is subject to a discretionary decision-making process; the valuation of ex post benefit reductions, if considered, is related to priority orders of security and benefit adjustment mechanisms. The discussion paper does not take into account any modelling for supervisory responses, i.e., among other issues, how supervisors should respond to shortfalls under the holistic balance approach. As a result, more calibration would be needed if proposed approaches for sponsor support were to be used or adapted for a specific supervisory framework.

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<sup>5</sup> Barrie & Hibbert research, in Institute and Faculty of Actuaries, Options for assessing employer covenant and the holistic balance sheet, Research Report, January 2013, Edinburgh/London.

<sup>6</sup> Gazelle, Quantifying sponsor covenant risk for defined benefit pension schemes, January 2013, London, [http://www.gazellegroup.co.uk/downloads/Quantifying\\_the\\_sponsor\\_covenant\\_risk.pdf](http://www.gazellegroup.co.uk/downloads/Quantifying_the_sponsor_covenant_risk.pdf)

<sup>7</sup> PwC research, in Institute and Faculty of Actuaries, Options for assessing employer covenant and the holistic balance sheet, Research Report, January 2013, Edinburgh/London.

<sup>8</sup> European Commission, Occupational Pension Funds (IORP): Next steps, Memo, 23 May 2013, Brussels.

## **2.2. Structure of paper**

This discussion paper sets out EIOPA's further thinking on sponsor support with the dual objectives of:

- Proposing improvements to the general principles for valuing sponsor support previously set out in the QIS technical specifications (e.g. stochastic valuation) in section 3; and
- Proposing an alternative, simplified approach to the current QIS methodology for the calculation of sponsor support in section 4.

The QIS technical specifications required IORPs to value sponsor support on a market consistent basis by reference to the probability weighted average of discounted future cash flows that would be required to be paid by the sponsor to the IORP, in excess of its regular contributions. EIOPA does not intend to revise this general principle of market-consistency.

### **Improving the general principles for valuing sponsor support**

The QIS technical specifications set out general principles for calculating sponsor support based on stochastic valuations. Such a general valuation approach will be particularly relevant for IORPs where the sponsor support arrangement contains embedded options or where its value is materially impacted management actions or sponsor behaviour.

In section 3 a number of possible directions for improvements are put forward for the consideration of stakeholders, in the following areas:

- Combining the principles of stochastic valuation used throughout the technical specifications into a single set to be used for technical provisions and sponsor support;
- Alternative elements and approaches that could be used for the calculation of maximum sponsor support, including the option to make this calculation voluntary. It is recognised that calculating a maximum value is complex, and there is no single universally recognised method that can be used to calculate the value of a sponsor, and therefore the maximum value of sponsor support; and
- Alternatives to linking default probabilities to credit ratings.

In addition, the section discusses ways to improve the QIS technical specifications around the timing of sponsor support, valuation of limited conditional sponsor support, and the provision of additional simplified methods.

## **Alternative Approach to Valuing Sponsor Support**

EIOPA recognises the need to apply the technical specifications in a proportionate manner to allow small and medium-sized IORPs to implement the holistic balance sheet approach. The alternative approach proposed in section 4 provides IORPs with a simple tool to achieve a market consistent valuation of sponsor support. The simplification is targeted at IORPs that have unlimited sponsor support as its value is based on the shortfall between financial assets and technical provisions. The time period used in the calculations to recover the shortfall depends on the annual payments assessed as being affordable for the sponsor.

Under the alternative approach, IORPs carry out their assessment of the sponsor's financial strength using two credit ratios: income cover and asset cover. Guidance is provided so that IORPs can do this in a proportionate manner. IORPs can then calculate the value of sponsor support using a percentage derived from a standardised table and applied to the difference between technical provisions and financial assets.

It will not be necessary to calculate a maximum value of sponsor support to value sponsor support under the alternative approach proposed in this discussion paper. It might still be necessary to determine a maximum value of sponsor support for the ancillary own funds option, but this issue is not covered in this discussion paper.

The new alternative approach is intended to be proportionate, particularly for small and medium-sized IORPs, for sponsors of multiple IORPs, or where IORPs have multiple sponsors although further work may still need to be done for more complex sponsor arrangements. The simplification can allow for the calculation of any sponsor support that is provided by other group entities, if that would be considered appropriate and would be decided upon at some stage.

The alternative approach contains a number of key assumptions and parameters. It is recognised that the results of any calculations will be sensitive to the assumptions and parameters used. In order to test the sensitivity to changes to assumptions in future QIS work, some sensitivity calculations have been suggested in section 4. Again, the alternative approach described in this paper and its application will be subject to further investigation and impact assessment.

## **Invitation of feedback**

EIOPA invites comments on any aspect of this paper and in particular on the specific questions summarised in section 5. Comments are most helpful if they:

- respond to the question stated;
- contain a clear rationale; and
- describe any alternatives EIOPA should consider.

## **Next steps**

EIOPA intends to undertake quantitative analysis of various possible valuation methods and to elaborate on the approaches and directions put forward in this discussion paper, taking into account the feedback received from stakeholders. EIOPA expects to publish a report on the further work on the methods for the valuation of sponsor support in the spring of 2014.

### 3. General valuation principles for sponsor support

1. There are four forms of sponsor support distinguished in the technical specifications for the QIS on IORPs (HBS.6.1):
  - A – Increase in contributions
  - B – Subsidiary liability of the sponsor
  - C – Contingent assets of the sponsor
  - D – Claims on the sponsor on the discontinuance of the IORP.
2. The methodology for valuing forms A, B and D was set out in section 2.6 of the QIS technical specifications. For reasons of simplicity the wording in this section of the technical specifications often takes into account form A (payments to the IORP) only, but is meant to capture form B (payments to members and beneficiaries) and Form D as well. This is also the case throughout this discussion paper.
3. Contingent assets (i.e. Form C) should be recognised separately and valued in accordance with the principles set out in section 2.9 of the QIS technical specifications applying to the valuation of financial assets of the IORPs.

#### 3.1 QIS technical specifications

4. The QIS technical specifications state that:
  - Sponsor support should be valued on a market consistent basis by reference to the future cash flows that would be required to be paid by the sponsor to the IORP, in excess of its regular contributions, in order to ensure assets in the IORP meet a required level (HBS.6.10).

For the purpose of the QIS, the required level was assumed to be the full value of the Level A technical provisions (with no adjustment for a possible reduction in benefits in the case of sponsor default) (HBS.6.11). This should not be taken to imply a conclusion on how in future any funding shortfalls would be assessed or met.
  - The expected values of these future cash-flows are dependent on both the maximum value of sponsor support calculated without default risk as a means of assessing the ability of the sponsor to afford any particular level of required support and the need of the IORP to request payments (HBS.6.12).
  - IORPs taking account of future contributions should, in assessing sponsor support, only take account of:
    - Contributions in excess of the costs of new accruals;
    - Both contributions paid by the employer(s) and employees (where employees are required to make contributions); and

- Possible restitutions (i.e. negative contributions) to the employer(s) and employees in favourable scenarios (HBS.6.21) for example in situations where the sponsor has the ability either to withdraw assets from the IORP or to reduce its regular contributions to a level below the actual cost of new accruals, in accordance with HBS.6.21(iii). The ability to withdraw assets from the IORP includes the return of any surplus to the sponsor in a run off situation.
5. In valuing sponsor support it is important to take into account the ability of the sponsor to make payments (financial constraints) which includes the financial position of the sponsor and also its credit risk. When deriving the amounts and probabilities of future sponsor support cash flows, IORPs should take into account their own financial situation, as well as the quantitative uncertainty of this situation.
  6. In the QIS, the probability of default was assessed according to the sponsor's rating or credit quality step, using a table that was also used for the counterparty default risk module of the SCR (HBS.6.15). This table assumed that the probability of default remains constant over time for each sponsor. Unrated sponsors should have used a probability of default of 4.175% (i.e. equal to the rate used for sponsors with a credit rating of B or CCC or lower), unless it was recognised that IORPs considered this to be inappropriate. In many cases, QIS participants did consider this to be inappropriate, and they used a lower probability of default.

### **3.2 Stochastic valuation**

7. The most general approach to calculate the market value of sponsor support is by means of a stochastic valuation.<sup>9</sup> However, EIOPA recognises that the use of a stochastic valuation could be complex and time consuming and that, for any future QIS work, a deterministic approach may be more proportionate for many IORPs.
8. The technical specifications prescribe that the value of sponsor support should be established as the probability weighted average of the discounted value of future cash flows. The sponsor payments in the various future scenarios should be discounted using the basic risk-free interest rate. The expected returns on all assets have to be set equal to the risk-free rate to ensure that the calculated value equals the value of the replicating portfolio. A practical application of such a so-called risk-neutral valuation of sponsor support can be found in the paper by Barrie & Hibbert.<sup>10</sup>
9. The use of a stochastic valuation method would in particular be appropriate if the sponsor commitment contains embedded options. This will be the

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<sup>9</sup> Stochastic valuation here refers to a valuation obtained by way of stochastic simulation (use of Monte-Carlo simulation for instance).

<sup>10</sup> Barrie & Hibbert research, in Institute and Faculty of Actuaries, Options for assessing employer covenant and the holistic balance sheet, Research Report, January 2013, Edinburgh/London.

case when sponsor support is limited – i.e. is subject to a cap – or when sponsor payments are asymmetric. For example, the sponsor may be required to cover shortfalls, but not be entitled to receive any restitution in scenarios with surpluses.

