

# **Report on QIS on IORPs**

# Table of Contents

<b>Executive summary</b>	<b>4</b>
<b>1 Introduction</b>	<b>11</b>
1.1 Background	11
1.2 EIOPA's advice on the Review of the IORP Directive	12
1.3 Technical specifications	12
<b>2 Conduct of QIS exercise</b>	<b>13</b>
2.1 Spreadsheets and launch event	13
2.2 Participation in QIS	14
2.3 Coordination at EIOPA	15
2.4 Validation and aggregation	15
<b>3 Context of results</b>	<b>17</b>
3.1 Comparability and transparency	17
3.2 Supervisory responses	18
3.3 Uncertainty and variation in outcomes	19
3.4 Further work	20
3.5 Interpreting and understanding the results	22
<b>4 Current regime</b>	<b>23</b>
4.1 Description QIS sample	23
4.2 Security and benefit adjustment mechanisms	25
4.3 Results current supervisory regimes	27
<b>5 The benchmark scenario (set 3)</b>	<b>30</b>
5.1 Benchmark set 3A	31
5.1.1 Overall impact	31
5.1.2 Assets	38
5.1.3 Technical provisions	39
5.1.4 Level B best estimate	40
5.1.5 Sponsor support and pension protection schemes	42
5.1.6 Recoverables from insurance contracts	45
5.1.7 Solvency capital requirement	45
5.2 Benchmark set 3B	48
5.2.1 Overall impact	48
5.2.2 Assets	55
5.2.3 Technical provisions	56
5.2.4 Level B best estimate	57
5.2.5 Sponsor support and pension protection schemes	59
5.2.6 Recoverables from insurance contracts	61
5.2.7 Solvency capital requirement	61
<b>6 Upper bound scenario (set 1)</b>	<b>64</b>
6.1 Overall impact	64
6.2 Technical provisions	69
6.3 Solvency capital requirement	70
<b>7 Lower bound scenario (set 2)</b>	<b>71</b>
7.1 Lower bound set 2A	72
7.1.1 Overall impact	72
7.1.2 Technical provisions	74
7.1.3 Sponsor support and pension protection scheme	75
7.1.4 Solvency capital requirement	76
7.2 Lower bound set 2B	76
7.2.1 Overall impact	76
7.2.2 Technical provisions	79
7.2.3 Sponsor support and pension protection scheme	80
7.2.4 Solvency capital requirement	81
<b>8 Sets with specific options</b>	<b>81</b>

8.1	Convergence speed of 40 years (set 4).....	83
8.2	Include CCP of 100 bps (set 5) .....	85
8.3	Matching adjustment (set 6 and 7) .....	87
8.4	Risk margin (set 8 and 9) .....	88
8.5	Include discretionary benefits (set 10) .....	91
8.6	Exclude mixed benefits (set 11) .....	91
8.7	Pension protection schemes (set 12 and 13).....	92
8.8	Exclude ex post benefit reductions (set 14) .....	94
8.9	Sponsor support as ancillary own fund (set 15).....	96
8.10	Equity dampener (set 16 and 17) .....	97
8.11	Exclude inflation module (set 18) .....	100
<b>9</b>	<b>Analysis of pension protection schemes on HBS.....</b>	<b>101</b>
9.1	Background.....	101
9.2	Reasons for setting up a pension protection scheme .....	101
9.3	General description of risks connected to pension protection schemes.....	102
9.4	Description of different pension protection schemes .....	105
9.5	Conclusion .....	109
<b>10</b>	<b>Methods and participants' assessments .....</b>	<b>110</b>
10.1	Best estimate of technical provisions .....	110
10.2	Sponsor support and pension protection schemes.....	118
10.3	Recoverables from insurance contracts .....	124
10.4	Solvency Capital Requirement.....	125
10.5	Assessment holistic balance sheet .....	133
10.6	Overall assessment and improvement.....	134
<b>11</b>	<b>Practicability and impressions of IORPs .....</b>	<b>135</b>
11.1	Suggestions for improvement .....	135
11.2	Practicability and resources .....	136
11.3	First impressions from IORPs .....	137
	<b>Annex A: QIS results baseline scenarios .....</b>	<b>138</b>
	<b>Annex B: Summary of current pension systems .....</b>	<b>144</b>
	<b>Annex C: National QIS process and system .....</b>	<b>150</b>

## Executive summary

This report presents the results of the quantitative impact study (QIS) on Institutions for Occupational Retirement Provision (IORPs) conducted by EIOPA. This study was undertaken at the request of the European Commission in order that stakeholders might better understand the quantitative impact of the different options for the holistic balance sheet approach included in EIOPA's Advice on the Review of the IORP Directive.

This first QIS is an important step in developing a better understanding of the financial position of European IORPs providing defined benefit and hybrid pensions. The ability of many IORPs to provide such benefits is under significant pressure as a result of historically low interest rates, market volatility, improving longevity as well as economic pressure on participants and sponsoring employers. The holistic balance sheet which underlies this QIS is an opportunity to develop an explicit and risk based measurement of all of the elements which affect the cost of providing benefits as well as all mechanisms which fund those benefits or contribute to their security. Although there is much further work needed to improve these measures, these QIS results represent a considerable improvement in the transparency and comparability of pension provision and funding by IORPs.

A supervisory framework not only comprises the prudential balance sheet, but also the set of responses by supervisors. The technical specifications for the QIS did not model the timing of sponsor support and benefit adjustment mechanisms and the nature of recovery plans. As such, this QIS cannot be considered a full assessment of a comprehensive supervisory framework.

This QIS report represents the results of the combined efforts of many people in the participating countries. EIOPA would like to record its appreciation of all of these contributions.

## Participation

The QIS was conducted between mid-October and 17 December 2012 in eight European countries: Belgium, Germany, Ireland, Netherlands, Norway, Portugal, Sweden and the United Kingdom. However, the Portuguese supervisory authority has decided not to publish the results due to material limitations on the quality and completeness of the calculations performed.

The QIS analyses the impact of EIOPA's advice on IORPs that provide defined benefit or hybrid schemes. This means that IORPs that only provide pure DC schemes are excluded from the scope. The seven countries included in this QIS report represent about 95% of defined benefit liabilities of IORPs in Europe.

Nearly one hundred IORPs completed the QIS exercise or provided their input to the supervisor. These IORPs represent a substantial market share in terms of assets, as generally it was larger IORPs that participated. Overall more than 6,500 IORPs were assessed in the study, as the UK supervisor performed the calculations for all defined benefit IORPs in the UK.

## Comparability and transparency

The QIS exercise is a first attempt to test the holistic balance sheet approach, which aims to make prudential balance sheets of IORPs comparable and transparent across Europe.

IORPs in different member states dispose of a wide range of security mechanisms (such as sponsor support and pension protection schemes) and adjustment mechanisms (such as discretionary and conditional benefits and last resort benefit reductions). These mechanisms are usually taken into account in national prudential regulation, but not necessarily on a quantitative basis. The current IORP Directive also allows for a wide range of national rules for valuing pension liabilities and funding requirements.

The holistic balance sheet as proposed in EIOPA's advice requires all assets and liabilities to be included on a market consistent valuation basis. It also includes all security and benefit adjustment mechanisms in an explicit way. The holistic balance sheet therefore provides stakeholders in IORPs with a transparent view of the extent to which pension obligations can be supported by financial assets and security mechanisms and the extent to which benefit adjustments may occur, not only under 'normal' circumstance, but also in stressed situations as measured by the solvency capital requirement (SCR).

The Commission's technical specifications contain three main scenarios: an 'upper bound', a 'lower bound' and a 'benchmark' scenario. A further 15 sets test individual options from EIOPA's advice against the benchmark scenario.

## Benchmark scenario

In the benchmark scenario (set 3) IORPs were requested to include all security and benefit adjustment mechanisms on the holistic balance sheet. All assets and liabilities had to be valued on a market-consistent basis by discounting future cash flows using the basic risk-free interest rate.

IORPs were requested to take into account ex post benefit reductions and benefit reductions in case of sponsor default, if allowed for under national legislation. Participants interpreted the technical specifications in different ways, depending on national specificities. IORPs in the Netherlands included ex post benefit reductions, the UK did not take into account benefit reductions in case of sponsor default and Ireland prepared two sets of calculations, with and without ex post benefits reductions. The other countries do not allow for these reduction mechanisms in their national systems.

To enhance comparability, but without claiming that the outcomes will be directly comparable, the report presents two groups of results for the benchmark:

- Set 3A excludes ex post benefit reductions and reductions in case of sponsor default. All participating countries are included in this set.
- Set 3B includes ex post benefit reductions and reductions in case of sponsor default. No results for the UK are shown in this set.

The results for Belgium, Germany, Norway and Sweden are the same in both groups as these countries do not allow for these reduction mechanisms.

The main elements of the assessment of the holistic balance sheet in the benchmark scenario are the valuation of technical provisions, the valuation of sponsor support and pension protection schemes and the calculation of the SCR.

## Technical provisions

A market-consistent valuation of liabilities ensures an adequate pricing of guarantees contained in occupational pension schemes. Technical provisions increase by 20 to 70% in five out of seven member states in the benchmark set 3A. Many IORPs in Belgium, the Pensionsfonds in Germany and IORPs in Ireland and the UK use a discount rate based on the expected return on assets, which exceeds the basic risk-free interest rate curve. The same holds true for the fixed discount rates employed by German Pensionskassen.

The Netherlands already use an adjusted interest rate swap curve that is comparable with the one in the benchmark scenario. A more important reason for the increase in the best estimate in the Netherlands is the inclusion in technical provisions of mixed benefits in this QIS. The basic risk-free interest rate curve results in a modest decrease of liabilities in Norway and Sweden, as its level is slightly higher than the current discount curves used in these countries.

A risk margin had to be included to establish a market value for pension obligations that cannot be replicated on financial markets. The inclusion of the risk margin in technical provisions has a upward effect on the value of liabilities in all countries.

Technical provisions decrease in Ireland and the Netherlands in the benchmark set 3B that includes ex post benefit reductions. In the Netherlands the value of ex post benefit reductions amounts to almost 20% of current liabilities, and in Ireland to 75% of current technical reserves.

## Sponsor support and pension protection schemes

The inclusion of sponsor support as an asset on the holistic balance sheet may compensate for the increase in technical provisions. This is particularly true in Germany and the UK where the value of sponsor support on the holistic balance sheet ranges from about 15% to 30% of liabilities.

The contribution of the pension protection schemes that cover German Pensionsfonds and UK IORPs is relatively modest relative to aggregate liabilities. The default risk of pension protection schemes was assumed to be zero in the technical specifications. The report provides an analysis of the pension protection schemes, which concludes that the assumption of zero default risk was acceptable for the purpose of this QIS.

In Belgium many IORPs dispose of unlimited sponsor support, but its average value is negligible. There is a lot of variation underlying this average with the reported value of sponsor support ranging from -44% to 35% of liabilities. IORPs which dispose of surpluses have included a negative value for sponsor support on the holistic balance sheet as it is expected that these excess funds will be returned to the sponsor in the future in the form of lower contributions. Two large IORPs have no (effective) recourse to sponsor support. In Sweden a few participating IORPs have recourse to unlimited sponsor support. However, the dependence on future sponsor contributions is small as IORPs are well-funded with financial assets.

In Ireland and Norway no value for sponsor support is reported, since the employer can choose not to provide support. In the Netherlands sponsor support arrangements are often also dependent on a discretionary decision-making process. Still, Dutch IORPs recognised a considerable value for sponsor support.

## **Solvency capital requirement (SCR)**

QIS participants were requested to calculate the solvency capital requirement. This measures the amount of capital needed as cover for unexpected losses, under a given confidence level, derived from risks on the asset and liability sides of the balance sheet, and the extent to which they can be absorbed by security and benefit adjustment mechanisms of IORPs.

The SCR with a confidence level of 99.5% ranges from 0% to 35% of liabilities in the benchmark set 3A. Market risk contributes the most to the SCR followed by pension liability risk and, where the sponsor provides unlimited support, counterparty default risk. Interest rate risk followed by equity risk are the most important components of the SCR for market risk; longevity risk is the most important component of pension liability risk.

Pensionsfonds in Germany are able to reduce the SCR to zero through the loss-absorbing capacity of sponsor support and pension protection schemes, the latter effectively absorbing all residual risk. In Ireland on the other hand the loss-absorbing capacity of adjustment and security mechanisms is zero. Pensionskassen in Germany and IORPs in other countries are able to partially reduce the SCR through the loss-absorbing capacity of technical provisions and security mechanisms.