10. The technical specifications provide general principles to conduct stochastic valuations in the following areas:
  - (1) Calibration of the asset price model for generating future economic scenarios (HBS.3.8-HBS.3.14)
  - (2) Assumptions with regard to members/beneficiaries or sponsor behaviour (HBS.3.19-HBS.3.21)
  - (3) Assumptions with regard to IORP management actions (HBS.3.22-HBS.3.28)
  - (4) Use of expert judgement (HBS.3.29)
  - (5) Time horizon for the valuation (HBS.4.6-HBS.4.7)
  - (6) Sponsor payments to be included in cash-flows and their timing (HBS.6.21-HBS.6.22)
11. These general principles were included in the section for valuing the best estimate of technical provisions. For any future technical specifications, EIOPA proposes to combine these in a more general section with valuation principles that applies to technical provision as well as sponsor support. IORPs were also provided with information on derivation of the basic risk-free interest rate curve using the Smith-Wilson procedure. However, some IORPs participating in the QIS indicated that more guidance is needed on how to incorporate the adjusted swap curve in their economic scenario sets underlying stochastic valuations.

Questions to stakeholders:

Q1: Should IORPs be provided with additional guidance for conducting a stochastic valuation of sponsor support?

### **3.3 Simplifications**

12. The technical specifications suggested two simplifications in order to provide comparable results for a first quantitative analysis.
  - (1) Simplification 1 involved a continuous model to value sponsor support, including volatility of assets and liabilities, the correlation between assets and liabilities and the default risk of the sponsor. Few IORPs used this simplification for the QIS.

- (2) Simplification 2 involved a deterministic model allowing IORPs to take the probability weighted average of future cash flows needed to meet the Level A technical provisions, where the only source of uncertainty is the default risk of the sponsor. Returns on assets were assumed to be equal to the risk-free interest rate; and the cash flows would be paid for a period equal to the value of the duration of the expected outgoing benefit payments from the IORP. Most IORPs used this simplification.

13. In section 4 of this discussion paper a new simplified approach will be discussed for IORPs disposing of unlimited sponsor support.

Questions to stakeholders:

Q2: Should IORPs be provided with additional guidance for conducting valuations of sponsor support using either Simplification 1 or 2? Should either of these simplifications be removed or should any other simplification be developed?

### **3.4 Maximum sponsor support**

14. The current technical specifications require IORPs to include the maximum value of sponsor support, which was linked to:
- The wealth currently available for the IORP; and
  - The future wealth, e.g. wealth which could be foreseen to be made available through future cash flows of the sponsor.
15. The maximum value of sponsor support was also needed in the calculation of the SCR to determine the maximum loss absorbing capacity of sponsor support and in the ancillary own funds option. For the ancillary own funds option it might still be necessary to determine a maximum value of sponsor support, but this issue is not covered in this discussion paper.
16. IORPs were asked to take into account future business plans of the sponsor that would affect the calculation where they have sufficient information to do so. For the purposes of the QIS and simplification, adjustments for future business plans could be ignored if this information is not readily available or is not deemed significant.
17. The QIS technical specifications contained a formula for calculating the maximum value of sponsor support. This was the sum of:
- 50% of the excess of assets over liabilities of the sponsor's balance sheet (i.e. shareholder's funds);

- 100% of the liabilities of the sponsor towards the IORP, as written in the balance sheet of the sponsor; plus
  - Current recovery plan contributions (payable over the duration of the IORP's obligations); plus
  - 33% of the sponsor's expected future discounted cash flows (payable over the duration of the IORP's obligations) (subject to a minimum of zero).
18. For IORPs where the nature of the sponsor or sponsors made the method set out in the QIS technical specifications inappropriate, IORPs could carry out their own valuation of maximum sponsor support, consistent with the general principles set out in the technical specifications. A simplification was also provided for IORPs that were unable to provide an estimate where the maximum value of sponsor support was set equal to the value of technical provisions.
19. However, the concept of the maximum sponsor support introduces a number of issues and can be approached in a number of ways (see Table 1).
20. The most straightforward approach to implement this concept is to relate the maximum support to the value of the sponsor. Equivalently, the maximum annual payments can be related to future income as the company's worth equals the discounted value of future earnings. Lastly, the maximum annual payments can be linked to the wage sum to achieve a maximum annual contribution rate in excess of the cost of new accruals (HBS.6.21). The latter is not a measure of the company's wealth, but corresponds to the economic intuition that contribution increases are deferred wages.

**Table 1: Examples maximum sponsor support**

	Sponsor (A)		Maximum support 1		Maximum support 2	
	EUR	% A	EUR	% A	EUR	
Value	100	50%	50	20%	20	
Capital income	10	50%	5	20%	2	
Wages	20	25%	4	10%	2	

Note: Sponsor financial statistics based on 'typical' price/earnings ratio of 10 and labour income share of 2/3.

21. There are no universally recognised standards for calculating the value of a sponsor. The value of a company could be expressed as market value, fair value, economic value or book value which may all results in different values. The use of discounted cash flow techniques to value sponsors could also lead to different values depending on the underlying assumptions including cash flow growth rates, terminal values and discount rates.

22. There are a number of practical difficulties associated with placing a maximum value on sponsor support. Many scheme sponsor are not listed and, therefore, do not have a quoted market value. In addition, IORPs sponsored by multiple employers, not-for-profit organisations and subsidiaries of companies may not have (easy) access to the necessary balance sheet data. Finally, incorporating maximum sponsor support adds to the complexity of a stochastic valuation as the value of the company would have to be evaluated in various economic scenarios. The last two issues may however be (partially) resolved by expressing the maximum in terms of total wages.
23. However, the biggest challenge is to translate the company's value into the maximum support the sponsor is capable of affording. Should the maximum amount of sponsor support be set at 50% of the sponsor's worth or only 20%? Similarly, is a prolonged increase in contribution rates of 25% of wages feasible or an increase of 10% of wages? At the least, the answers to these questions will depend on the specific situation of the IORPs and sponsors. This makes it very difficult to prescribe a standard method that is appropriate for all IORPs as equivalent criticisms of arbitrariness of the choice of parameters might apply whichever methodology is used.
24. As an alternative to a prescriptive method IORPs could be required to assess whether the calculated value of maximum sponsor support is feasible, possibly as part of a possible own risk and solvency assessment (ORSA). In order to do so, IORPs could compare the value of sponsor support with the value of the company or annual recovery payments with the company's earnings or wage sum. Appropriate adjustments would then have to be made to the value of maximum sponsor support if IORPs would come to the conclusion that the value exceeds the sponsor's financial capabilities.
25. Another option would be to make the use of the maximum value of sponsor support purely voluntary. The valuation of sponsor support is comparable to the valuation of (re-) insurance recoverables on the holistic balance sheet. The technical specifications for (re-) insurance recoverables do not contain a concept of a maximum amount for recoverables. It is implicitly assumed that the possibility that the (re-) insurer will not meet its obligations is captured by the default risk of the (re-)insurer.
26. Other major financial creditors, such as commercial banks, also do not try to calculate a maximum level of sponsor (corporate) support for credit and debt obligations. Instead, banks typically use an internal rating system (as required by Basel II) to estimate the credit risk of each borrower. These internal rating systems often include standardised credit ratios, such as interest cover or debt leverage. The alternative, simplified method in the

next section explores such an approach where credit ratios of the sponsor are used to determine default probabilities.

Questions to stakeholders:

Q3: In the stakeholders' view what role should the concept of maximum sponsor support play in the general valuation principles for sponsor support?

Q4: Is wage an appropriate additional measure for estimating the maximum amount of sponsor support? If so, please explain why? Are there any other measures which could be used to assess the maximum sponsor support?

### **3.5 Probability of default**

27. The technical specifications of the QIS prescribe that the default risk of the sponsor should be taken into account in the valuation. Default probabilities were linked to the credit ratings of the sponsor, following the table set out in HBS.6.15. For unrated employers a probability of default of 4.175% should have been used (i.e. the same rate as for sponsors with a credit rating of B, CCC or lower). EIOPA recognised that some IORPs may consider this inappropriate in their particular circumstances, and were allowed to use different probabilities if they had evidence as to why they should be used.
28. Although the QIS outcomes showed that about half of sponsors of participating IORPs have credit ratings, this is largely due to the over-representation of larger IORPs in the sample. Relatively few sponsors of IORPs have credit ratings. For the QIS, the UK Pensions Regulator used credit scores rather than credit ratings allowing a credit assessment to be derived for all UK IORPs. Indeed, Standard & Poor's data shows that there are less than 1,500 European companies with a credit rating, which is significantly less than the number of IORPs in the EEA. In many cases, the IORP sponsor is a subsidiary of another company, where the parent company may have a credit rating, but the sponsor may not. In some cases the IORP is sponsored by multiple employers where not all employers may have a credit rating.
29. Since the QIS technical specifications were produced, the European legislators have amended the IORP Directive in respect of over-reliance on credit ratings, stating that competent authorities should encourage IORPs to mitigate the impact of references to credit ratings, with a view to reducing sole and mechanistic reliance on such credit ratings.<sup>11</sup> This recognises the need to find alternative methods to assessing creditworthiness. Therefore, a set of principles needs to be found where it is not necessary to mechanically link default probabilities to credit ratings.

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<sup>11</sup> Directive 2013/14/EU of 21 May 2013 amending IORP Directive 2003/41/EC.

Annex 1 provides more information on the potential limitations on the use of credit ratings to determine the value of sponsor support.

30. The most obvious alternative for estimating a market-consistent value are default probabilities implied by securities traded on financial markets, such as credit default swaps and corporate bonds. However, as these relate to the credit risk of bonds which may have a different risk exposure than that of the pension scheme, they may not be appropriate. Moreover, such an approach will only be feasible for a very limited number of companies with access to bond markets and not for many other smaller sponsors.
31. As a second alternative EIOPA would like to explore the possibility of preparing standardised tables that provide a link between standardised credit ratios, sponsor strength and default probabilities (see Table 7 and Annex 2). IORPs would have to assess the credit strength of the sponsor using financial information measuring the extent to which liabilities are covered by assets and debt service by income. The outcomes for these credit ratios can then be linked to some broad categories for sponsor strength and default probabilities. The simplified approach in the next section describes how such method can be applied in practice.
32. The simplified approach maps the categories for sponsor strength with default probabilities based on credit ratings. It may be worth considering making a link with market-implied default probabilities. Such probabilities are forward-looking instead of backward-looking and more in line with the general principle of market-consistency.

Questions to stakeholders:

Q5: Are stakeholders comfortable with the concept of linking default probabilities, credit ratios and sponsor strength?

Q6: Do stakeholders agree with exploring the possibility of including a standard table in the technical specifications that links credit ratios with default probabilities?

Q7: Do stakeholders have other suggestions to derive default probabilities of the sponsor and to reduce reliance on credit ratings?

### **3.6 Timing of sponsor support**

33. The technical specifications stated that IORPs should consider the timing of sponsor support when making projections of future cash flows. The specifications explained that the distribution of sponsor support over time may depend on the pension contract and/or social and labour law.
34. The number of future years for which sponsor support is deemed to be payable for the assessment was set equal to the duration of liabilities. The alternative approach provided in the next section uses a different approach. The period over which assets will reach the required level depends on the

strength of the sponsor reflecting the affordability of making additional payments.

35. In many member states the maximum length of recovery payments made by the sponsor is part of the supervisory framework and for the first QIS many IORPs had to use their current national supervisory frameworks in their stochastic modelling for sponsor support. EIOPA already states in its QIS report that the QIS cannot be considered a complete assessment of a comprehensive supervisory framework. This is because a prudential supervisory framework comprises two elements:
  - A prudential balance sheet that assesses the funding position of IORPs, and
  - The set of responses used by supervisors and IORPs.
36. The technical specifications did not address the supervisory responses, i.e. the tiering of assets or the thresholds at which supervisory action will be taken, the nature of recovery plans and recovery periods permitted when IORPs do not meet the capital requirements and possible restrictions on the timing of sponsor support and benefit adjustments. A further specification will have an impact on the timing to be considered for sponsor support. Therefore these issues are not covered in this discussion paper.

Questions to stakeholders:

Q8: Do stakeholders agree that timing of sponsor support reflecting the affordability of making additional payments could be an improvement to the general principles for valuing sponsor support?

### **3.7 Limited conditional sponsor support**

37. In the current QIS technical specifications, sponsor support is set to zero if it is considered to be limited conditional. The reason is that EIOPA's advice recommends that sponsor support should be legally enforceable to be included in the holistic balance sheet. The QIS results therefore show that there is no sponsor support available in a number of countries.
38. Even if the sponsor has the opportunity to no longer provide support, sponsor support may have some positive (option) value. Moreover, ignoring this type of sponsor support may result in an asymmetric treatment of contributions on the asset-side and benefits on the liability-side. In a number of scenarios, IORPs were expected to recognise pure discretionary and mixed benefits, which are also subject to a discretionary decision-making process.

39. The market value of limited conditional sponsor support can be assessed by taking into account the probability of the sponsor deciding to cease providing support or the probability of the IORP management deciding to alter contribution rates. The QIS technical specifications provided general guidance for incorporating "Sponsor behaviour" (HBS.3.19 ff.) and "IORP management actions" (HBS.3.22 ff.) with regard to the valuation of the best estimate of technical provisions. An important requirement was that any assumptions should be realistic in comparison to past sponsor behaviour and management actions. In future QISs these guidelines could also be applied to the valuation of limited conditional sponsor support, if such an inclusion would be considered appropriate and would be decided upon.
40. The QIS results indicated that many IORPs did not take into account discretionary decision-making processes, even though these may have had a material impact on the value of sponsor support and technical provisions. The QIS participant may not have been able to develop the appropriate modelling for the valuation of mechanisms with discretionary powers and as a result these powers were ignored in the QIS. The reason may be that the technical specifications provided insufficient guidance to provide a credible estimate.

#### **Potential solutions for more detailed guidance**

41. Given that these valuation issues have in common that they are the result of the existence of subjective decisions by either the IORP or the plan sponsor, it is obvious that it is not possible to identify the 'real' cash-flows that will result from the use of the mechanisms. The best that can be achieved is the identification of 'realistic' cash-flows, leading to an 'expected value' of the mechanisms. There are several alternative approaches for such realistic valuations, all with their own pros and cons. Below are a few examples of potentially realistic valuations.

*Include a single factor in the calculation method to reflect the discretionary power*

42. One approach would be to start identifying future cash-flows as if there were no voluntary mechanisms or mechanisms with discretionary power, and to multiply the identified cash-flows with a factor to reflect the voluntary or discretionary power. What the value of the specific factor is, is up to the IORP to decide (and to explain to the supervisor). Elements that could play a role in defining the appropriate value for the factor include:
- The strength of the plan sponsor;
  - The current funding position of the IORP;
  - Past practices in (more or less) similar situations;

43. The effects that other mechanisms may have on specific groups of participants.

*Include a matrix of factors in the calculation method to reflect the discretionary power*

44. Another approach would be similar to the previous approach, but using a matrix of factor instead of a single factor. The elements that could play a role would be the same, but the matrix could allow for different combinations of elements.

Questions to stakeholders:

Q9: Do stakeholders think that limited conditional sponsor support should be valued and included on the holistic balance sheet? Should it be included separately?

Q10: Should more detailed guidance be provided in future technical specifications to value sponsor support that is subject to discretionary decision-making processes? If yes, please explain in what way. Could the suggested detailed guidance also be applied to benefit adjustment mechanisms that contain discretionary elements?

## 4. Alternative Simplified Approach to Calculating Sponsor Support

### 4.1. Overview

45. EIOPA is considering an alternative approach to the calculation of sponsor support using sponsor credit ratios. The aim of this simplified approach is to provide IORPs – in particular small and medium-sized ones – with a practical and proportionate tool to do a sponsor support valuation. The method is applicable to IORPs with unlimited sponsor support, since the calculation is based on the gap between financial assets and technical provisions.<sup>12</sup> The approach is summarised below in seven stages, each of which is explained in more detail later in this section:

**Stage 1.** IORPs should use credit ratio techniques to assess the strength of sponsor support relative to their financial obligations (including pension shortfalls under Level A technical provisions) on a 6 step credit quality scale from "very strong" to "very weak".

**Stage 2.** Based on that strength of the sponsor, IORPs should then:

- determine a period over which the sponsor could reasonably afford to make the payments to meet the required funding level. For very strong sponsors, this could be a very short period. For very weak sponsors, this may have to be a very long period; and
- determine an appropriate annual probability of default for the sponsor i.e. the probability that the sponsor will not pay the contributions to the IORP.

**Stage 3.** IORPs can then determine the actual level of annual contributions required to meet the required funding level. If this gives rise to an inappropriate level of annual contributions (e.g. because local regulations do not allow contributions above or below pre-defined limits) then the period in Stage 2 can be adjusted

**Stage 4.** IORPs can then determine the value of sponsor support by calculating the present value of these contributions, adjusted to allow for default risk of the sponsor.

46. Under this alternative proposal, there would be no need for IORPs to

- Calculate a maximum value of sponsor support, or
- Use external credit ratings to determine probabilities of default

47. Many IORPs may find it proportionate to assess the strength of sponsor support (Stage 1) and then go straight to Stage 4 to obtain the value of sponsor support. A look-up table has been prepared to allow IORPs to set the strength of sponsor support to a percentage of the shortfall in Level A

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<sup>12</sup> As in the technical specifications of the QIS, the gap does also include other assets and other liabilities, which are not mentioned here for reasons of simplicity.

technical provisions (Table 10). The percentage will depend on the credit strength determined in Stage 1, and whether a short, medium or long payment period is chosen.

48. IORPs should then carry out additional stages as follows:

**Stage 5.** Calculate the value of additional sponsor support available from other entities that the legal sponsor may be associated with (e.g. parent companies) using similar principles

**Stage 6.** Calculate the value of sponsor support available for the loss-absorbing capacity of security mechanisms in the solvency capital requirement (SCR) calculations

**Stage 7.** Carry out sensitivity analysis on the sponsor support calculations. (This is because a number of assumptions and parameters are used to carry out the calculations, and EIOPA believes that it is important to understand the sensitivity of changes to key items).

Questions to stakeholders:

Q11: Please provide your general comments on the alternative approach.

Q12: Does the alternative approach address the concerns raised during the previous consultation on the technical specifications?

Q13: Are there any areas that have not been addressed adequately enough?

Q14: Are IORPs still likely to want to calculate a maximum value of sponsor support (even if not required under the alternative approach)? If so, for what purpose?

#### **4.2. Stage 1 –Credit ratios to assess strength of sponsor**

49. It is not necessary for IORPs to value maximum sponsor support under the suggested alternative approach.

50. IORPs need to carry out their own assessment of sponsor risk which can then be linked to probabilities of default. However, in order to have an approach which is proportionate and can be carried out readily by small and medium-sized IORPs, as well as for the sake of comparability of context in any future QIS work, parameters have been developed that could be used for this purpose which are similar to those commonly used by banks.

51. Under this alternative approach, IORPs should determine the credit strength of the sponsor (i.e. its ability to support its financial obligation including the level A technical provisions) by calculating standardised credit ratios. The advantage of using credit ratios is that they are based on readily available financial information and this alternative approach is similar to that used by bank lenders. The ratios could be adjusted by industry sector or sponsor type to suit specific circumstances.

52. Sponsor strength will then fall into one of six credit steps depicted in table 2. The credit rating that each level is broadly equivalent to is also shown but, as noted above, the proposed method does not use external credit ratings to assess sponsor strength. Whilst 6 steps are shown here, the principles could, if required, be adapted to have more or fewer steps.

Credit Step	Definition	Code	Broadly equivalent to a credit rating (if one exists) of
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

53. The credit steps outlined above are linked to Standard & Poor's financial ratio table below which outlines a way of linking credit ratios to credit ratings from which probabilities of default can then be inferred. In the context of sponsor support, certain credit ratios – such as Income Cover and Asset Cover – can be linked to Credit Steps with equivalent Credit Ratings (see Table 2 above).

In other words, when a sponsor is not rated, it may be possible to use a credit ratio approach (e.g. EBITDA interest cover - see Table 3 below) to determine if a sponsor is "strong" or "weak".