The inclusion of ex post benefit reductions in benchmark set 3B lowers the SCR in Ireland and the Netherlands.

The SCRs with a 97.5% and 95% confidence level were calculated using a simplified formula and are naturally lower than the SCR at the 99.5% level.

## **Overall impact**

The impact of the holistic balance sheet differs substantially between the participating countries in the benchmark scenario. The excess of assets over liabilities and the surplus over the SCR range from large shortfalls to substantial surpluses. The dispersion in outcomes can to a large extent be explained by differences in the availability of financial assets and the strength of security and benefit adjustment mechanisms reflecting differences in national systems:

- Swedish IORPs have sufficient financial assets to cover liabilities and to comply with the SCR. IORPs in Norway also have sufficient financial assets to meet liabilities and to comply with the SCR at the 95% and 97.5% confidence level, but are not able to satisfy the SCR at the 99.5% confidence level.
- Pensionsfonds in Germany are able to meet liabilities and the SCR, as they are backed up by sponsor support and a pension protection scheme, which acts as a balancing item on the holistic balance sheet and provides full loss-absorbency in the SCR. German Pensionskassen experience on average a relatively modest shortfall relative to liabilities and the SCR. Pensionskassen dispose in most cases of sponsor support, but they are not covered by the pension protection scheme. Some Pensionskassen provide pure conditional benefits that allow for the reduction of pension benefits under certain pre-defined events. These Pensionskassen are able to meet liabilities and the SCR as this ex ante reduction mechanism is able to absorb all risks.
- IORPs in Belgium and the UK (in set 3A only) experience a shortfall with respect to liabilities as well as the SCR. All IORPs in the UK and most in Belgium are covered by unlimited sponsor support. However, the value of sponsor support recognised is in

most cases not sufficient to close the gap on the holistic balance sheet, and the UK Pension Protection Fund does not guarantee the full level of benefits. The Belgian sample also contains two large IORPs without any (effective) recourse to sponsor support.

- Ireland experiences shortfalls under the benchmark set 3A. In Ireland there are no security mechanisms that can diminish the gap between technical provisions and financial assets, as sponsor support is limited conditional in nature, which means that the employer can choose not to provide support. This gap is reduced under set 3B, but remains substantial.
- The Netherlands also experiences shortfalls under the benchmark set 3A. The Netherlands reported a substantial amount of sponsor support, although this is often limited conditional in nature, but not enough to balance the holistic balance sheet. In benchmark set 3B the Netherlands shows a positive excess of assets over liabilities and a surplus over the SCR. The inclusion of ex post benefit reduction allows for a reduction in accrued pensions when assets are insufficient relative to liabilities and affords strong loss-absorbency in the calculation of the SCR.

## Upper and lower bound scenario

In the upper bound scenario the excess of assets over liabilities deteriorates in many countries compared to the benchmark scenario as sponsor support, pension protection schemes and ex post benefit reductions can no longer be recognised on the holistic balance sheet. As a consequence, the positive excess of assets over liabilities of Pensionsfonds in Germany in the benchmark scenario and IORPs in the Netherlands in benchmark set 3B turns into a substantial shortfall under the upper bound scenario.

The surplus over the SCR increases sharply in the upper bound scenario in member states where IORPs are backed by unlimited sponsor support. The reason is that in this scenario the maximum amount of support is recognised off-balance sheet as an ancillary own fund that can cover the SCR. These IORPs often combine a large surplus over the SCR with a significant shortfall relative to liabilities. It should be remembered though that the technical specifications did not contain any rules determining to what extent ancillary own funds may be used to cover the SCR.

The impact under the lower bound scenario is more favourable compared to the benchmark scenario. The exclusion of the risk margin reduces the level of technical provisions for IORPs in all countries. The exclusion of mixed benefits would benefit Pensionskassen in Germany and IORPs in the Netherlands in terms of lower technical provisions. As a result, Pensionskassen would have a positive excess of assets over liabilities, but would still not be able to meet the SCR. IORPs in Norway would in this scenario also be able to comply with the SCR with a 99.5% confidence level.

## Specific sets of options

Sets 4 to 18 tested specific options for the valuation of the holistic balance sheet and the calculation of the SCR. These sets are assessed relative to the benchmark scenario set 3A and/or 3B depending on the member state concerned. The report does not provide the results for all sets in all member states: in some cases the options are not relevant for all countries; in other cases too few IORPs completed a given set for the outcomes to be representative for the country concerned.



The options analyse different ways of deriving the risk-free discount curve, the risk margin, the exclusion/inclusion of security and benefit adjustment mechanisms, the treatment of equity risk in the SCR standard formula and the inflation module in the interest rate risk sub-module. Details of the results for these options are set out in the body of the report.

## **Qualitative findings**

Participating IORPs completed qualitative questionnaires which complemented the quantitative inputs. These responses provided EIOPA with a valuable insight into the approaches adopted, participants' views of the reliability of the results, and the practical difficulties encountered during the study.

- IORPs assessed the best estimate of technical provisions to be the most reliable item on the holistic balance sheet. The quality of the value of unconditional benefits was considered higher than that of non-unconditional benefits. The approaches adopted differed significantly, each giving rise to its own issues. Participants in most member states used deterministic methods; IORPs in other countries used more complex stochastic models. Many IORPs ignored future management actions of IORPs, even though these discretionary decision-making processes may have had a material impact on the outcomes.
- Participants had the least confidence in the estimates for sponsor support. IORPs experienced considerable difficulties in establishing the maximum amount of sponsor support, the sponsor default probability and the recovery rate of claims on the sponsor, in particular in the case of IORPs with multiple sponsors.
- Most sub-modules in the SCR standard formula proved relevant for some participants in some member states. The approach to modelling the loss-absorbency of security and benefits adjustment mechanisms was generally received with approval. Many IORPs mentioned practical difficulties in establishing the loss-absorbing capacity on the level of every individual SCR sub-module.

A comprehensive overview of responses is included in the main report and clearly demonstrates that further work will be needed to improve confidence in future quantitative studies.

## **Way forward**

The work done and the information collected show the need for further work towards a risk based regulatory framework for Europe. It is also clear that a methodology like the holistic balance sheet is needed that allows for the specificities of occupational pension provision.

Europe faces the challenge of providing its citizens with adequate, sustainable and secure pensions. A market-consistent valuation of balance sheets provides stakeholders with an objective and transparent view of the financial situation of IORPs. EIOPA believes that the holistic balance sheet approach, including all security and benefit adjustment mechanisms, may contribute to the sustainability of IORPs and prevent shortfalls disproportionately falling on future generations.

Enhanced risk management, including sound asset/liability management techniques need to be part of any future developments. The ultimate objective must be transparent and comprehensive assessment of pension provision which allow for a better understanding

and a better informed management over the long term. Furthermore, exogenous elements, such as the risk of persistently low interest rates, need to be part of any overall assessment of IORP finances.

The QIS has introduced and tested a number of new concepts and approaches, and EIOPA is not yet in a position to fully assess the practicality of the holistic balance sheet. As would be expected, considerable practical difficulties were encountered and in many cases there was not enough time to satisfactorily resolve issues which were identified before and during the QIS. However, EIOPA is fully committed to further work to resolve these matters.

Further work is underway by EIOPA in the area of the valuation of sponsor support with an approach that benefits from input provided during the consultation on the QIS technical specifications.

More quantitative modelling would be required to inform any future legislative initiatives on solvency. However, before undertaking any further quantitative studies, EIOPA would need to undertake further work on evolving definitions and methodologies in specific areas, including (but not limited to):

- A common basis for understanding and valuing discretionary decision-making processes
- A common understanding and methodology for handling benefit adjustment mechanisms
- Simplification methodologies
- Appropriate recognition of long-term liabilities
- Calibration of different SCR parameters

A full assessment of the holistic balance sheet also requires the modelling of supervisory responses, and any further quantitative assessments would need a methodology for this.

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. In the coming months, EIOPA will set out a programme of work to better assess and compare IORP solvency, and to contribute to future decisions on European initiatives regarding the treatment of pension funds that appropriately addresses the issues of sustainability, adequacy and the security of pensions, both for present and future generations.

# 1 Introduction

## 1.1 Background

- 1.1. The European Commission requested EIOPA to conduct a Quantitative Impact Study (QIS) on Institutions for Occupational Retirement Provision (IORPs).
- 1.2. The Commission's objective was twofold: <sup>1</sup>
  - First, to provide all stakeholders with detailed information on the quantitative impact of part of EIOPA's advice<sup>2</sup> to the European Commission on the Review of the IORP Directive.
  - Second, to collect quantitative and qualitative information to support the analysis of different policy options in the Commission's impact assessment report that will accompany the IORP II Directive proposal.
- 1.3. IORPs providing only pure defined contributions schemes – i.e. that do not provide any guarantees to the members or participants – were not included in the QIS exercise. The QIS was conducted between mid-October and 17 December 2012 in eight European countries: Belgium, Germany, Ireland, Netherlands, Norway, Portugal, Sweden and the United Kingdom. The QIS was based on the technical specifications of 8 October 2012<sup>3</sup> established by the Commission, the addendum with the matching adjustment specifications of 12 November 2012<sup>4</sup> and a qualitative questionnaire prepared by EIOPA in agreement with the Commission services<sup>5</sup>.
- 1.4. EIOPA published a high-level overview of the preliminary QIS results for the European Commission on 9 April 2013.<sup>6</sup> The Occupational Pensions Stakeholders Group (OPSG) of EIOPA provided its feedback on the preliminary QIS results.<sup>7</sup>
- 1.5. On 23 May 2013 the Commission 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>
- 1.6. This report contains the final results of the QIS on IORPs. The realisation of this final report was only possible because of the hard work of many people in many countries. EIOPA would like to record its appreciation of all of these contributions.

---

<sup>1</sup> European Commission, Call for Advice from the European Insurance and Occupational Pensions Authority (EIOPA) for the Review of Directive 2003/41/EC (IORP II), 30 March 2011.

<sup>2</sup> EIOPA, EIOPA's Advice to the European Commission on the Review of the IORP Directive 2003/41/EC, EIOPA-BOS-12/015, 15 February 2012, Frankfurt.

<sup>3</sup> European Commission, Quantitative Impact Study (QIS) on Institutions for Occupational Retirement Provision (IORPs) – Technical Specifications, Ares(2012)1182662, 8 October 2012, Brussels.

<sup>4</sup> European Commission, Quantitative Impact Study (QIS) on Institutions for Occupational Retirement Provision (IORPs) – Technical Specification – Addendum, Ares(2012)1333819, 12 November 2012, Brussels.

<sup>5</sup> QIS on IORPs – Qualitative Questionnaire, 9 October 2012.

<sup>6</sup> EIOPA, QIS on IORPs – Preliminary Results for the European Commission, EIOPA-BOS-13/021, 9 April 2013, Frankfurt.

<sup>7</sup> EIOPA OPSG, OPSG Feedback Statement to EIOPA "QIS on IORPs – Preliminary Results for the European Commission", EIOPA-OPSG-13-04, 16 May 2013:

[https://eiopa.europa.eu/fileadmin/tx\\_dam/files/Stakeholder\\_groups/opinions-feedback/EIOPA-OPSG-13-04\\_-Feedback\\_statement\\_OPSG\\_to\\_EIOPA\\_Report\\_QIS\\_Preliminary\\_Results\\_FINAL\\_2013-05-17.pdf](https://eiopa.europa.eu/fileadmin/tx_dam/files/Stakeholder_groups/opinions-feedback/EIOPA-OPSG-13-04_-Feedback_statement_OPSG_to_EIOPA_Report_QIS_Preliminary_Results_FINAL_2013-05-17.pdf)

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

## 1.2 EIOPA's advice on the Review of the IORP Directive

- 1.7. The QIS on IORPs analyses a number of options on the quantitative aspects of EIOPA's advice on the Review of the IORP Directive. In its advice, EIOPA proposed the holistic balance sheet as a means of achieving the Commission's objective of a harmonised prudential framework for IORPs.
- 1.8. The holistic balance sheet allows IORPs to recognise the full range of adjustment and security mechanisms available in different member states in an explicit and consistent manner. The holistic balance sheet approach enhances comparability of IORPs across Europe by valuing all assets and liabilities on a market-consistent basis.
- 1.9. EIOPA's advice recognised the importance of performing a QIS to analyse the impact of its advice on capital requirements. The advice particularly stressed that:
  - the concept of the holistic balance sheet needs to be further investigated with respect to the feasibility of developing a methodology for the quantification of the security and benefit adjustment mechanisms and the costs and benefits of such a methodology; and
  - further information is needed on the feasibility in practice of a common level of security and its effectiveness in terms of costs and benefits, given the diversity of IORPs in the different member states, and EIOPA will consider whether to offer further views on these matters in light of the results.