On S&P's rating scale, for example, "strong" is the descriptor for an "A" rating and "BB" means a "weak" rating; the same descriptors are used in the credit steps as outlined in Table 2.

**Table 3: Standard & Poor's – Credit Ratios**

<b>Adjusted Key Industrial Financial Ratios, Long-Term Debt--Europe, Middle East, Africa</b>					
<b>Median three-year (2009 to 2011) averages</b>					
	<b>AA</b>	<b>A</b>	<b>BBB</b>	<b>BB</b>	<b>B</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

54. For any future QIS, IORPs should calculate at least two standard credit ratios under the alternative approach and then use these to determine the strength of sponsor support. This discussion paper shows how a two-ratio approach might work.
55. The income and asset cover ratios in the Table 3 are commonly used by creditors such as bank lenders and credit rating agencies in estimating the creditworthiness (on a scale of strong to weak) of a creditor to service and to repay their financial liabilities. These ratios can be used to rank the creditworthiness of borrowers too.
56. The specific choice of credit ratios could vary by industry. However for the purposes of this discussion paper, the suggested credit ratios are Income Cover and Asset Cover. It should also be noted that the weight given to Income Cover and Asset Cover may change depending on the outcome of this discussion paper.
57. Once Income Cover and Asset Cover have been determined, the overall sponsor strength can be assessed by using a matrix similar to Table 4 (which is for illustrative purposes only). The codes used in this table are those shown in Table 2.

<b>Table 4: Sponsor Strength - Credit Ratio Matrix</b>							
		<b>Income Cover</b>					
		<b>&lt;1</b>	<b>1x</b>	<b>3x</b>	<b>5x</b>	<b>7x</b>	<b>9x+</b>
<b>9x+</b>		S	S	S	VS	VS	VS
<b>7x</b>		M+	M+	S	S	VS	VS
<b>Asset</b>	<b>5x</b>	M	M+	M+	S	S	VS
<b>Cover</b>	<b>3x</b>	W	M	M+	M+	S	S
	<b>1x</b>	VW	W	M	M+	M+	S
	<b>&lt;1x</b>	VW	VW	W	M	M+	S

58. Table 4 above combines two simple measures of creditworthiness:
  - On the horizontal axis is Income Cover which is an ongoing income measure of the ability of the IORP's sponsor to service all of its financial obligations on an annual basis. The income cover ratio compares an entity's annual operating profits (typically EBITDA) to the annual service cost of its long-term financial obligations such as interest on debt, property lease rentals and, for QIS purposes, affordable annual deficit repair costs.

This is a variation on "interest cover" which is a very commonly used bank measure of a borrower's ability to service a loan/debt. The higher the ratio the better. A high ratio indicates that a borrower can easily service the interest on its debt/loans and its other obligations and its pension deficit repair obligations and probably could still do so in a stress scenario if the income or cash flow was stressed. Therefore, a

high interest cover ratio indicates strong creditworthiness and vice versa.

- On the vertical axis is Asset Cover which is a balance sheet measure which indicates how many times the net assets of the sponsor could cover the Level A deficit.

The asset cover ratio is a measure of "downside" risk protection specifically from the perspective of the level A deficit. In other words, the asset cover ratio measures the amount of the value that is left in the business after all other creditors (except the IORP) have been repaid. This is a measure of how much "cushion" supports the IORP deficit and the numerator could be stress tested for a downside scenario. The higher the asset cover the better in terms of IORP protection.

59. The ratios in Table 4 above are indicative of credit quality, but, of course, these ratios need to be used with careful judgement.
60. For example, in Table 5 three IORP sponsors with the same operating income and net assets but different levels of IORP shortfalls and debt burden are considered. Their sponsor strength could be estimated as follows:

	EBITDA (or Operating Income)	Net Assets	IORP Shortfall	Debt service cost	Income Cover	Asset Cover	Sponsor Strength
IORP 1	300	1,000	200	60	5x	5x	S=Strong
IORP 2	300	1,000	300	60	5x	3.3x	M+=Medium Strong
IORP 3	300	1,000	1,000	300	1x	1x	W=Weak

61. The suggested simplification defines the sponsor inputs as follows:
- (1) Operating income equals EBITDA (averaged over the last 3 years),
  - (2) 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
  - (3) 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)
  - (4) Debt equals net debt of the sponsor including bank/intra-group loans

- (5) 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;
- (6) Income Cover equals a sponsor's operating income (note 1) divided by debt service cost (note 5)
- (7) Asset Cover equals net assets (note 2) divided by the IORP shortfall (note 3)

### **Use of judgement**

62. For any future QIS exercise, it will be expected that most IORPs use at least the above credit ratios and definitions. However, if IORPs can provide evidence that these credit ratios lead to credit step outcomes that do not adequately represent the financial strength of the sponsor, IORPs could additionally use informed adjustments to derive alternative credit ratios that would be more indicative of financial strength.
63. For example:
  - operating income could be averaged over a shorter or longer period so that it more closely reflects a best estimate of future operating income;
  - operating income could be smoothed to remove one-off items that may not be repeated in future years. This could be the case if recent earnings figures capture strong results which have not been repeated since, or vice versa;
  - net assets can be adjusted to add back goodwill;
  - where a sponsor has subsidiary companies which it controls, or associates, the credit ratios should take account of these entities too (in addition to the legal sponsor). This could be an issue if these entities are not included on a consolidated basis in the sponsor's accounts. In this case the credit ratios could then be based just on the sponsor's accounts. Caution is necessary to avoid double gearing between group entities;
  - IORPs that use their own definitions are able to do so providing they are consistent with the above and that they explain their methodology.

### **Non Corporate Sponsors (examples)**

64. The comments on the methodology for calculating sponsor support received during the consultation on the draft technical specifications in the summer of 2012 and during the QIS itself, made it clear that some types of sponsors do not have financial structures which fit into the standard

corporate model and that the QIS technical specifications could not account for sponsors such as charities, universities or other not-for-profit entities.

65. EIOPA has not considered all situations where this might apply, but the following examples outline how the principles outlined in this consultation document could be used in some specific circumstances.
66. **Charities.** For not-for-profit sponsors, the definition of the inputs and the calibration of the Credit Matrix could be amended as follows:
- Instead of operating income use a similar item such as "operating surplus" or equivalent, normally defined as total revenues less total operating costs;
  - Instead of net assets use total reserves
  - Reflecting the specific credit features of charities (e.g. generally no target to generate surplus income), it may be appropriate to relax the income cover metrics as compared to a corporate sponsor
67. **Public Sector** entities. For funded IORPs with public sector sponsors, the credit quality of the sponsor may be linked to the size and stability of its income (e.g. central government grants and/or tax receipts) relative to its operating and debt/pension service costs. The credit strength of the sponsor will be influenced by the degree of control over its costs and its financial flexibility to cope with revenue shortfalls and cost increases as well as the commitment, if any, by government to support the IORP.

Questions to stakeholders:

Q15: Do stakeholders have other suggestions to adjust these ratios to cater for different sectors?

Q16: Does Stage 1 contain enough information and guidance for IORPs to calculate a credit strength that is proportionate for QIS purposes?

Q17: Does Stage 1 contain enough guidance for IORPs to do their own calculations if they believe this is appropriate for them to do so?

Q18: Are Income Cover and Asset Cover suitable credit ratios to use for Stage 1?

Q19: Are the parameters used to determine sponsor strength in Table 4 appropriate?

Q20: What other definitions of earnings or net assets could be used in sectors where the standard definitions are not appropriate?

#### 4.3. Stage 2 – Timing of sponsor contributions and probabilities of default

##### Stage 2A – timing of sponsor contributions

68. The period over which a sponsor could afford to pay contributions is not the same as the period over which they may be willing or obliged to pay contributions. In many cases, the sponsor's ability to pay will be different from its willingness or its obligation to pay.
69. The period over which contributions could be paid so that assets reach the required level for the purpose of assessing sponsor support for the holistic balance sheet (i.e. Level A technical provisions) will depend on the strength of the sponsor (determined in Stage 1):
- Strong sponsors should be deemed to be able to afford to pay contributions over a very short time period depending on the deficit (e.g. less than three years).
  - Weak sponsors may not be able to afford to pay contributions over a short time period, and will need a much longer period. For very weak sponsors with large IORP shortfalls, it is conceivable this period could be twenty years or more.
70. For any future QIS, this stage will look at how quickly a sponsor could afford to pay contributions. Short, medium and long periods are shown in Table 6. Each of these periods are suggested as possible ranges over which sponsors could be expected to be able to pay contributions. These will need to be tested in QIS calculations.

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

71. EIOPA also recognises that, in some cases, these periods may not be suitable. This could be the case where national supervisors may intervene in cases of very weak sponsors or for IORPs where national regulation imposes minimum or maximum contribution levels, where sponsor contributions are capped (e.g. 30% of pensionable pay) or where the sponsor is no longer viable. In these cases, IORPs with unlimited sponsor support should determine an appropriate range of periods and then use this

range under stage 3. Further analysis is needed on this matter in conjunction with the issue of supervisory responses.

**Stage 2B – Annual probabilities of default of the sponsor**

- 72. The technical specifications state that sponsor support should be valued on a market consistent basis by reference to the future cash flows that would be required to be paid by the sponsor to the IORP, in excess of its regular contributions, in order to ensure assets in the IORP meet a required level.
- 73. This requires two inputs:
  - Annual level of payments that would be required from the sponsor (obtained from Stage 3 below)
  - Annual probability of default of the sponsor
- 74. Stage 1 uses credit risk techniques to assess the overall strength of the sponsor, and its ability to meet the shortfall in Level A technical provisions. However, in order to place an actual value on sponsor support, it is still necessary to use the annual probabilities of default.
- 75. Annex 2 contains a suggested approach to choosing associated probabilities of default. For each level of sponsor strength in Stage 1, we suggest appropriate probabilities of default. Despite concerns over the use of credit ratings, credit rating providers still provide very useful and comprehensive data on default probabilities. An annual probability of default can be derived from 10 year cumulative default rates. The suggested probabilities for any future QIS work are set in Table 7 below.

<b>Table 7: Default probabilities</b>		
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%

- 76. For the purposes of any future QIS, IORPs could be allowed to make additional calculations in which they would apply their own estimate of the sponsor’s probability of default. In such a case, IORPs should be able to evidence the extent to which their own assessment is more appropriate than the default value.

Questions to stakeholders:

Q21: Are the periods shown in Stage 2 appropriate (bearing in mind this is for QIS work only, and not to determine a policy response)?

Q22: Do you agree that time periods for contributions for the QIS calculations for sponsor support should be based on affordability or should they be based on willingness/obligation to pay?

Q23: To what extent are there any IORPs whereby sponsor contributions cannot exceed certain limits (even if contributions are affordable)?

Q24: Are the annual probabilities of default appropriate for future QIS purposes? If not, why not?

#### 4.4. Stage 3 – Determining the annual level of contributions

77. Standard actuarial techniques can be used to determine the annual level of contributions required in order to meet the shortfall in Level A technical provisions.
78. Table 8 shows the annual contributions (expressed as a % of the shortfall) for the different payment periods shown in Stage 2. The calculations for this table were based on standard actuarial formulae and using a discount rate of 3% per annum, and using contributions paid uniformly over the payment period (which is why the figure for the 1 year period is higher than the actual shortfall).
79. IORPs should use the actual discount rate used to determine the technical provisions. The use of a 3% per annum discount rate below is therefore for illustrative purposes only. Similar tables could be produced by EIOPA in a future set of QIS technical specifications to allow for different discount rates or different currencies.

**Table 8: Annual contributions needed to meet shortfall (assuming no default)**

Credit strength	Period to meet shortfall (years):			Annual contributions (% 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%

Questions to stakeholders:

Q25: Do stakeholders have any comments on stage 3?

#### 4.5. Stage 4 – Calculating sponsor support

80. As sponsor support is the discounted value (with allowance for default risk) of future cash flow payments that would be required to be paid by the sponsor, standard actuarial techniques can then be used to calculate sponsor support. Essentially, the discounted value is obtained by discounting the required contributions at a higher discount rate (where the discount rate takes into account default probability). Table 9 shows the net discount rate, based on the standard actuarial formulae using an underlying risk-free interest rate of 3% pa (net discount rate =  $1.03 / \text{annual probability of survival} - 1$ ).<sup>13</sup>

Sponsor strength	Net discount rate for sponsor support calculation
Very strong	3.1%
Strong	3.2%
Medium strong	3.5%
Medium	4.6%
Weak	7.8%
Very weak	40.8%

81. Table 10 shows the value of sponsor support (as a % of any shortfall) based on the payment periods used in Stage 2 and the annual contributions used in Stage 3, and the net discount rates shown above.

Credit strength	Short	Middle	Long
Very strong	100.0%	99.9%	99.8%
Strong	99.9%	99.7%	99.6%
Medium strong	99.3%	98.8%	97.7%
Medium	96.3%	92.9%	87.1%
Weak	81.1%	68.4%	59.7%
Very weak	19.4%	14.7%	11.2%

#### Allowing for recoveries on default

82. The QIS technical specifications for sponsor support included an allowance for expected recoveries by the IORP on default (subject to a maximum of 50%). The figure of 50% may be too high and a rate of 5% may be more appropriate for a typical sponsor, although it might be very dependent on the nature of the sponsor. However, for the purpose of the QIS, 50% could be assumed.

<sup>13</sup> A discount rate of 3% is shown here as an illustration. Actual discount rates (weighted by cash flows) used will be determined by technical provisions, which will vary by country and by the method used to calculate technical provisions.

83. For simplicity, the proposed alternative approach set out here does not allow for recoveries from claims on the sponsor in the event of default.<sup>14</sup> However, they could be allowed for if thought necessary. Recoveries are only likely to have a material impact on the sponsor support where (a) there is a high expected level of recovery and (b) the probability of default is high. For strong sponsors, with very low probabilities of default, allowance for recoveries is likely to be immaterial. For very weak sponsors (i.e. with a strong probability of insolvency), the amounts that could potentially be recovered may be difficult to establish without doing detailed calculations assessing the impact of insolvency on the sponsor. Therefore, no recoveries are assumed in this stage of calculating sponsor support.
84. If IORPs are of the view that allowing for recoveries upon default would lead to a material change to the value of sponsor support, IORPs can do their own calculations of these expected amounts and provide details of the methodology used.

Questions to stakeholders:

Q26: Is it reasonable to not allow for any recoveries from sponsor defaults? Please provide examples where this could increase the calculated value of sponsor support.

#### **4.6. Stage 5 – Allowance for other group companies**

85. The sponsor support calculation should be based on the legal sponsor (or sponsors) of the IORP or on any guarantees from other group companies, including parent companies, where applicable
86. In practice, sponsor support may be enhanced by the sponsor being part of a much larger group of companies (for example, it is part of a multinational group where the parent company is based in another country). The support provided by other companies of the group can either be legally enforceable or not. In case it is legally enforceable, the calculations for valuing the share of other group companies in sponsor support should be done in the same way as for the support of the "main" sponsor, taking into account any commitment of those other group companies towards other IORPs, in order to avoid any multiple gearing.
87. There may be cases where support from other companies of the group is not legally enforceable. In such cases it may be possible to place some reliance on the wider group's "willingness" to support the IORP, particularly if certain circumstances are apparent or if the group has a history of doing this. In this case the same principles should apply as for the valuation of

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<sup>14</sup> The QIS technical specifications refer to recoveries in the context of default (see HBS 6.52, 7.11, and 7.33). It should be recognised, however, that a default event is not the same as an insolvency event. For more information please refer to the illustration on page 43 of Annex 1.

limited conditional sponsor support of the “main” sponsor, taking into account any commitment of those other group companies towards other IORPs, in order to avoid any multiple gearing.

88. The potential sponsor support from a wider group other than those with direct legal obligations to the IORP may be relevant, particularly where:
  - any changes to the legal sponsor(s) will also affect the financial position of the wider sponsor group, for example by removing entities from the group or transferring assets (whether within or outside the group);
  - the legal sponsor(s) have provided valid reasons why the IORP should take the financial position of the wider sponsor group into account when assessing the sponsor's financial position;
  - there is interdependency between entities in the wider sponsor group and the legal sponsor(s) which may affect the overall level of sponsor support.
89. Valuing only the legal obligations of the sponsor is helpful in providing some boundaries of the asset to be valued. However, value may also come from other sources within the group and be a significant or even vital addition to sponsor support in practice. Excluding non-legally bound sources of support might lead to a too pessimistic picture of the actual situation of the IORP, but it could also encourage sponsors to enter into a legally binding arrangement with the IORP for their support being taken into account, which could increase the level of protection of members and beneficiaries of the IORP.
90. IORPs and sponsors should remember, though, that only certain members of the wider sponsors group (i.e. legal sponsor(s) or those with contractual obligations) may be legally liable to contribute to the IORP (i.e. legal sponsor(s) or those with contractual obligations). Furthermore caution is necessary to avoid double gearing between group entities.
91. In Stage 5 IORPs could be asked to provide the following calculations:
  - Value of support to the IORP from other entities in the group where this is based solely on a legal obligation; and
  - Value of wider group sponsor support where this is not based on a legal obligation, but other entities within a group associated with the legal sponsors can be expected to provide support to the IORP, e.g. based on historical experience.
92. The results of the calculations above should be presented separately.
93. IORPs will need to exercise some judgement in determining the extent of support available from other entities in the wider sponsor group. If allowance has been made for group support, IORPs should document how they have allowed for this when carrying out the calculations.

Questions to stakeholders:

Q27: Is it appropriate to do separate calculations to allow for sponsor support from other group companies (both for legally enforceable and not legally enforceable support by group companies)?

Q28: Should any other guidance be included on how to allow for sponsor support from other group companies?

Q29: What could be other valid reasons why the IORP should or should not take the financial position of the wider sponsor group into account when assessing the sponsor's financial position?

#### **4.7. Stage 6 – Loss Absorbing Capacity**

94. Under the alternative approach proposed here, it is not necessary for IORPs to calculate a maximum value of sponsor support but IORPs may still need to calculate the loss-absorbing capacity to determine the solvency capital requirement (SCR). Whether IORPs do need to calculate the loss-absorbing capacity of sponsor support may depend on the ability of benefit adjustment mechanisms that take precedence over sponsor support to absorb the full gross SCR. The calculation for the SCR takes account of the ability for a sponsor to increase its support in response to an increase in liabilities and/or decrease in assets. In the QIS technical specifications, this is referred to as a loss-absorbing capacity, and was set equal to a change in value of sponsor support as a result of the shocks applied on the assets and the liabilities, capped by the maximum value of sponsor support minus the value of sponsor support already included in the holistic balance sheet.
95. In order to calculate the loss-absorbing capacity for sponsor support, IORPs should repeat the sponsor support calculations above but with the gross SCR minus the loss-absorbing capacity of benefit adjustment mechanisms that take precedence over sponsor support added to the IORP Shortfall figure used in Stage 1. For the avoidance of doubt, the SCR figure to be added should exclude SCR amounts relating to sponsor support counterparty default risk.
96. The implication of adding the gross SCR <sup>15</sup> to the IORP shortfall figure will be as follows:
- The IORP shortfall will increase.
  - The ability of the sponsor to support the increased IORP shortfall will worsen.

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<sup>15</sup> Gross SCR refers in paragraph 95 to gross SCR corrected for benefit adjustment mechanisms that take precedence over sponsor support in absorbing shocks.