## 1.3 Technical specifications

- 1.10. EIOPA's advice contains the high-level principles on valuation and capital requirements. It does not consider technical issues, such as methodologies to value the items on the holistic balance sheet, the determination of the risk-free interest rate curve to discount cash flows and stresses and correlations to be included in the calculation of the solvency capital requirement (SCR).
- 1.11. For the QIS, EIOPA therefore developed technical specifications to provide participants with prescriptions and guidance to prepare the holistic balance sheet. On 15 June 2012 EIOPA published a consultation paper with draft technical specifications.<sup>9</sup> The public consultation ran until 31 July 2012 and EIOPA received 117 responses from stakeholders in eight member states and several European / international organisations.
- 1.12. The revised draft technical specifications were published on 2 October 2012 together with EIOPA's reasoned feedback on responses received<sup>10</sup> and were sent to the Commission for its consideration.
- 1.13. The Commission published the official technical specifications on 8 October 2012. The Commission amended EIOPA's revised draft technical specifications in two areas:
  - The sections detailing EIOPA's reaction to the consultation responses, the list of issues that still need to be resolved<sup>11</sup>, and the list of issues where EIOPA

---

<sup>9</sup> EIOPA, Draft Technical Specifications QIS of EIOPA's Advice on the Review of the IORP Directive: Consultation Paper, EIOPA-CP-12-003, 15 June 2012, Frankfurt.

<sup>10</sup> EIOPA, Draft Technical Specification QIS of EIOPA's Advice on the Review of the IORP Directive, EIOPA-BOS-12/085, 2 October 2012, Frankfurt.

considered further work was needed<sup>12</sup> were removed and some other editorial changes were made, mainly in the introduction.

- The long-term adjustment to the risk-free interest rate curve – i.e. the counter cyclical premium (CCP) and matching adjustment (MA) – was excluded from the benchmark and lower bound scenario. Instead, these adjustments were to be tested as options in sets 5 to 7.
- 1.14. The Commission added the technical specifications for the matching adjustment on 12 November 2012 by means of an addendum to the technical specifications of 8 October 2012.
- 1.15. The Commission's specifications contain 18 scenarios to be completed by participants. There are three main scenarios: a 'benchmark' scenario, an 'upper bound' and a 'lower bound' scenario. The remaining 15 sets test individual options from EIOPA's advice against the benchmark scenario. The upper and lower bound scenarios combine some of the options considered in the remaining 15 sets.

## **2 Conduct of QIS exercise**

### **2.1 Spreadsheets and launch event**

- 2.1. EIOPA developed spreadsheets and helper tabs to assist IORPs in completing the QIS:
- An input spreadsheet to collect the outcomes of the calculations and the responses to the non-open questions in the qualitative questionnaire. The spreadsheet also performed some calculations, such as the aggregation of capital requirements for SCR risk (sub-) modules and the derivation of the SCR for the 97.5% and 95% confidence levels. The input spreadsheet was accompanied by a user guide;
  - Helper tabs that implemented the simplifications for the valuation of sponsor support and pension protection schemes and the standard method for the maximum amount of sponsor support;
  - Helper tabs to calculate the capital charges for concentration risk, counterparty default risk, interest rate risk, spread risk and pension liability risk;
  - A helper tab to determine the level of the matching adjustment; and
  - A spreadsheet with the basic risk-free interest rate curves and inflation curves for the different sets and sensitivity analyses for EUR, GBP, NOK and SEK.
- 2.2. The spreadsheets and helper tabs were regularly updated during the QIS exercise on EIOPA's website to resolve bugs and errors discovered by participating IORPs and supervisors.
- 2.3. On 19 October 2012 a QIS launch event was organised at EIOPA which was attended by close to one hundred representatives of the occupational pensions sector. The aim was to provide participating IORPs with a practical introduction to the spreadsheets and helper tabs and to exchange approaches in the different member states.

---

<sup>11</sup> Section I.5.12 of EIOPA's revised draft technical specifications, referred to in footnote 10.

<sup>12</sup> Section I.5.13 of EIOPA's revised draft technical specifications, referred to in footnote 10.

## 2.2 Participation in QIS

- 2.4. Eight countries participated in the QIS: Belgium, Germany, Ireland, Netherlands, Norway, Portugal, Sweden and the United Kingdom. France also made preparations to participate in the QIS, but no French Article 4 insurance undertaking eventually decided to complete the QIS exercise, mainly because the business undertaken under Article 4 of the IORP Directive is not within the scope of the QIS (pure DC business).
- 2.5. Portugal participated in the QIS and has followed the approach where the supervisory authority itself performed the calculations based on internally available information and tools. However, the supervisory authority has decided not to publish the results due to material limitations on the quality and completeness of the calculations performed.

Table 2.1: Approaches to completing the QIS in participating countries		
	IORPs	Supervisor
<b>Belgium</b>	14	-
<b>Germany</b> : Pensionsfonds	11	-
: Pensionskassen	27	
<b>Ireland</b>	-	representative data
<b>Netherlands</b>	9	-
<b>Norway</b>	7	-
<b>Sweden</b> : Pension funds	9 provided input	completed spreadsheet
: Pension foundations	-	representative data
: Art 4 insurer	1	-
<b>United Kingdom</b>	21 provided input	6,432 IORPs

- 2.6. The remaining seven countries account for approximately 95% of defined benefit liabilities of IORPs in the EEA.<sup>13</sup> National supervisory authorities adopted different approaches to completing the exercise. The IORPs completing the QIS exercise represented a substantial part of IORPs in the respective countries providing DB benefits in terms of assets. The approaches by the seven countries were as follows<sup>14</sup>:

- In Belgium 14 IORPs participated on a voluntary basis representing about 23% of total assets, but the sample is not representative for the whole Belgian pensions market.
- In Germany 11 Pensionsfonds and 27 Pensionskassen completed the QIS exercise. The market share by total assets exceeds 85% for Pensionsfonds and 70% for Pensionskassen.

<sup>13</sup> CEIOPS, Survey on fully funded, technical provisions and security mechanisms in the European occupational pension sector, CEIOPS-OPSSC-01/08, 31 March 2008.

<sup>14</sup> See Annex C for a more elaborate description of the QIS process in the seven participating countries.

- In the Netherlands a representative sample of 9 IORPs was selected by De Nederlandsche Bank representing a substantial proportion of occupational pension funds.
  - In Norway the calculations were performed by 7 pension funds representing over 50% of assets.
  - In Ireland a number of actuarial consultants completed the QIS on behalf of the supervisor based on data of representative IORPs.
  - In Sweden one large insurance undertaking subject to Article 4 of the IORP Directive took part in the QIS. Nine pension funds, accounting for more than 90% of total assets of pension funds, were asked to perform a number of calculations in addition to the regular supervisory reporting and to answer some qualitative questions regarding pension benefits and sponsor support. Finansinspektionen subsequently completed the spreadsheets. The Swedish pension protection scheme (PRI) performed some calculations for representative pension foundations with credit insurance.
  - In the United Kingdom the Pensions Regulator performed the QIS using real in-house data of the 6,432 IORPs comprising almost the entire UK DB universe. A simplified questionnaire was circulated to the 100 largest IORPs to which 20 IORPs responded. Two IORPs completed the full exercise on a voluntary basis, one of whom also completed the simplified questionnaire. The Pensions Regulator used the input from these 21 IORPs to verify the outcomes of their own calculations.
- 2.7. National authorities provided guidance and Q&A's to local IORPs in interpreting the technical specifications and completing the spreadsheets and organised stakeholders meetings or participated in meetings organised by stakeholders to assist them in performing the QIS calculations.

## 2.3 Coordination at EIOPA

- 2.8. EIOPA undertook a coordinating role while the QIS exercise was being conducted in the participating countries. A coordination group, consisting of representatives from the participating countries, a representative from France and EIOPA staff, was established that held weekly conference calls. The group identified and discussed issues that arose during the QIS exercise and the subsequent validation period.
- 2.9. A Q&A procedure was set up to ensure consistency of answers to questions on the technical specifications that would arise during the course of the work. The aim was to answer questions raised in member states within five working days and to provide an update of the Q&A document every week. In total EIOPA published five updates on its website during the nine-week QIS period and provided responses to 32 questions.

## 2.4 Validation and aggregation

- 2.10. Following the end of the QIS exercise on 17 December 2012, national supervisory authorities undertook validation of the input spreadsheets submitted by the participating IORPs in their country. Some NSAs requested further information –

either in written form or through a meeting with IORPs – to get clarification on assumptions and methods used.

- 2.11. A three day validation meeting was organised at EIOPA at the end of January 2013. It provided the opportunity for national experts from participating countries to check consistency within countries and between countries, by explaining approaches, issues and outcomes in their country and by analysing and comparing data submissions of IORPs. Participation in this meeting was governed by strict confidentiality protocols.
- 2.12. NSAs followed different approaches when inconsistencies were discovered in the results. Obvious errors were often corrected by the NSAs themselves in communication with the relevant IORP. In some cases, IORPs were asked to perform some new calculations when the mistakes could not be easily resolved by the NSA. In other cases, inconsistencies were not corrected due to time constraints if it was judged that they would not have a significant impact on the overall results.
- 2.13. The QIS outcomes in this report are aggregated and in most cases (see 2.14) scaled up to the national level as these totals are considered most suitable. It should also be kept in mind that the QIS aimed at testing the potential effects of the holistic balance sheet approach on national pension systems as a whole.
- 2.14. The results have been aggregated by the national supervisors. The aggregation approaches vary between NSAs:
  - The outcomes in Belgium, Germany and the Netherlands have been grossed up to the national level of IORP's liabilities. Germany scaled both Pensionskassen and Pensionsfonds to their national totals as both types of IORPs have very distinct features. In Belgium and Germany, scaling factors may vary between scenarios since not all participating IORPs have completed all sets. The scaled up aggregate sample of IORPs for Belgium is not representative for the whole pensions market.
  - In Ireland the outcomes for the representative IORPs have been aggregated by the Pensions Board to represent the national aggregate of IORP liabilities.
  - In Norway and Sweden the outcomes have not been scaled up to the national level. The 7 participating IORPs in Norway represent over 50% of pension fund assets, the 9 IORPs in Sweden represent over 90% of total assets of pension funds. The participating Article 4 mutual insurance company in Sweden accounts for approximately 80% of defined benefit obligations of insurance companies. Article 4 is mandatory for all insurance companies with occupational pensions in Sweden. Of the total combined individual participants, pension funds and the insurance company, the company represents more than 70% of defined benefit obligations. The results are however not fully representative for occupational pensions in Article 4 companies as a whole.
  - The data used by the supervisor in the United Kingdom already represent almost all UK IORPs with defined benefit liabilities meaning that scaling up was not necessary.
- 2.15. The results for the Swedish pension foundations and Article 4 insurer will only be described in qualitative terms. Insufficient data are available for the pension



foundations to be included in the figures and tables. The Article 4 insurer would be easily identifiable when included (separately) in the aggregate tables.