- Under Stage 1, many IORPs will find that the sponsor strength is rated lower than when calculating sponsor support (before allowing for gross SCR).
- The calculation of sponsor support (allowing for the gross SCR) will then be based on higher default probabilities (in Stage 2) and longer payment periods (in Stage 3).
- The value of sponsor support (allowing for the gross SCR) in Stage 4 should then be obtained by multiplying the appropriate percentage against the overall shortfall (including gross SCR).
- The loss-absorbing capacity of sponsor support then equals the value of sponsor support (allowing for gross SCR) calculated above less the actual value of sponsor support in the holistic balance sheet.
- In cases where the value is negative, the loss-absorbing capacity for sponsor support should be set to nil.
- The loss-absorbing capacity should also be set to nil for sponsors where the sponsor support strength is very weak.
- Some medium or weak sponsors may find that the loss-absorbing capacity is positive. This is because the method of calculation means that even weak sponsors may be able to afford additional shortfall payments if they spread these over a longer period.

97. These calculations should be carried out where sponsor support is based on both the legal sponsor and the wider group.

Questions to stakeholders:

Q30: Is the approach to determining the loss-absorbing capacity appropriate?

#### **4.8. Stage 7 – Sensitivity analysis**

98. To analyse the sensitivity to changes in sponsor strength, default probabilities, and payment periods, it may be worth examining the results using different assumptions. For example, in any future QIS, IORPs may calculate the sponsor support with the following sorts of changes to the method of calculation:

- Sponsor strength in Stages 2-5 to be based on the strength that is two levels lower than that calculated in Stage 1 (e.g. very strong companies are treated as medium strong; medium sponsors are treated as very weak etc.). Weak and very weak sponsors should be regarded as very weak.
- Sponsor strength in Stages 2-5 to be based on the strength that is one level lower than that calculated in Stage 1 (e.g. very strong companies

are treated as strong; weak sponsors are treated as very weak etc). Very weak sponsors should continue to be regarded as very weak.

- Sponsor strength in Stages 2-5 to be based on strength that is one level higher than that calculated in Stage 1 (e.g. strong companies rate are treated as very strong; very weak sponsors are treated as weak). Very strong sponsors should continue to be regarded as very strong.
- Payment periods in Stage 2 to be calculated on each of the three periods shown (i.e. short, medium, long)
- Annual probabilities of default in Stage 2 are multiplied by 1.5
- Annual probabilities of default in Stage 2 are multiplied by 2.0
- Discount rate (instead of 3% or the relevant risk-free rates): plus/minus 1% and 1.5%)

99. These calculations should be carried out where sponsor support is based on both the legal sponsor and the wider group.

Questions to stakeholders:

Q31: Should any other sensitivity analysis be considered?

#### **4.9. Different types of sponsors**

100. Certain IORPs and sponsors will need to make adjustments to the proposed approach to take account of their own specific circumstances. The following outline the issues for some IORPs likely to have to do this.

##### **Not for profit institutions (e.g. charities, providents)**

101. These institutions have to be viewed in the light of their particular links (if any) to government or social policy and funding sources. While their finances are not generally organised to make a profit or "surplus", there is normally an annual report and accounts which have an income and expense account which is broadly equivalent to a P&L statement and a balance sheet (with "reserves" instead of "shareholder funds"). The "operating surplus" and "reserves" can be assessed in relation to the size of their financial burden to gauge the affordability thereof. Sector specific affordability ratios may be appropriate.

##### **Public sector IORPs**

102. IORPs backed by sponsors in the public sector will need to make adjustments depending on the nature of the sponsor in the public sector, and its ability to pay contributions to the IORP in all circumstances, including if the organisation is wound up.

## **Sponsors of multiple IORPs**

103. A few approaches are possible to assessing the sponsor risk:

- (1) analyse all IORPs together (but this is then difficult to calculate sponsor support for each IORP separately)
- (2) analyse each IORP separately and treat the other IORPs' shortfalls as debt-like items (this makes it hard to manage correlations)
- (3) analyse each IORP separately and treat the other IORPs' deficits as other creditors with pari passu ranking (which could then create an element of double counting).
- (4) analyse the IORP in aggregate and then do pro-rate adjustments to the income cover ratios for each IORP. E.g. if there are three IORPs each with shortfall of 100; the sponsor "cover" assigned to each IORP is 1/3 total of all schemes. (i.e. 33.3)

104. For sponsors with multiple IORPs we suggest that the aggregate approach (Option 4) is generally used, i.e. comparing the consolidated position of the IORP with the sponsor, although other approaches may be more suitable in some circumstances.

## **Multi-employer schemes**

105. The starting point is to determine whether or not the liability for the deficit or obligations of the IORP is split between the different sponsors in a pre-agreed manner ("partial segregation") or whether there is joint and several liability for the deficit or obligations across all employers ("last man standing").

106. In the former case, there will be multiple sponsor support available reflecting each sponsor's financial strength and each sponsor's portion of the technical provisions. In the latter case, it can be very complex as, theoretically, the weakest sponsor – even if it the largest – is expected to be the first to fail. In this case, its technical provisions would pass to the remaining sponsors and then the analysis can be repeated with the next weakest failing.

107. From an affordability perspective, it may be appropriate to determine sponsor strength by using weighted (e.g. by income) financial figures for all of the sponsors in Stage 1.

## **Industry wide schemes**

108. In a number of countries there are some industry wide schemes. These are in principle similar to multi-employer schemes above, but the risk may be somewhat different. For example, some multi-employer IORPs may have employers which may be directly connected financially. On the other hand, industry wide schemes may have financially independent sponsors, but the business risks they face may be highly correlated.

109. In cases where the schemes are organised in a “last man standing” manner, it may be appropriate to base the sponsor support on average financial strength across the industry. Further analysis is needed on how to determine such average financial strength.

Questions to stakeholders:

Q32: Are there any other types of sponsors that should be included?

Q33: What additional work should be carried out if this methodology was to be used for determining sponsor support in a regulatory or supervisory environment?

Q34: What other improvements could be made to the suggested approach?

Q35: Are there any aspects of the suggested approach which are unclear?

Q36: How could the average financial strength of an industry be determined?

## **5. Summary of Questions**

### **General valuation principles**

Q1: Should IORPs be provided with additional guidance for conducting stochastic valuations of sponsor support?

Q2: Should IORPs be provided with additional guidance for conducting valuations of sponsor support using either Simplification 1 or 2? Should either of these simplifications be removed or should any other simplification be developed?

Q3: In the stakeholders' view what role should the concept of maximum sponsor support play in the general valuation principles for sponsor support?

Q4: Is wage an appropriate additional measure for estimating the maximum amount of sponsor support? If so, please explain why? Are there any other measures which could be used to assess the maximum sponsor support?

Q5: Are stakeholders comfortable with the concept of linking default probabilities, credit ratios and sponsor strength?

Q6: Do stakeholders agree with exploring the possibility of including a standard table in the technical specifications that links credit ratios with default probabilities?

Q7: Do stakeholders have other suggestions to derive default probabilities of the sponsor and to reduce reliance on credit ratings?

Q8: Do stakeholders agree that timing of sponsor support reflecting the affordability of making additional payments could be an improvement to the general principles for valuing sponsor support?

Q9: Do stakeholders think that limited conditional sponsor support should be valued and included on the holistic balance sheet? Should it be included separately?

Q10: Should more detailed guidance be provided in future technical specifications to value sponsor support that is subject to discretionary decision-making processes? If yes, please explain in what way. Could the suggested detailed guidance also be applied to benefit adjustment mechanisms that contain discretionary elements?

### **Alternative approach - general**

Q11: Please provide your general comments on the alternative approach.

Q12: Does the alternative approach address the concerns raised during the previous consultation on the technical specifications?

Q13: Are there any areas that have not been addressed adequately enough?

Q14: Are IORPs still likely to want to calculate a maximum value of sponsor support (even if not required under the alternative approach)? If so, for what purpose?

### **Alternative approach – stage 1**

Q15: Do stakeholders have other suggestions to adjust these ratios to cater for different sectors?

Q16: Does Stage 1 contain enough information and guidance for IORPs to calculate a credit strength that is proportionate for QIS purposes?

Q17: Does Stage 1 contain enough guidance for IORPs to do their own calculations if they believe this is appropriate for them to do so?

Q18: Are Income Cover and Asset Cover suitable credit ratios to use for Stage 1?

Q19: Are the parameters used to determine sponsor strength in Table 4 appropriate?

Q20: What other definitions of earnings or net assets could be used in sectors where the standard definitions are not appropriate?

### **Alternative approach – stage 2**

Q21: Are the periods shown in Stage 2 appropriate (bearing in mind this is for QIS work only, and not to determine a policy response)?

Q22: Do you agree that time periods for contributions for the QIS calculations for sponsor support should be based on affordability or should they be based on willingness/obligation to pay?

Q23: To what extent are there any IORPs whereby sponsor contributions cannot exceed certain limits (even if contributions are affordable)?

Q24: Are the annual probabilities of default appropriate for future QIS purposes? If not, why not?

### **Alternative approach – stage 3**

Q25: Do stakeholders have any comments on stage 3?

#### **Alternative approach – stage 4**

Q26: Is it reasonable to not allow for any recoveries from sponsor defaults? Please provide examples where this could increase the calculated value of sponsor support.

#### **Alternative approach – stage 5**

Q27: Is it appropriate to do separate calculations to allow for sponsor support from other group companies (both for legally enforceable and not legally enforceable support by group companies)?

Q28: Should any other guidance be included on how to allow for sponsor support from other group companies?

Q29: What could be other valid reasons why the IORP should or should not take the financial position of the wider sponsor group into account when assessing the sponsor's financial position?

#### **Alternative approach – stage 6**

Q30: Is the approach to determining the loss-absorbing capacity appropriate?

#### **Alternative approach – stage 7**

Q31: Should any other sensitivity analysis be considered?

#### **Alternative approach – Types of sponsors**

Q32: Are there any other types of sponsors that should be included?

Q33: What additional work should be carried out if this methodology was to be used for determining sponsor support in a regulatory or supervisory environment?

Q34: What other improvements could be made to the suggested approach?

Q35: Are there any aspects of the suggested approach which are unclear?

Q36: How could the average financial strength of an industry be determined?

## Annex 1 – Credit ratings and default probabilities

Credit ratings normally refer to credit worthiness scores or rankings from one of the big three global credit rating agencies of Standard & Poor's (S&P), Moody's and Fitch. Credit ratings are based on "expert judgment" which incorporates business and financial analysis. There is no direct link between the ratings of the big three agencies although they are generally quite close to one another as they use similar rating methodologies and have similar rating scales.

Credit ratings are normally applied to bond issues or bank loans issued by large companies and they facilitate transparency and liquidity of these financial assets as they provide investors with a means comparing the credit risk of different assets on a standardised rating scale (generally AAA to CCC).

The big three rating agencies monitor the accuracy or performance of their ratings and publish data on an annual basis which shows the default rate of each rating grade as well as the tendency for ratings to change or transition (i.e. be upgraded, downgraded or stay at the same level). This is the great advantage of credit ratings – i.e. they are backed up by default and transition data which is not the case for most other credit scores.

Note that default rates for all rating categories are highly correlated with the business cycle and therefore long-term average default rates can be very misleading as is evidenced by the standard deviation of S&P default rates in Chart 1 below and the cyclical spikes in Chart 3.

Chart 1: Actual default rates as published by Standard & Poor's				
Credit Risk	Rating	1 year Global Average Corp Cumul. Default Rates (%)	10 year Global Average Corp Cumul. Default Rates (%)	Comment
Extremely low	AAA	0.0% std dev 0.0%	0.78% std dev 0.21%	Tiny AAA data set and largely irrelevant for QIS purposes
Medium	BBB	0.24% std dev 0.06%	4.88% std dev 0.84%	Note non-linearity
Extremely High	CCC/C	26.82% std dev 6.99%	51.65% Std dev 6.46%	Note non linearity and wide std dev in Year 1

Source: S&P Default Study March 2012

## Limitation of credit ratings

Most credit ratings are issued to large/global/parent companies that need to borrow from international bond markets and, therefore, most of the small and medium sized companies that sponsor IORPs will not have a credit rating.

Even if the parent company of an IORP sponsor is rated it is not appropriate to use the credit rating of the parent company as a proxy for that of the sponsoring entity (e.g. a subsidiary in another country) unless there is a legal guarantee from the parent company to the IORP sponsor.

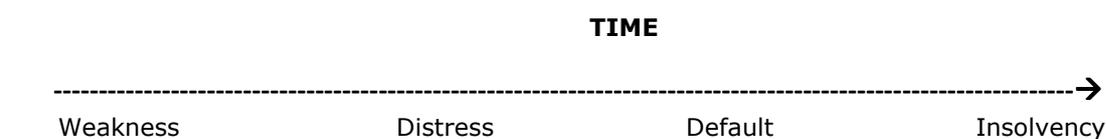
Where credit ratings exist for a sponsor, they are often in relation to bond issuance which may imply different risks to that of the sponsor in relation to its IORP.

For historical reasons, most rated entities are US companies and the bulk of historical global default and transition data relates to US companies. The data set for Europe or any specific European country (e.g. Germany) is much less comprehensive and has a much shorter history. Therefore, it may not be appropriate to assume that ratings of European entities will have the same default and transition rates as their US counterparts for which the agencies have large data sets and long time-series of historical data e.g. 30 years.

Historical default and transition data needs to be interpreted with care. For example, according to S&P statistics<sup>16</sup> 0.24% of BBB rated companies defaulted over the first year, while over 10 years the rate was close to 5.0% (i.e. an average of about 0.5% per annum). Using the first year default rate is not indicative of the average one year default rate.

All default rates published in the annual performance reviews by the big three rating agencies are generally very long term averages (i.e. over 30 years which typically covers a number of business cycles). The peak and trough default rates can be multiples or fractions of the average rates. In other words, while around 5% of BBB rated companies have defaulted, on average, over a 10 year period, the range can vary from around 2% in a benign 10 year period (boom) to 15% in a recessionary period (bust).

Credit ratings measure the risk of default which is not the same as risk of insolvency, which is more relevant for assessing the value of sponsor support (see illustration below).



<sup>16</sup> 2011 Rating Performance Study from S&P.

Not all defaults lead to insolvency. For example, a company may default on its corporate bonds or bank loans due to financial pressures, but a bank may choose to adjust the terms of the loans and thereby enable the company to restructure its debt service commitments and avoid insolvency.

While S&P, Moody's and Fitch use comparable rating scales, the historic default rates can vary (see Chart 4 below). Therefore, the choice of rating agency may influence the default rate.

The UK has with 400 entities the largest number of corporate entities rated by S&P. This compares with about 6,400 UK defined benefit IORPs. Of course, some of these UK rated entities may not be the direct sponsor of an IORP in the UK and often the actual sponsor is a subsidiary thereof and does not have its own credit rating.

## Annex 2 – Calibration of probabilities of default

With regard to choosing an appropriate probability of default, the following approach is suggested. The 7 credit quality steps as suggested in HBS.6.15 could be collapsed into 6 steps (see Chart 2 below) with an additional step for "unrated" entities. The reason for this suggestion is that there are only a handful of companies worldwide that have either a AAA or AA rating.

Therefore, the first two credit steps as suggested in HBS 6.15 covering AAA/AA ratings could easily be collapsed into one step labelled "very strong". Similarly, the next 5 credit quality steps could be labelled, "medium/strong", "medium", "weak", and "very weak" with an additional new step for "unrated".

**Chart 2: Suggested credit steps**

Credit step	Credit definition	Suggested 1 year Pd	1 year Pd based on*	First year Pd	Credit rating equivalent
1	Very strong = VS	0.08%	10 yr cumul. rate / 10	0.01%	AAA/AA
2	Strong = S	0.18%	10 yr cumul. rate / 10	0.08%	A
3	Med/Strong = M+	0.49%	10 yr cumul. rate / 10	0.24%	BBB
4	Medium = M	1.56%	10 yr cumul. rate / 10	0.90%	BB
5	Weak = W	4.48%	First year rate	4.48%	B
6	Very weak = VW	26.82%	First year rate	26.82%	CCC
7	To be det = TBD	tbd			Unrated

\* S&P – Observed default rates – global basis (March 2012 Default Study)

For the first 4 credit steps, 1 year Pds should be used. These are based on the 1 year default rates averaged over a 10 year time horizon rather than the "year 1" default rates, as the latter are lower than the average of the credit risk that is evidenced over the longer term (see Chart 5) and the methodology is not allowing for any transitions from the starting credit level.

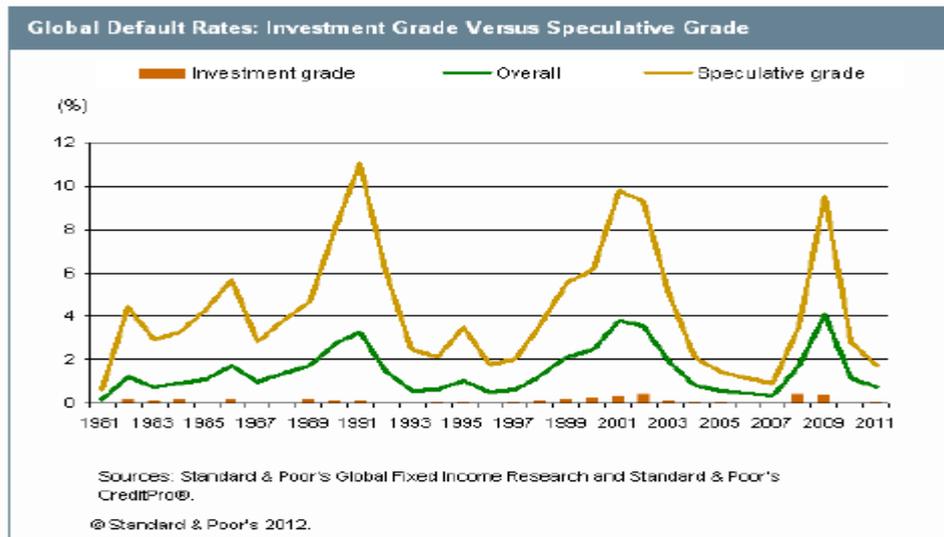
A 10 year time horizon appears to be long enough to even out any single year anomalies, (although longer term averages could be used to derive the 1 year rates). For example, for Credit Step 3 (Medium/Strong) which is broadly equivalent to a "BBB" credit rating, a 1 year Pd of 0.488% - based on the 10 year cumulative default rate of 4.88% - is more reflective of the credit risk for Medium/Strong sponsors than the year 1 (first year) default rate of 0.24% which is much lower than the average rate.

For the "weak" and "very weak" Credit Steps 5 and 6, the year 1 default are higher than the long-term average rates and, therefore, may be left un-altered as these are conservative rates compared to the long-term average rates (see Chart 5).

### Constant rate of default over time (HBS 7.27)

The above-mentioned 1 year Pds are based on long term averages which covers many business cycles. However, looking at historical data from Standard & Poor's (see Chart 3 below), we can see that the default rates follow the business cycle and are very sensitive to peaks and troughs of economic activity (i.e. defaults are highly correlated with the business cycle).

**Chart 3: Default rates vary considerably over the business cycle**



Source: S&P Default Study March 2012

For example, the peak and trough default rates can be multiples or fractions of the average rates. For example, the 1 year default rate of speculative grade companies (i.e. those rated below BBB-) varied between 1% and 10% as can be seen from the chart above.

Therefore, it seems unreasonable to assume constant 1 year default probabilities over time. However, as a simplification, it may be a good starting point as long as some sensitivities are looked at as well. It is suggested using 1 year Pds that are based on a long-term average 1 year rate, say over 10 years as above, as opposed to the first year actual (observed) rate as the latter does not appear to be representative of the longer term credit risk involved. Such rates could be calculated from data suitable for the specific valuation date.