## 3 Context of results

### 3.1 Comparability and transparency

- 3.1 The aim of the holistic balance sheet approach tested in the QIS is to make prudential balance sheets of IORPs more comparable and transparent across Europe. At present, IORPs are subject to different national prudential rules and obligations, subject to the requirements of the current IORP Directive<sup>15</sup> for the valuation method and assumptions to be chosen prudently. Not all member states employ a mark-to-market approach in determining the value of assets. Differences in current prudential rules result in large variations in liability values for similar pension obligations.
- 3.2 There is a wide spectrum of IORPs covered in the QIS, ranging from IORPs where the IORP itself bears the risk, to IORPs where the sponsoring undertaking bears the risk, to IORPs where the members to some extent bear the risk.<sup>16</sup> These IORPs apply a wide range of security mechanisms (regulatory own funds, sponsor support, pension protection schemes) and benefit adjustment mechanisms (conditional, mixed and discretionary benefits, benefit reductions in case of sponsor default and ex post benefit reductions) provided for in pension schemes/contracts and/or national law and regulation. These mechanisms may be taken into account in national prudential regulation, but not necessarily on an explicit or quantitative basis.
- 3.3 In this QIS, all IORPs had to value assets and liabilities on a market-consistent basis, i.e. making use of and being consistent with information provided by financial markets. Market-consistency is an objective measure which aims to achieve comparability and transparency of an IORP's financial situation, but there are a number of challenges. The QIS includes several options covering situations where cash flows cannot be replicated on financial markets or where pricing on financial markets may be distorted.
- 3.4 QIS participants were also required to calculate the value of security and benefit adjustment mechanisms to capture the differences of these mechanisms in national systems on a single holistic balance sheet. The objective is to provide stakeholders in IORPs with a transparent view of the extent to which pension obligations can be supported by financial assets and security mechanisms and the extent to which benefit adjustments may occur in the future, not only under 'normal' circumstances (i.e. the best estimate case), but also in stressed situations as measured by the solvency capital requirement.
- 3.5 Nevertheless, the differences between member states' regimes can make interpretation difficult. For this reason, it is vital that country-specific features and their implications are clearly understood. Annex C contains descriptions of the national systems and the QIS processes used by countries participating in the QIS.

---

<sup>15</sup> Directive 2003/41/EC on the activities and supervision of institutions for occupational retirement provision.

<sup>16</sup> IORPs providing only pure DC schemes are not within the scope of the QIS.

## 3.2 Supervisory responses

- 3.6 EIOPA proposed the holistic balance sheet approach as the means in principle of including all security and benefit adjustment mechanisms, in response to the Call for Advice's objective to increase the level of harmonisation and the Commission's objective of achieving a common level of security for all IORPs.
- 3.7 A prudential supervisory framework comprises broadly speaking a prudential balance sheet, that assesses the funding position of an IORP, and the set of responses by supervisors and IORPs. This QIS can therefore not be considered an assessment of a comprehensive supervisory framework, as emphasised by EIOPA in its draft technical specifications of 2 October 2012. For example, the technical specifications do not specify:
- The tiering of assets, i.e. what types of assets are eligible to cover what type of liabilities.
  - The tiering of own funds, i.e. to what extent basic and ancillary own fund items may be used to cover the capital requirements.
  - Supervisory responses, such as the thresholds at which 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.
- 3.8 EIOPA's advice proposed the Level B best estimate of technical provisions as a possible minimum threshold to be covered with financial assets. QIS participants were asked to calculate this Level B best estimate based on a simple approach using a predetermined set of expected returns for certain asset categories, but its role in the tiering of assets, recovery plans and supervisory responses has not yet been investigated or specified.
- 3.9 The technical specifications also did not specify the requirements on IORPs or supervisory responses in cases where the holistic balance sheet never balances – unless the IORP's liabilities are fully covered with financial assets – or always balances:
- The holistic balance sheet may not balance, unless the liabilities of the IORP are fully covered with financial assets, because the IORP's sponsor is subject to default risk. In a situation with a positive value of sponsor support on the holistic balance sheet, but still a remaining gap between liabilities and assets (including sponsor support), additional payments made to the IORP will not resolve the gap as the extra funding will simultaneously lower the value of sponsor support. Similarly, a reduction in benefits of the same size as the gap may also not resolve the problem, since this will lower the value of sponsor support. To close the gap, additional payments to the IORP or a reduction in benefits will be necessary to an extent that leads to the liabilities of the IORP being fully covered by financial assets.
  - The holistic balance sheet may always balance in case of sufficiently strong adjustment or security mechanisms. An IORP may have the possibility to absorb all shocks by reducing benefits or a pension protection scheme that guarantees the full amount of liabilities.

- 3.10 Both situations may be the result of very different adjustment and security mechanisms available to IORPs depending on the pension scheme/contract and possibly national social and labour law.

### **3.3 Uncertainty and variation in outcomes**

- 3.11 Although this QIS provides insight in the workings of the holistic balance sheet approach, the outcomes of this first QIS should be treated with caution. The reported values for the balance sheet items and capital requirements should be recognised as rough estimates surrounded by a lot of uncertainty that are dependent on methodologies and specific assumptions used for the QIS as well as the use of the holistic balance sheet in practice and the accompanying supervisory responses.
- 3.12 The values of the items on the holistic balance sheet depend on the timing of benefit adjustments and additional sponsor contributions. As such, the outcomes of this QIS are to some extent conditional on the policies and supervisory responses that were either explicitly or implicitly assumed by participating IORPs. Many calculations are based on existing policies and national supervisory frameworks. If the design and practical use of the holistic balance sheet as well as the underlying supervisory responses are further specified then the outcomes for the holistic balance sheet would also change.
- 3.13 One source of uncertainty is the methodology for the quantification of sponsor support which, as mentioned below, is the subject of further investigation. In particular, the method to calculate the maximum amount of support that the sponsor is able to pay is difficult to implement for IORPs that are multi-employer schemes or that dispose of a sponsor that is a subsidiary or a not-for-profit institution. Moreover, little guidance is provided to establish the probability of default for unrated sponsors. The technical specifications referred to the condition of “legal enforceability” of sponsor support. However, some IORPs have recognised a value for sponsor support considering that there may be a realistic expectation that the sponsoring undertaking will provide additional funding. Given these concerns and the fact that sponsor support figures could change significantly if alternative assumptions for some parameters or other methods were used, the estimated value of sponsor support in the QIS is subject to considerable uncertainty itself.
- 3.14 Another source of uncertainty is that the technical specifications contained simplifications in many areas. This is, for example, the case for the derivation of the risk margin, the minimum capital requirement and the solvency capital requirement for confidence levels other than 99.5%. Such simplifications can potentially result in significant differences, as is illustrated by some Norwegian IORPs that estimated the risk margin using a more elaborate method in accordance with Solvency II. These IORPs calculated a risk margin of less than 2% of the best estimate of liabilities, whereas the simplification assumed a fixed percentage of 8%.
- 3.15 In many countries, the participation in the QIS represents only a certain proportion of the total. Although every effort has been made to ensure that the QIS was compiled using representative data, the outcomes are nonetheless dependent on the data chosen.

- 3.16 In countries where IORPs completed the QIS themselves, large variations in outcomes were found for similar IORPs. These variations are not visible in the aggregates presented in this document. Part of the explanation for such large variations may be that the technical specifications were in some areas not clear and unambiguous or did not provide straightforward methods to do the calculations. The technical specifications do – for example - recognise the existence of discretionary decision-making rules governing security and benefit adjustment mechanisms, but the guidance for modelling and valuing them may not have been clear or specific enough. IORPs will have resolved this lack of clarity and guidance in certain areas by making different interpretations and choosing their own models with varying assumptions. Another reason is that the QIS was conducted on a best-effort basis allowing for simplifications in the event of time constraints which may have resulted in model-error.
- 3.17 The QIS outcomes also show substantial variation between participating countries as a result of differences in assumptions. IORPs in different countries have taken different interpretations of excluding security and benefit adjustment mechanisms from the holistic balance sheet. One interpretation is that the exclusion of these mechanisms has an impact on the value of other security and benefit adjustment mechanisms. In that way, for example, excluding sponsor support from the holistic balance sheet can impact on the provision of benefits to members. Another interpretation is that the value of adjustment and security mechanisms is independent of the recognition of other mechanisms on the holistic balance sheet. Another source of variation between countries is that some member states have not included benefit reduction mechanisms, while other member states did incorporate these mechanisms. Participating countries interpreted the technical specifications to include ex post benefit reductions and benefit reductions in the case of sponsor default in different ways, considering their national specificities.
- 3.18 This QIS was the first occasion on which IORPs and pension supervisors experienced the practical application of the holistic balance sheet approach. This approach introduces new concepts and poses practical computational challenges and participants have taken different approaches to meet those challenges. The issues encountered during this QIS need to be improved upon in further work on the definitions and methodologies contained in the technical specifications.
- 3.19 In addition to issues regarding the comparability of results between different participants, it must be noted that EIOPA has not investigated the possible sensitivity of the QIS results to the market conditions prevailing at the reporting date underlying the calculations.

## 3.4 Further work

- 3.20 EIOPA is not yet in a position to assess the practicality of the holistic balance sheet as a result of this QIS. This is the first comprehensive attempt to calculate the holistic balance sheet and solvency figures on a common and consistent basis for European defined benefit IORPs. As would be expected, considerable practical difficulties were encountered, and in many instances, there has not been enough time to resolve satisfactorily issues which have been identified during the QIS.
- 3.21 EIOPA's response to the Commission's Call for Advice suggested a number of proposals to assess the solvency of IORPs. This quantitative impact study is a first

attempt to model those proposals, and to assess the practicality of the holistic balance sheet concept for IORPs, which has until now been an untested idea. The process has identified a number of areas where further work is required before final conclusions can be drawn, and therefore this QIS cannot be a complete assessment of the holistic balance sheet approach. These issues were identified in a number of ways:

- When drafting the technical specifications, EIOPA became aware of a number of issues where further work would have been desirable to improve the specifications, had the time been available.
- The public consultation on the technical specifications raised a number of issues. There was not enough time to resolve all of these issues before the start of the QIS exercise and the decision was made to revisit some of them at a later stage.
- The experience of completing the QIS identified a number of problems which had not been anticipated in the technical specifications.

3.22 Further work is already underway by EIOPA in the area of the valuation of sponsor support. This project is in response to issues that were raised during the consultation on the technical specifications. Another area that requires further attention is that of long-term guarantees. The QIS analyses approximations for the counter-cyclical premium and the matching adjustment, but it has not been specified how and when these adjustments can be applied. More work has also to be carried out on the derivation of the Level B best estimate of technical provisions, the Level B expected return on assets, in particularly in relation to the derivation of the equity risk premium and the absence of any allowance for further planned changes in IORPs' asset allocations, the calibration of the SCR parameters and the modelling of discretionary decision-making rules. Many other important areas were identified as well that need to be further developed.

3.23 EIOPA is aware of the shortcomings in the current QIS and considers that it would not be appropriate to immediately begin further QIS exercises. Instead, EIOPA would need to undertake further work on evolving definitions and methodologies in specific areas, including (but not limited to):

- A common basis for understanding and valuing discretionary decision-making processes
- A common understanding and methodology for handling benefit adjustment mechanisms
- Simplification methodologies
- Calibration of different parameters for the SCR

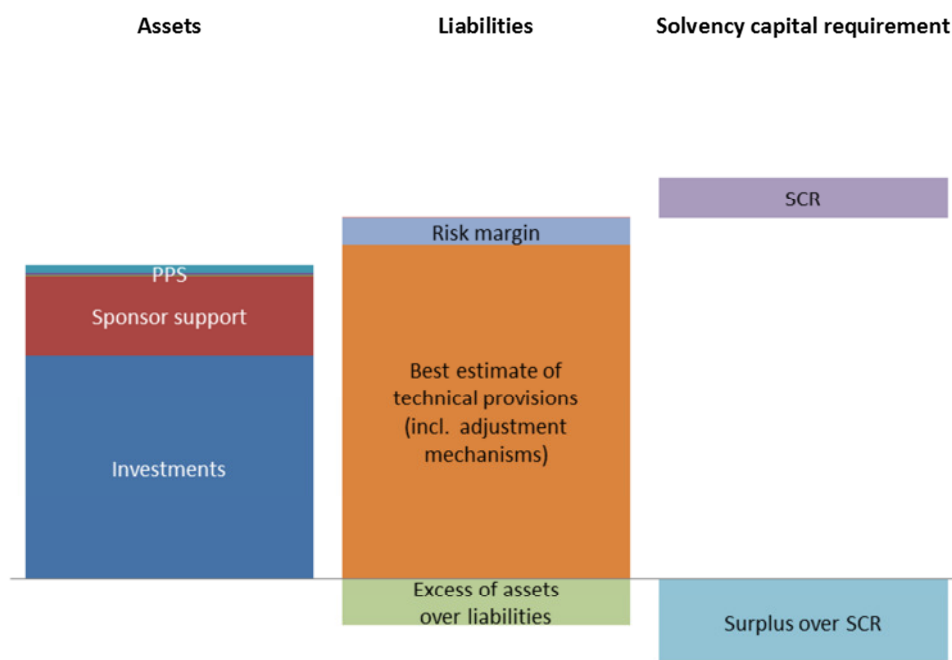
3.24 It is recognised by EIOPA that a full assessment of the holistic balance sheet requires the modelling of supervisory responses, and any further quantitative assessments would need to include proposals for a methodology for this.

3.25 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. In consultation with the Commission, EIOPA will 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.

### 3.5 Interpreting and understanding the results

- 3.26 The outcomes presented in the following sections relate to an aggregate of IORPs in the participating countries, in many cases scaled up to the national level. It should be kept in mind that there can be significant variation in outcomes for IORPs within countries. The impact on individual IORPs can deviate significantly from the aggregate impact. In some cases the explanatory text highlights some of the variation underlying the aggregate results. However, this should not be interpreted to mean that in other cases such variation is absent.
- 3.27 In describing the impact of a scenario or set, this and the following sections will frequently refer to the impact on "IORPs" in specific countries. Again, it should be borne in mind that the impact is measured for an aggregate of a sample of IORPs, often scaled up to the national level.
- 3.28 Holistic balance sheet – excess of assets over liabilities and surplus over SCR <sup>17</sup>



- 3.29 The impact of the three baseline scenarios and sets with specific options will be described using two overall measures (see also Figure 3.28):
- Excess of assets over liabilities (EAL); which equals the value of assets minus the value of liabilities, where liabilities refer to the value of technical provisions plus the value of other liabilities. The category 'other liabilities' is, for all countries, small in comparison to the level of technical provisions and might

<sup>17</sup> The figure is based on the aggregated QIS results in the seven countries in the benchmark set 3A. Three items ((re-)insurance recoverables, others assets and other liabilities) have not been labelled in the figure, since these are on aggregate very limited in size and barely visible in the figure. The impact of sponsor support as an ancillary own funds item on the surplus over the SCR has not been illustrated in the figure.

even be zero. In the holistic balance sheet technical provisions equal the best estimate plus the risk margin, if included.

- Surplus; which equals the value of assets and ancillary own fund items eligible for covering the solvency capital requirement (SCR)<sup>18</sup> minus the required level of assets or the funding requirement. In the holistic balance sheet approach the funding requirement equals the value of liabilities plus the SCR.
- 3.30 The QIS exercise included a detailed qualitative questionnaire in which participants were asked to make assessments of the calculation processes for the different parts of the holistic balance sheet and the solvency capital requirement. Section 10 of this report provides an overview of the approaches taken by participants and their assessment of the results.
- 3.31 The quantitative outcomes of the questionnaire should be interpreted with the necessary caution. The report only presents the responses of participants that responded to a particular question in the questionnaire. Due to the problem of non-response the distribution of – for instance – different methods applied by IORPs is not necessarily the same as the actual distribution. This means that the quantitative outcomes of the questionnaire should be interpreted as providing a rough indication.

## 4 Current regime

### 4.1 Description QIS sample

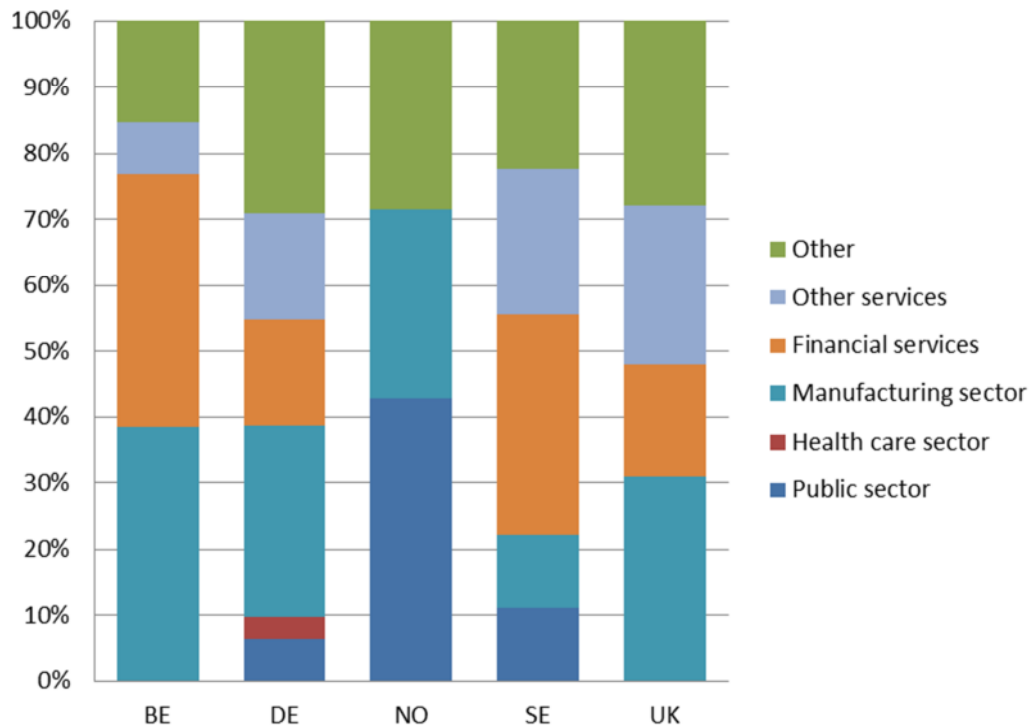
- 4.1. The QIS does not take into account IORPs that only provide pure defined contributions schemes. This does not mean that DC schemes are not included at all. In several participating countries IORPs may provide DC schemes besides other pension plans, such as defined benefit plans and hybrid schemes. This is the case in the Netherlands where some IORPs indicate that they also dispose of (some) DC obligations. The DC obligations reported in the Netherlands only exist in the accumulation phase, since lifetime annuities are mandatory in the pay-out phase.
- 4.2. German IORPs reported pure DC pension obligations in the QIS, although pure DC pension schemes are not allowed according to German social and labour law. The reporting of DC pension obligations by German IORPs concerns unit linked products where a certain part of the contributions paid for by each member are treated like contributions into a DC scheme, while the remaining part of the contributions is used to secure the guarantee/DB-part of the product. In such a situation the IORP has liabilities (obligations) and assets which are “pure DC” in an economic view, while the scheme as a whole is a DB scheme. The “pure DC assets” mentioned above only exist in the accumulation phase. In the pay-out phase a defined benefit has to be paid. In Sweden more than half of IORPs included in the sample also provide health benefits.
- 4.3. The IORPs included in the QIS have sponsors that are generally well-distributed over the various economic sectors (see Figure 4.4). Sponsors of IORPs operate in the public, health care and manufacturing sectors as well as the financial services

---

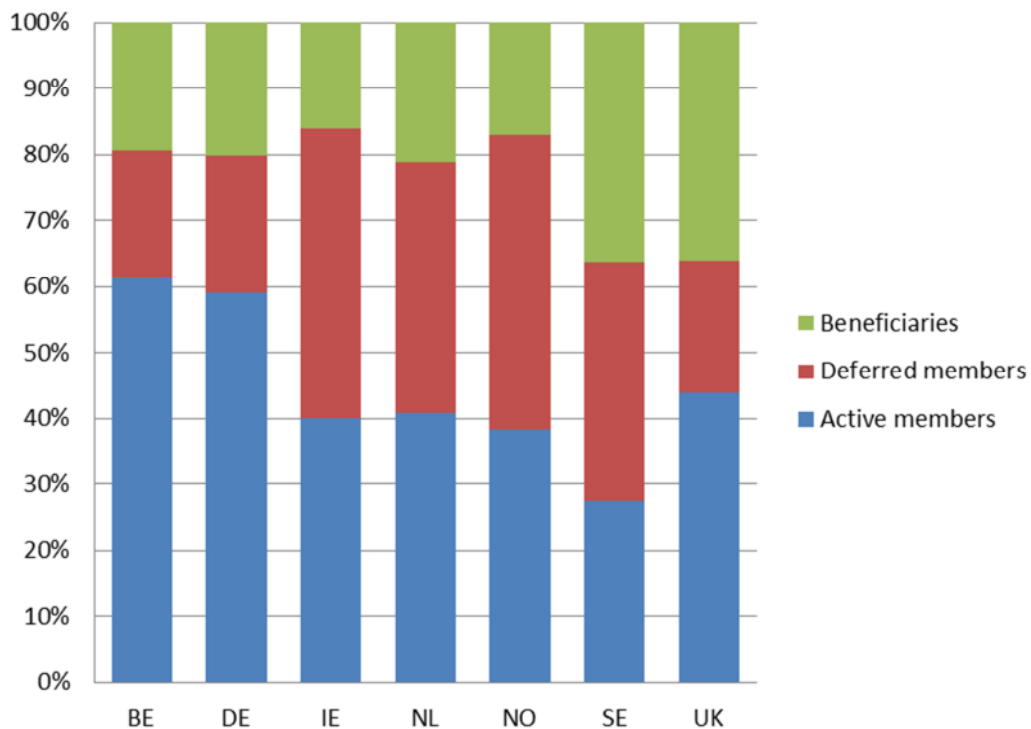
<sup>18</sup> The ancillary own fund items are only relevant in set 1 (upper bound scenario) and set 15 where sponsor support is recognised as an off-balance ancillary own fund item.

and other services industries. In Germany, the Netherlands and Sweden a substantial part (35-55%) of the sample consists of IORPs sponsored by multiple employers.

#### 4.4. Sector of sponsor's activities of IORPs in sample <sup>19</sup>



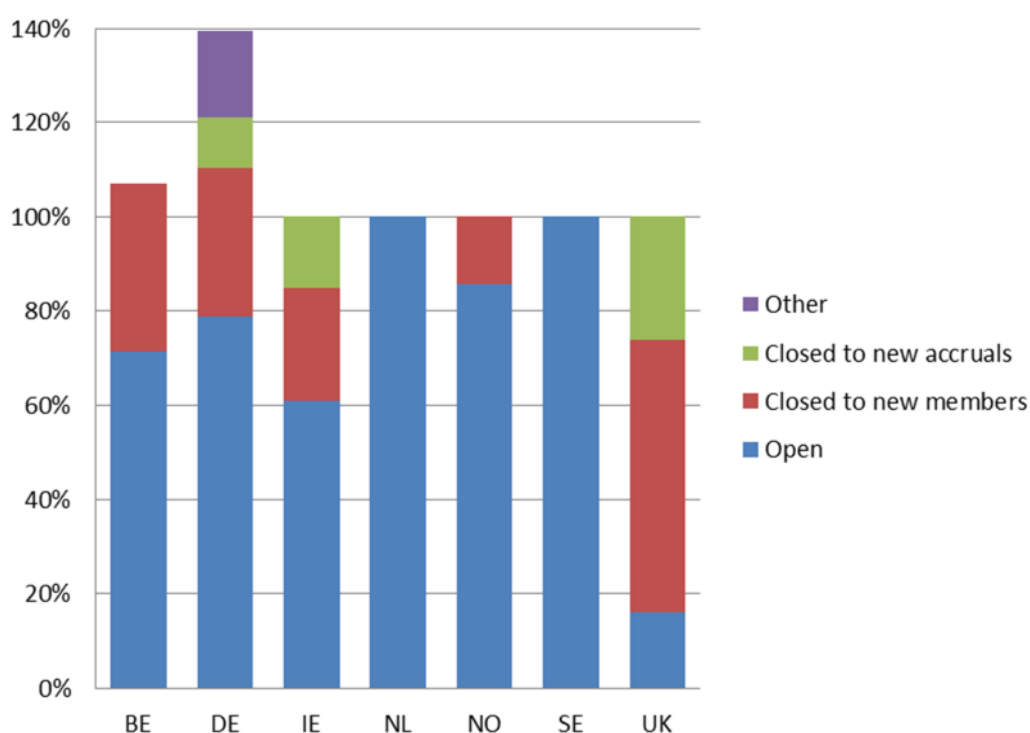
#### 4.5. Distribution of plan members of IORPs in sample



<sup>19</sup> The sector information for the Netherlands has not been included because of confidentiality reasons.