### Using default rates derived from credit ratings to generate Pds

The above comments on credit ratings may be summarised as:

Advantages:

- Ratings are a widely accepted approach to long term creditor analysis used in bank/bond markets

- Ratings are normally interactive and may incorporate confidential forward looking information
- Ratings are linked to historic default rates and can provide an estimate of future default likelihood

Disadvantages:

- Very few IORP sponsors are rated in Europe (e.g. only 400 ratings in the UK)
- Historic default data is mainly related to US companies and needs careful interpretation
- The choice of rating agency (S&P, Moody's or Fitch) will influence observed Pds (see Chart 4 below)

<b>Chart 4: Default Rates for Comparable Rating Grades</b>				
Credit Rating	S&P* 10 Year Corporate bond Default Rate %	Moody's* 10 Year Corporate bond Default Rate %	Fitch* 10 Year Corporate bond Default Rate %	Comment
A	1.77	2.48	2.23	Some variation
BBB	4.88	4.66	5.64	Reasonably similar
BB	15.59	20.71	17.81	Some variation
B	28.70	42.3	17.93	Huge variation
CCC/C	51.65	69.06	43.93	Large variation
* S&P data history 1981-2011; Moody's data history 1983-2012; Fitch's data history 1990-2011				
Sources: S&P, Moody's and Fitch Default Studies (2012)				

### Calibration of Credit Steps

As can be seen from the Standard & Poor's default table in Chart 5 below, the first year default rate (year 1) is generally much lower than the average 1 year default rate (e.g. year 10 cumulative default rate divided by 10). For example, for BBB rated companies the first year default rate is 0.24% whereas the average 1 year default rate derived from the 10 year cumulative rate is double that at 0.488% (i.e. 4.88/10).

Therefore, it may be appropriate to use a 1 year average default rate derived from the 10 year cumulative rate (rather than the first year default rate) for smoothing purposes for the low default AAA to BB grades which have reasonably linear cumulative default rate frequencies.

However, for the high risk, high default grades (B and CCC), it may be appropriate to use the first year default rates which are much higher than the average 1 year rate derived from the 10 year cumulative rates. For example, a B rated company has a first year (year 1) default rate of 4.48% which is much higher than the 2.87% derived from 10 year rate.

**Chart 5: Standard & Poor's – 2012 Default Study**

Global Corporate Average Cumulative Default Rates (1981-2011)															
	--Time horizon (years)--														
(%)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
AAA	0.00	0.03	0.14	0.25	0.37	0.49	0.55	0.64	0.71	0.78	0.81	0.85	0.89	0.97	1.06
	(0.00)	(0.01)	(0.07)	(0.13)	(0.19)	(0.26)	(0.28)	(0.28)	(0.24)	(0.21)	(0.20)	(0.19)	(0.18)	(0.19)	(0.20)
AA	0.02	0.07	0.14	0.26	0.37	0.49	0.60	0.69	0.77	0.86	0.94	1.01	1.09	1.17	1.23
	(0.01)	(0.03)	(0.04)	(0.09)	(0.15)	(0.22)	(0.29)	(0.37)	(0.38)	(0.41)	(0.43)	(0.47)	(0.44)	(0.42)	(0.41)
A	0.08	0.18	0.32	0.48	0.66	0.86	1.10	1.31	1.53	1.77	1.97	2.14	2.30	2.45	2.66
	(0.02)	(0.04)	(0.05)	(0.08)	(0.09)	(0.10)	(0.13)	(0.16)	(0.24)	(0.36)	(0.49)	(0.53)	(0.55)	(0.53)	(0.53)
BBB	0.24	0.67	1.13	1.71	2.30	2.88	3.38	3.88	4.38	4.88	5.41	5.85	6.30	6.76	7.22
	(0.06)	(0.14)	(0.17)	(0.24)	(0.31)	(0.41)	(0.50)	(0.59)	(0.73)	(0.84)	(0.93)	(0.82)	(0.67)	(0.53)	(0.43)
BB	0.90	2.70	4.80	6.80	8.61	10.34	11.85	13.21	14.49	15.59	16.49	17.29	17.97	18.55	19.24
	(0.31)	(0.56)	(0.83)	(1.20)	(1.69)	(2.30)	(2.29)	(2.43)	(2.78)	(3.04)	(3.51)	(3.55)	(3.56)	(3.36)	(3.23)
B	4.48	9.95	14.57	18.15	20.83	23.00	24.76	26.19	27.46	28.70	29.77	30.65	31.47	32.22	33.01
	(0.94)	(1.98)	(2.21)	(2.44)	(2.91)	(2.87)	(3.01)	(3.19)	(3.13)	(2.78)	(2.21)	(2.13)	(2.00)	(2.15)	(2.34)
CCC/C	26.82	35.84	41.14	44.27	46.72	47.82	48.79	49.66	50.77	51.65	52.42	53.28	54.24	55.13	55.13
	(6.99)	(7.19)	(8.32)	(9.21)	(9.33)	(7.91)	(8.14)	(8.15)	(7.82)	(6.46)	(6.62)	(6.73)	(6.54)	(5.22)	(5.22)
Investment grade	0.12	0.33	0.57	0.86	1.17	1.47	1.76	2.03	2.30	2.57	2.82	3.04	3.25	3.46	3.69
	(0.03)	(0.06)	(0.10)	(0.13)	(0.16)	(0.16)	(0.18)	(0.22)	(0.29)	(0.40)	(0.49)	(0.49)	(0.45)	(0.39)	(0.34)
Speculative grade	4.21	8.23	11.74	14.56	16.82	18.72	20.31	21.68	22.93	24.08	25.06	25.89	26.65	27.33	28.03
	(0.98)	(1.41)	(1.73)	(1.85)	(1.86)	(1.61)	(1.68)	(1.68)	(1.53)	(1.37)	(1.30)	(1.28)	(1.28)	(1.23)	(1.20)
All rated	1.57	3.10	4.47	5.62	6.58	7.41	8.12	8.73	9.30	9.83	10.29	10.68	11.05	11.38	11.74
	(0.38)	(0.60)	(0.82)	(0.94)	(0.99)	(0.93)	(0.95)	(0.88)	(0.78)	(0.61)	(0.47)	(0.47)	(0.49)	(0.55)	(0.61)

Note: Numbers in parentheses are standard deviations. Sources: Standard & Poor's Global Fixed Income Research and Standard & Poor's CreditPro®.

## **Annex 3 – Alternatives to Credit Ratings**

As most sponsors of European IORPs are not rated, it may be appropriate to look at alternative means of generating a Pd.

### Credit rating estimates for large companies and SMEs.

For large unrated companies, agencies such as S&P and Moody's have proprietary mathematical models which can produce credit estimates (e.g. normally designated "bbb" rather than "BBB"). These rating estimates are produced by sophisticated models that have been based on the universe of rated companies to recognise financial parameters such as interest cover that are predictive of rating outcomes.

These models are normally sector based (e.g. manufacturing, services, petrochemicals) and can be used to generate a rating estimate for companies with sales above a minimum threshold e.g. \$25m. Some agencies have already produced credit estimates on some unrated companies. For example, S&P has already produced rating estimates on over 6,000 Western European companies. The advantage of these models is that the credit rating estimates have similar characteristics of credit ratings in that they can be linked to default rates and have similar levels of stability from year to year. IS&P and/or Moody's licence their models/data for third party use.

For SMEs, as opposed to large companies, S&P also has a look up database of rating estimates covering more than 1.5 million European SMEs covering the UK, Germany, Spain, Italy and Greece (i.e. those European countries where they have access to suitable company data). These estimates provide a link to rating agency default rates and transition matrices. Moody's can also supply rating estimates where there is sufficient data to train their models.

### Credit Scoring Organisations

Specialist firms, such as Dun & Bradstreet and Company Watch, produce information on the credit quality of companies at subsidiary levels. For example, D&B track payments of trade receivables (e.g. average of 19 days overdue) and can provide a Failure Score which is a country-based ranking on a scale of 1 to 100 across most European countries. D&B produces trade credit scores (like the credit insurers – see below), but do not offer the supplier insurance element. D&B have scores on most companies in Europe who file accounts with the relevant national body (e.g. Companies House in the UK).

However, it is not clear that these scoring organisations (as with trade credit insurers) have data which provides a robust link to a default rates (i.e. they are primarily a relative ranking of trade credit risk), although it might be possible. Unlike credit ratings, credit scores are not generally very stable. For example,

unlike credit ratings, a one year dip in profits will normally result in a one year dip in the D&B score. Another scoring organisation, Company Watch, provides "Health Scores" based on publicly available information (mainly annual report and accounts). Other organisations provide similar types of assessment.

### Trade Credit Insurer Scores

Across Europe, there are a number of credit insurers such as Coface and Euler Hermes, who monitor the credit risk of companies and produce credit scores and provide suppliers (vendors) with the ability to insure against credit losses. The disadvantage of these scores is that they cannot normally be linked directly to default rates and the scores may be unstable (i.e. they can change materially from year to year e.g. 81/100 in year 1, 35/100 in year 2, 90/100 in year 3 etc).

### UK Sponsor Covenant Assessments

Many UK trustee bodies who govern large IORPs will have already engaged a professional services firm to independently assess and monitor the sponsor covenant of their IORP in line with the Pensions Regulator's recommendations. Covenant assessors will typically use a 5 point covenant scale such as "strong", "medium/strong", "medium", "medium/weak" and "weak". These covenant assessments normally incorporate a qualitative and quantitative view of the long term financial strength of the sponsor in relation to its financial liabilities including pension deficit. In this way they are similar to credit ratings in assessing long-term "creditworthiness" and it may be possible to map covenant assessments to a credit rating and/or a Pd, although this is not generally done as part of the current assessment process. For example, a "medium/strong covenant" from a reputable firm may equate to a "BBB" credit rating which can then be used to estimate a Pd if needed.

The advantages of using independent sponsor covenant assessments are:

- Similar conceptual approach to that used by credit rating agencies and bank lenders
- Most sponsors of UK IORPs have had a covenant assessments by an external advisor
- Transparent and relative stability of outcomes

The disadvantages are:

- Covenant assessment are not common outside the UK
- No standard analytical approach or definition of covenant scale
- The cost for small IORPs and their sponsors.