- 4.6. Sweden and the United Kingdom have the most mature pension systems with around one-third of plan members consisting of beneficiaries (see Figure 4.5). Belgian and German IORPs have the largest proportion of active members, Ireland and Norway the largest proportion of deferred members, i.e. members who are no longer contributing to the IORP but have not yet retired.
- 4.7. In Belgium, Germany, Ireland, Netherlands, Norway and Sweden between 60% and 100% of participating IORPs are still open to new members (see Figure 4.8). In the United Kingdom only 15% of IORPs providing DB benefits are still open, while other DB IORPs are either closed to new members or new accruals. In Belgium and Germany IORPs may provide more than one non-pure DC plan and the overall percentage of open and closed schemes exceeds the number of IORPs.
- 4.8. Status of non-pure DC pension schemes provided by IORPs in sample



## 4.2 Security and benefit adjustment mechanisms

- 4.9. The holistic balance sheet approach allows for the inclusion of the different security and benefit adjustment mechanisms that are available to IORPs in the various member states. Depending on the scenario being tested, QIS participants were asked to recognise sponsor support and pension protection schemes on the asset-side of the holistic balance sheet and to include benefit adjustment mechanisms in the valuation of technical provisions on the liability-side. In addition, the loss-absorbing capacity of security and benefit adjustment mechanisms had to be taken into account in the calculation of the SCR. A brief summary of the different security and benefit adjustment mechanisms that are included in the participating countries is provided below.<sup>20</sup>

<sup>20</sup> See Annex B for a summary table and Annex C for a more comprehensive overview of the various adjustment and security mechanisms available to IORPs in these countries.

4.10. IORPs in the QIS dispose of different forms of sponsor support that provide the IORP with different levels of security. In addition, Pensionsfonds in Germany, pension foundations with credit insurance in Sweden and IORPs in the United Kingdom are backed up by a pension protection scheme.

- In Belgium most IORPs are covered by unlimited sponsor support predominantly in the form of an increase in employer contributions.
- In Germany both Pensionsfonds and Pensionskassen dispose of all forms of sponsor support and in many cases even of more than one per IORP. However, most often sponsor support takes the form of a subsidiary liability of the sponsor followed by increases in employer contributions. About three-quarters of IORPs reported that they are backed up by unlimited sponsor support. Pensionsfonds are covered by a pension protection scheme that guarantees the full amount of benefits in the event the sponsor defaults.
- In Ireland sponsor support takes the form of increases in employer contributions. All sponsor support is regarded as limited conditional, which is defined in the technical specifications as sponsor support where its legal nature means that the sponsor has the opportunity to choose to no longer provide support.
- In the Netherlands sponsor support is also in most cases considered to be limited conditional or not automatic. Many IORPs are allowed, under the financing agreement with the plan sponsor(s), to carry through limited increases in contribution rates, but the IORP has the discretion to deviate from it. Plan sponsors may also decide on a case-by-case basis to provide additional funding. Few IORPs provide pension schemes that contain obligations for the sponsor to recover shortfalls.
- In Norway sponsor support is not taken into account in this QIS since it is considered to be limited conditional or not automatic. Sponsor support which was considered to be limited conditional should, according to the technical specifications, be set to zero for the purpose of the QIS.
- In Sweden several participating pension funds report some kind of sponsor support for DB schemes. For some pension funds the sponsor support has tentatively been considered legally enforceable by the supervisor. For other pension funds sponsor support was categorised as limited conditional for the purpose of the QIS. The participating Article 4 insurance company reports no sponsor support. The pension protection scheme, PRI, is only backing some pension foundations and book reserves. Book reserves as such are not included in the QIS and pension foundations with PRI credit insurance (sometimes in combination with book reserves) are only represented by a qualitative description in paragraph 5.58 and 5.129.
- In the United Kingdom sponsor support may consist of increases in contributions, contingent assets of the sponsor and claims on the sponsor when the IORP is liquidated. Additionally, the UK supervisor also has the power to request payments from entities connected or associated with the sponsor (Financial Support Directions and Contribution Notices). Sponsoring employers have an unlimited obligation to recover funding shortfalls. The members of IORPs will receive benefits, which are generally lower, from the Pension

Protection Fund (UK) in the event the sponsor becomes insolvent and the IORP cannot provide the PPF level of benefits.

4.11. The technical specifications distinguished between different non-unconditional benefits: pure conditional, pure discretionary and mixed benefits. In addition, ex post benefit reductions and reductions in the event of sponsor default were considered.

- In Belgium most IORPs only provide unconditional benefits. The Belgian sample contains one IORP that manages a specific type of pension scheme for independent workers, for which part of the benefits has been classified as pure conditional.
- In Germany IORPs may provide with-profits-contracts based on profit sharing that are considered mixed benefits. Some German Pensionskassen dispose of an ex ante benefit adjustment mechanism. Benefits will be cut in certain events laid down in a contractual agreement, which means that these benefits should be considered pure conditional.
- In Ireland all benefits are unconditional. Discretionary pension increases in the case of a surplus have become extremely rare and have not been considered in this QIS. Both calculations with and without ex post benefit reductions in the event of a wind-up of pension schemes have been included.
- In the Netherlands IORPs aim to give increases of accrued pensions, which are considered mixed benefits under this QIS. IORPs provide policy guidance under what circumstances indexation is granted, but in the end it depends on a discretionary decision of the IORP. Some IORPs also dispose of pure discretionary pension increases. Dutch pension legislation allows for ex post benefits reductions, but only as a last resort mechanism if all other security mechanisms to recover funding shortfalls have been exhausted.
- In Norway all IORPs provide with-profit contracts with a minimum guaranteed interest rate and 100% profit sharing. The pension benefits based on profit sharing are included as pure conditional benefits.
- In Sweden unconditional benefits are included for pension funds providing DC schemes with a guarantee, two pension funds providing DB schemes, three pension funds and the participating Article 4 insurance company providing DB as well as DC schemes with guarantees.
- In the United Kingdom IORPs provide guaranteed benefits at retirement with statutory pension increases. The PPF provides for less generous pension benefits when the sponsor defaults. The UK did not take these benefit reductions into account as they only occur when the IORP is liquidated rather than in an ongoing situation.

## 4.3 Results current supervisory regimes

4.12. The outcomes in the various sets will be compared with the current supervisory regime. The latter depends to a large extent on the discount rates and funding

requirements in existing prudential regulation in the seven participating countries for which a concise summary is given below:<sup>21</sup>

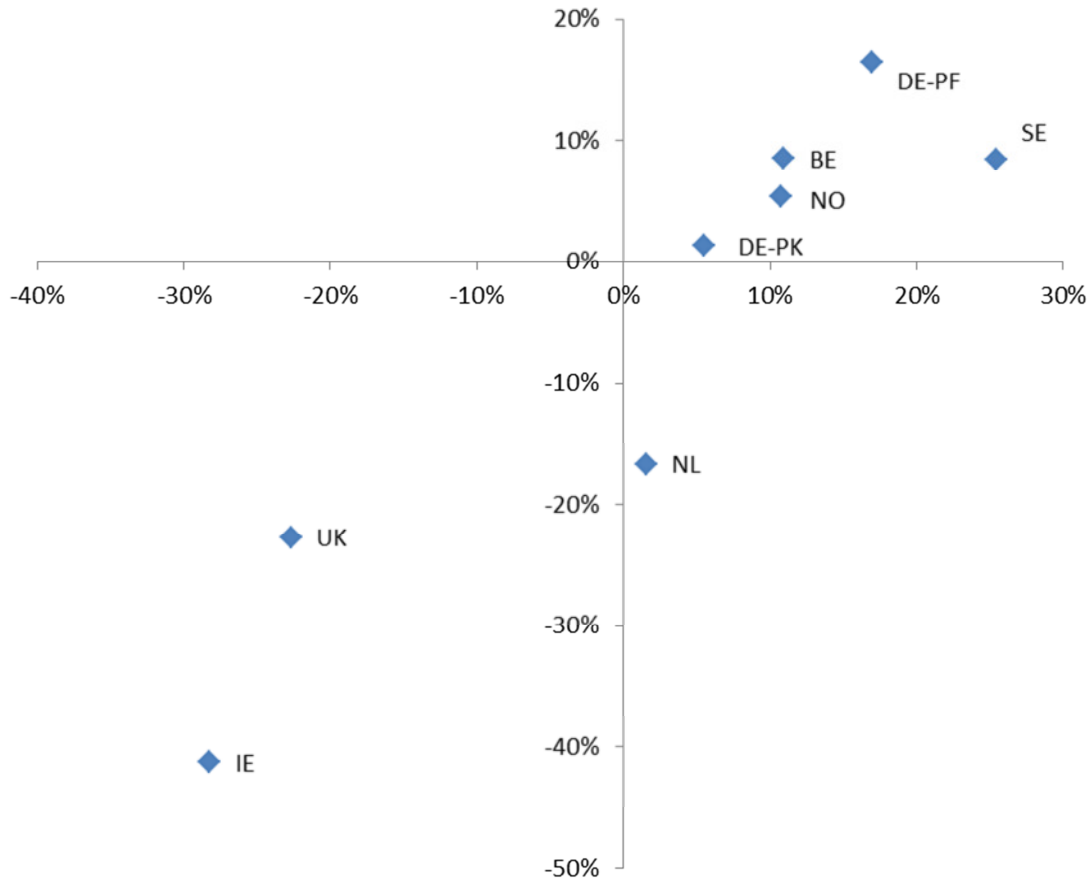
- In **Belgium** discount rates may range from the market interest rate on high-quality or government bonds to the expected return on assets. IORPs must have sufficient assets to cover technical provisions. IORPs underwriting the liabilities themselves are subject to solvency requirements according to Solvency I, but there are no such IORPs at the moment on the Belgian market. There are also slightly different solvency requirements in case of coverage of mortality and invalidity risk and in case of IORPs operating schemes for independent workers.
  - In **Germany** technical provisions of Pensionsfonds are discounted with a discount rate derived from the expected return on assets. Pensionskassen are obliged to use fixed discount rates with an additional safety margin. Both types of IORPs are subject to solvency requirements in accordance with Solvency I.
  - In **Ireland** liabilities are discounted with the expected return on assets and IORPs are required to have sufficient assets to cover liabilities. The risk reserve that will be introduced in 2016 has been included as the Irish funding requirement under the current regime.
  - In the **Netherlands** liabilities are discounted using an adjusted swap curve similar to the one used in this QIS. IORPs must have sufficient assets to cover both the technical provisions and a risk-based financial buffer based on a 97.5% confidence level.
  - In **Norway** liabilities have to be discounted with the contractual guaranteed interest rate varying from 2.5% to 3.7% for the participating IORPs. The pension funds are required to have sufficient assets to cover their liabilities and the highest of the Solvency I and Basel I capital requirements.
  - In **Sweden** pension funds as well as Article 4 insurance companies value liabilities by using a discount rate curve that is based on the average between the government bond curve and the covered bond (AAA) curve. The quarterly "Traffic Light" stress test, which takes into account the sensitivity to market and insurance risks of assets and liabilities, is used as the funding requirement for this QIS, although it is not a strict funding requirement,
  - In the **United Kingdom** technical provisions may be discounted using the expected return on assets as long as it is prudently chosen. IORPs are required to have sufficient and appropriate assets to cover their technical provisions and a recovery plan must be in place to meet any shortfall.
- 4.13. At the end of 2011, under the current supervisory regime, IORPs in four countries, Belgium, Germany, Norway, Sweden, have on average a positive excess of assets over liabilities as well as a positive surplus over the funding requirement (see Figure 4.14 and Annex A for the amounts in euros). In Sweden the participating Article 4 life insurance company is not included in the numbers. This insurer – as well as the aggregate life insurance business in Sweden – has a more favourable situation both in terms of the excess of assets over liabilities and the surplus over

---

<sup>21</sup> See Annex B for a summary table and Annex C for a more comprehensive overview of the national pension and supervisory systems in these countries.

the funding requirement compared to the aggregate situation of participating Swedish pension funds.

- 4.14. Current regime: excess of assets over liabilities (horizontal axis) and surplus over funding requirement (vertical axis), in % liabilities<sup>22</sup>



- 4.15. Assets in the Netherlands exceed the level of liabilities, but are insufficient to meet the funding requirement. IORPs in Ireland and the United Kingdom have both a negative excess of assets over liabilities and a negative surplus. In the United Kingdom, the position shown in Figure 4.14 is before any allowance for recovery plans.
- 4.16. In Belgium 17% of IORPs indicated that they were subject to a recovery plan. In Ireland 20% of IORPs are covered by a recovery plan, but most of the rest of them are preparing one. A majority of IORPs are subject to a recovery plan in the Netherlands (three quarters) and the United Kingdom (almost all DB IORPs). The average recovery period for these IORPs amounted to 5 years in Belgium, 9.5 years in the UK, 10 years in Ireland and 5 respectively 15 years in the Netherlands<sup>23</sup>, though it should be noted that the target for the recovery plans differs greatly between these countries. Participating IORPs in Germany, Norway and Sweden were not subject to any recovery plan.

<sup>22</sup> See Annex A for the corresponding outcomes in absolute amounts.

<sup>23</sup> The legal recovery plan length is 3 years for funding deficits and 15 years for reserve deficits. For current short-term recovery plans a length of 5 years is allowed, due to a decision by the Minister of Social Affairs and Employment.

- 4.17. It should be reiterated that it is not meaningful to compare the outcomes under the current regime as a consequence of the differences in valuation and funding requirements between countries.

## 5 The benchmark scenario (set 3)

5.1 Under the benchmark scenario participants were asked to:

- use the basic risk-free interest rate curve for discounting future cash flows based on a convergence speed to the ultimate forward rate (UFR) of 10 years after the last liquid point (LLP) and a credit risk adjustment of 35 bps across maturities
- include all types of pension benefits, except for pure discretionary benefits, and to take into account benefit reductions in case of sponsor default and ex post benefit reductions
- include a risk margin based on the cost-of-capital concept
- include sponsor support and pension protection schemes as an asset on the balance sheet
- use the duration-based dampener in the equity risk sub-module where the duration of liabilities exceeds 12 years
- include the inflation module in interest rate risk sub-module

5.2 Participating countries interpreted the requirements to include ex post benefit reductions and benefit reductions in case of sponsor default differently, considering their national specificities. The differing interpretations made in this context are a reason why the results are not directly comparable between countries. Most participating countries do not have benefit adjustment mechanisms of any description. In those that do, there are differences about whether the reductions possibly fall within the definition set out in the technical specifications or not, and/or how the benefit reductions under the current solvency regime should be calculated within the context of the holistic balance sheet. The participating countries affected are:

- Netherlands, where the benchmark was calculated including ex post benefit reductions, which IORPs calculated by reference to the current rules and to the holistic balance sheet;
- United Kingdom, where the benchmark calculations do not include benefit adjustment mechanisms; and
- Ireland, who prepared two sets, one with and one without ex post benefit reductions, the former being calculated by reference to the current rules and not to the holistic balance sheet.

5.3 Because of these differences in interpretation, it is not necessarily true that like is being compared with like when comparing benchmark calculations between participating countries. However, because of the legislative frameworks and benefit structures in different member states, neither can it be assumed that all calculations including benefit adjustment mechanisms or excluding them are directly comparable. Further work will be needed to achieve consistency in the understanding of this issue.

- 5.4 As a result, there are two groups of benchmark calculations provided. These are entitled set 3A and 3B, but no significance should be attached to the ordering of the groups.
- As these countries do not use ex post benefit reductions or benefit reductions in case of sponsor default, the calculations for Belgium, Germany, Norway, and Sweden are identical with and without these mechanisms, and are included in both groups.
  - Set 3A does not take account of ex post benefit reductions and reductions in case of sponsor default. It includes the benchmark calculations for the United Kingdom and includes the corresponding calculations for Ireland. The results for the Netherlands in this group are the calculations for set 14 that excludes ex post benefit reductions from the holistic balance sheet.
  - Set 3B takes account of ex post benefit reductions and reductions in case of sponsor default, and includes benchmark calculations for the Netherlands, and calculations for Ireland. There are no calculations in this set for the United Kingdom.

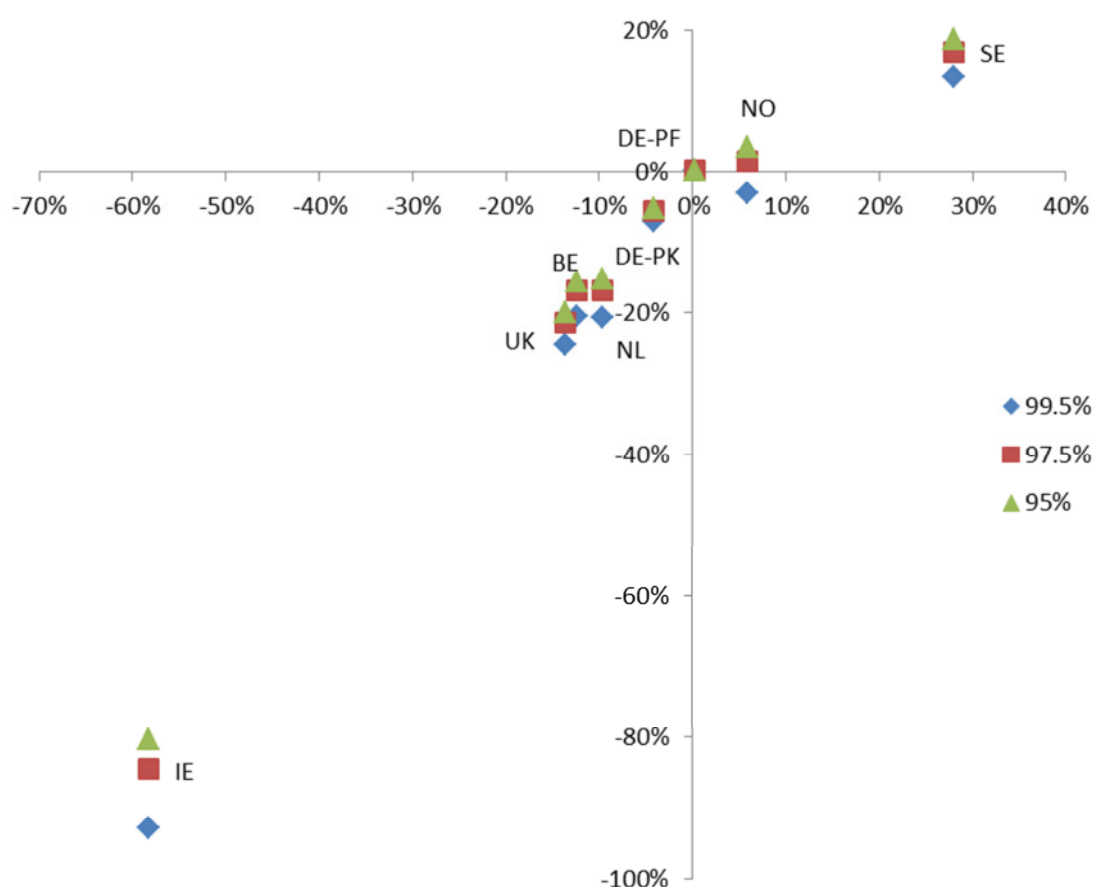
## 5.1 Benchmark set 3A

### 5.1.1 Overall impact

- 5.5 In the benchmark set 3A IORPs in Sweden have more than sufficient financial assets to cover liabilities and to comply with the solvency capital requirement (SCR) (see Figure 5.9 as well as Annex A for the amounts in euros). IORPs in Norway have (on average) sufficient financial assets to cover liabilities and to meet the SCR at the 95% and 97.5% confidence level. However, IORPs are not able to satisfy the SCR at the 99.5% confidence level.
- 5.6 Pensionsfonds in Germany have (on average) a slight positive excess of assets over liabilities as well as a positive surplus over the SCR. Pensionsfonds are backed up by sponsor support as well as by a pension protection scheme which acts as a balancing item on the holistic balance sheet. These security mechanisms also provide for full loss-absorbency in adverse scenarios and effectively reduce the SCR to zero. German Pensionskassen experience a negative excess of assets over liabilities as well as a shortfall with respect to the SCR. In most cases Pensionskassen are also covered by sponsor support. The pension protection scheme does not cover Pensionskassen. Some Pensionskassen do manage to balance the holistic balance sheet and to meet the SCR through the allowance to reduce benefits included in pension contracts. This ex ante reduction mechanism is able to absorb all risks and to reduce the SCR to zero.
- 5.7 Both the excess of assets over liabilities as well as the surplus are negative for IORPs in other member states. All IORPs in the United Kingdom and most IORPs in Belgium are covered by unlimited sponsor support. However, the value of sponsor support recognised is in most cases not enough to close the gap between liabilities and financial assets. The reason is that there is some probability that in a future scenario the sponsor is no longer capable of fully supporting the pension promise, due to its probability of default. The Pension Protection Fund (PPF) in the United Kingdom – which may be triggered in such an event – does not guarantee the full level of benefits. The outcomes for Belgium are distorted due to the

presence of two large IORPs without any effective recourse to sponsor support. The shortfalls with regard to liabilities and the SCR would have been substantially smaller without these two IORPs.

- 5.8 IORPs in the Netherlands have included a value for sponsor support, even though sponsor support is often limited conditional<sup>24</sup> or non-automatic. However, the sponsor support value is not enough for the total assets to meet the liabilities. Ireland has not included a value for limited conditional sponsor support to diminish the gap between technical provisions and financial assets.
- 5.9 Benchmark scenario (set 3A): excess of assets over liabilities (horizontal axis) and surplus over solvency capital requirement (vertical axis), in % liabilities<sup>25</sup>



### Change in excess of assets over liabilities compared to current regime

- 5.10 The excess of assets over liabilities declines in most countries in comparison with the situation under the current supervisory regimes (see Figure 5.12). The two exceptions are Sweden and the United Kingdom where the excess of assets over liabilities slightly improves.
- 5.11 In five out of seven countries technical provisions increase by 20 to 70%. The most important driver is the introduction of market valuation of technical provisions. Many IORPs in Belgium, the Pensionsfonds in Germany and IORPs in Ireland and the United Kingdom currently use a discount rate based on the expected return on assets, which exceeds the basic risk-free interest rate curve.

<sup>24</sup> Limited conditional sponsor support is defined in the technical specifications as sponsor support where its legal nature means that the sponsor has the opportunity to choose to no longer provide support.

<sup>25</sup> See Annex A for the corresponding outcomes in billions of euros.

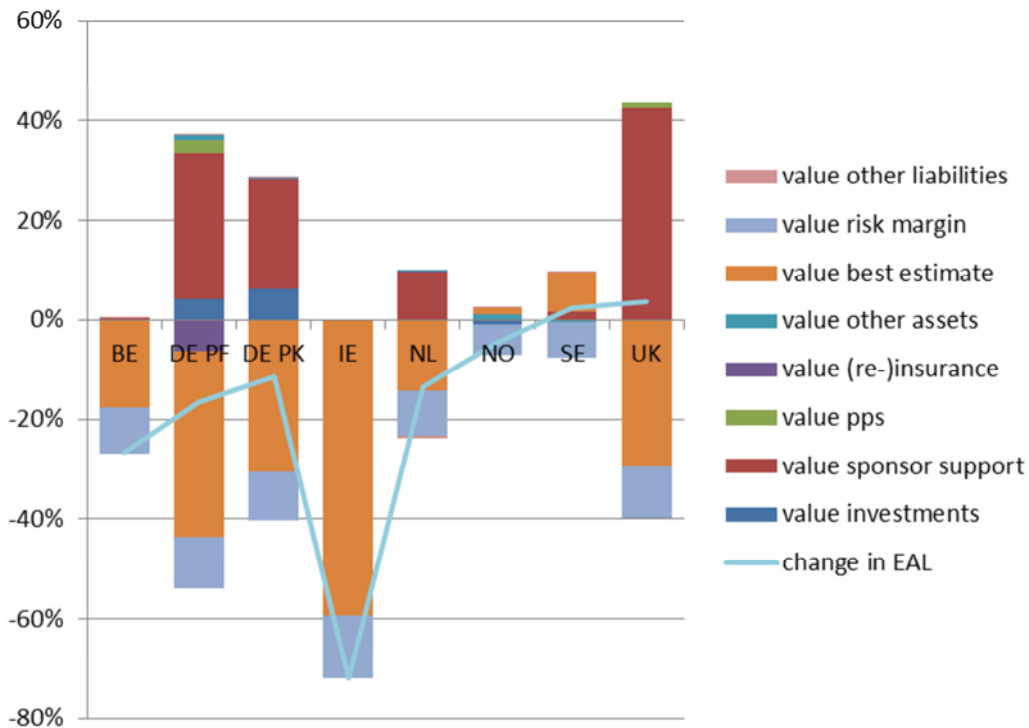


The same holds true for the fixed discount rates currently employed by German Pensionskassen. Dutch IORPs already use an (adjusted) interest rate swap curve that is comparable (though not identical) with the one in the benchmark scenario. A more important reason for the increase in the best estimate in the Netherlands in set 3A is the inclusion of mixed benefits in technical provisions.

Norway and Sweden are the only countries where the best estimate of technical provisions declines compared to the current regime. The contractual guaranteed interest rate in Norway and the combined bond curve in Sweden are both lower than the risk-free interest rate curve. However, the value of technical provisions increases in Norway due to the inclusion of the risk margin.

The inclusion of the risk margin in technical provisions also has an upward effect on the value of liabilities in all other countries considered in set 3A.

#### 5.12 Benchmark scenario (set 3A): Decomposition of change in excess of assets over liabilities compared to current regime, % current liabilities



#### 5.13 The possibility to value future sponsor support as an asset on the holistic balance sheet compensates for the increase in technical provisions, in particular in Germany and the United Kingdom. The contribution of the pension protection schemes that cover German Pensionsfonds and UK IORPs is relatively modest relative to aggregate liabilities. In Belgium many IORPs are backed by unlimited sponsor support, but its average value is negligible. The explanation is that a couple of Belgian IORPs dispose of large surpluses. These IORPs have included a negative value for sponsor support on the holistic balance sheet as it is expected that these excess funds will be returned to the sponsor in the future in the form of lower contributions. In Sweden a few participating IORPs have recourse to unlimited sponsor support. However, the dependence on future sponsor contributions is small as IORPs are well-funded with financial assets.

- 5.14 In Ireland and Norway no sponsor support is included as it is limited conditional in nature. Also in the Netherlands there is often no legal obligation for the sponsor to recover funding shortfalls. Still, Dutch IORPs reported a substantial value for sponsor support, diminishing to some extent the negative impact of the rise in technical provisions.
- 5.15 The IORPs in **Belgium** have on average a negative excess of assets over liabilities (EAL) of 12% of liabilities, while experiencing a positive EAL of 11% under the current supervisory regime. Technical provisions rise due to the use of the risk-free discount rate (+18% compared to the current regime) and the inclusion of the risk margin (+9%). Sponsor support amounts to 0.2% on average and cannot compensate for the higher liabilities. The overall impact is strongly influenced by two large IORPs with no or no effective recourse to sponsor support. If these IORPs were excluded, the result would have been a negative EAL of 0.2%. The other IORPs recognised sponsor support and reported either a small negative excess of assets over liabilities, in which case sponsor support reduces the negative EAL where the remaining deficit is due to the default risk of the sponsor, or a positive EAL, in which sponsor support is recognised as a negative asset and, hence, reduces the positive EAL. The IORPs with a deficit need on average 18% of sponsor support.
- 5.16 In **Germany** technical provisions also increase strongly, driven mainly by the use of a risk free interest rate curve instead of the currently used discount rates and by the introduction of a separate risk margin.
- Pensionsfonds can offset this increase by including sponsor support and the pension protection scheme, which acts as a balancing item on the holistic balance sheets. This leads to a reduced, but still (marginally) positive excess of assets over liabilities.
  - Pensionskassen, where there is no protection by a pension protection scheme, can only partly offset the increase in technical provisions by including the value of sponsor support and the possibility to reduce benefits (ex-ante mechanism). This results in a negative overall excess of assets over liabilities of 4% of liabilities compared to a positive excess of assets over liabilities of 6% in the current situation. The excess of assets over liabilities is not negative for all Pensionskassen: some can close the gap in the holistic balance sheet, but don't have a positive excess of assets over liabilities.
- 5.17 In **Ireland** IORPs would experience a negative excess of assets over liabilities of almost 60% of liabilities. Technical provisions would almost double compared to the current situation due to the use of the risk-free discount curve – instead of an expected return on assets – and the inclusion of the risk margin. IORPs do not dispose of any sponsor support to compensate for this increase and ex post benefit reductions have not been included in the calculation of set 3A.
- 5.18 For the **Netherlands** the current positive excess of assets over liabilities of 2% of liabilities would in set 3A decrease to a negative excess of assets over liabilities of 10% of liabilities. This is mainly due to the inclusion of mixed benefits and the inclusion of a risk margin.
- 5.19 In **Norway** the excess of assets over liabilities declines from 11% to 6% of liabilities. The decrease in the best estimate due to a higher discount curve is

more than offset by the inclusion of the risk margin in technical provisions. No enforceable sponsor support is available to compensate for the higher liabilities.

- 5.20 In **Sweden** the excess of assets over liabilities increases. The best estimate of technical provisions decreases compared to the current situation by 8% due to a higher discount curve. However, the decrease is more or less offset by the inclusion of the risk margin, leaving technical provisions only slightly lower. Moreover, some pension funds can recognise sponsor support as an asset on the holistic balance sheet. Although the aggregate result for pension fund IORPs in Sweden is positive, the variation in the (size of) results between IORPs is large.

For the Article 4 insurance company the benchmark scenario results in approximately the same effect on the excess of assets over liabilities as for the aggregated pension funds, excluding the effect of sponsor support. The reduction of the best estimate of technical provisions due to a higher discount rate curve is more or less offset by the addition of the risk margin.

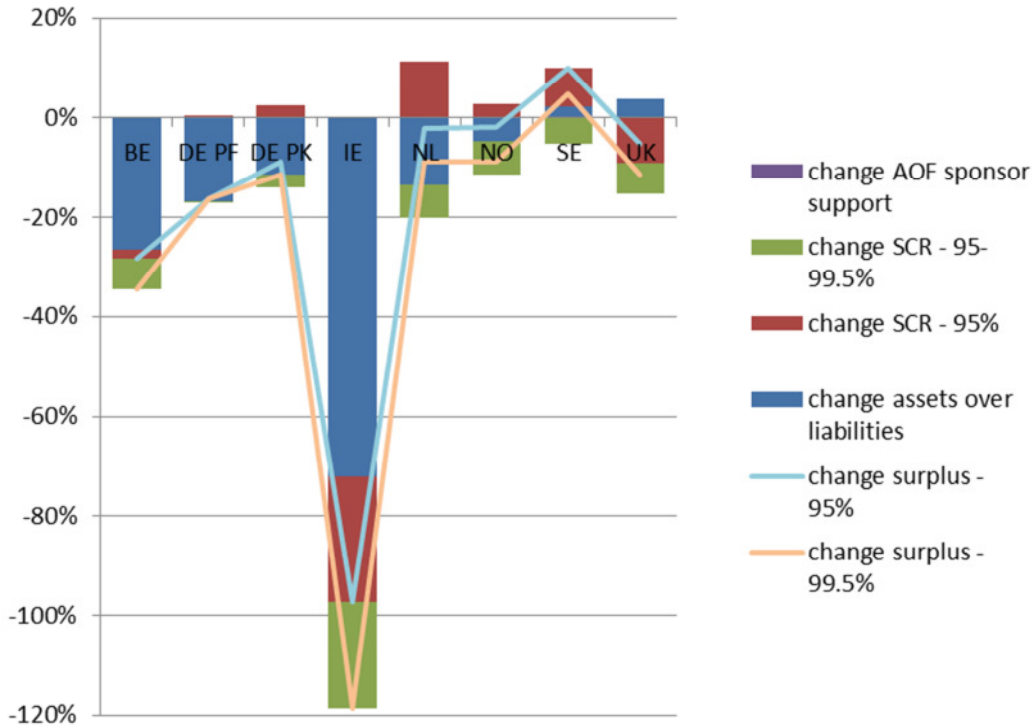
- 5.21 In the **United Kingdom** technical provisions increase significantly due to the use of the risk-free interest rate and the addition of the risk margin. This increase is more than offset by the inclusion of sponsor support and to a small extent the Pension Protection Fund (PPF). Overall there is a shortfall of assets relative to liabilities of almost 15%, or 292 billion euro. Under the holistic balance sheet, IORPs have in principle exhausted the possibility to use sponsor support to recover the present deficit. This differs from the current regime, where a shortfall can be made good through recovery plans, which means that the outcomes cannot be directly compared. The UK supervisor did not take into account benefit reductions in case of sponsor default as this only happens when the IORP is liquidated rather than as a process possible within the existence of the IORP.

### **Change in surplus over the capital requirement compared to the current regime**

- 5.22 In Belgium, Ireland and the United Kingdom the impact of the benchmark set 3A on the surplus over the capital requirement is more adverse than the impact on the excess of assets over liabilities. The reason is that the SCR in these countries exceeds the capital requirement in the present supervisory regimes, if they exist. In Germany, the Netherlands and Sweden the change in the surplus is less adverse than the change in the excess of assets over liabilities. In these member states the SCR is actually lower than the present capital requirements (or the traffic light stress test in the case of Sweden) as a consequence of the loss-absorbing capacity of adjustment and security mechanisms. In Norway the SCR with a confidence level of 95% is lower than the existing capital requirement, and the SCR with a confidence level of 99.5% is higher.
- 5.23 In **Belgium** a surplus of 9% of liabilities under the present funding requirements turns into a negative surplus (or shortfall) of 20% under the 99.5% confidence level and 16% under the 95% confidence level. Again, these results are strongly influenced by two large IORPs that have no (effective) recourse to the loss-absorbing capacity of sponsor support. If these IORPs were excluded from the sample the results would have been -1.2% and 0.2% respectively.
- 5.24 The Pensionsfonds in **Germany** would not only have a positive excess of assets over liabilities, but would also be able to meet the SCR. Sponsor support and the pension protection scheme provide for full loss-absorbency and effectively reduce

the SCR to zero. Some Pensionskassen would also be able to achieve a zero SCR through the loss-absorbing capacity of sponsor support and conditional benefits, but not all of them. On average, a negative surplus results of 7% of liabilities under the SCR with a 99.5% confidence level. Lowering the confidence level will diminish the shortfall, but never to zero.

5.25 Benchmark scenario (set 3A): Decomposition of change in surplus under 95% and 99.5% confidence levels compared to current regime, % current liabilities<sup>26</sup>



5.26 In **Ireland** adding the SCR results in a negative surplus ranging from 81 to 93% of liabilities.

5.27 In the **Netherlands** the shortfall with regard to the funding requirement of 17% of liabilities under the current regime (based on 97.5% confidence level) deepens in set 3A to a shortfall of 21% under the SCR with a 99.5% confidence level. In this QIS exercise, the SCRs with a 97.5% and 95% confidence level have been derived from the SCR with a 99.5% confidence level using approximations. Only the SCR for the 99.5% confidence level has been explicitly calibrated for the purpose of Solvency II for insurers. As a consequence, the (derived) SCR for the 97.5% confidence level in this QIS may lead to different outcomes than the current Dutch regime, which includes a capital requirement that is explicitly calibrated at a 97.5% confidence level.

5.28 In **Norway** the introduction of the SCR with a 99.5% confidence level would imply that the current average surplus would turn into a shortfall of 3% of liabilities. Five of the seven participating pension funds would not have sufficient capital to meet the SCR. The aggregate solvency position (available capital divided by SCR)

<sup>26</sup> This QIS tests SCRs with a 99.5%, 97.5% and 95% confidence level. The figure only displays the impact for the higher (99.5%) and lower (95%) confidence levels to keep it comprehensible.

under the benchmark scenario is 65% (99.5% confidence level), while the current position under Solvency I (available solvency margin divided by required solvency margin) is 333.5%. Norwegian IORPs would on average have a surplus under the 97.5% and 95% confidence levels.

- 5.29 In **Sweden** the average surplus for pension funds increases from 8% of liabilities to 13% over the SCR (99.5% confidence interval). This implies a rise of 58% in the benchmark scenario compared to the current situation. The increase is entirely due to sponsor support. However, sponsor support is only recognized at a few of the participating pension funds, who achieve full loss-absorbency through this and consequently report no capital requirement. They are therefore strongly influencing the overall impact. Excluding sponsor support, surplus over SCR would decrease by 55% compared to the current situation, from 8% of liabilities to 4%. Several individual pension funds, where sponsor support has no value, report negative surpluses in the benchmark scenario.

For the Swedish Art 4 insurance company the gross capital requirement for market risks remains more or less unchanged while the capital requirement for pension liability risk increases somewhat in the benchmark scenario compared to the current regime. Like for the pension funds, the biggest effect on total capital requirements comes from the lower diversification benefit, translating into a similar increase in the SCR in relation to the current situation. Due to the higher EAL, the surplus over the SCR (99.5% confidence level) relative to liabilities therefore remains above the aggregated surplus of the pension funds.

- 5.30 The SCR calculation for the benchmark scenario has two very distinctive effects in relation to the current Traffic Light stress test (one year horizon, 99.5% confidence interval). The much lower stress on equities more or less halves the capital required, while the higher stress on interest rates doubles the capital required, in total more or less balancing each other out for capital required for market risks. The effect of a lower capital requirement for equity risk however results in lower total SCR requirements for individual pension funds with very high allocation to equities.
- 5.31 Overall, the total SCR capital requirements (excluding sponsor support) are considerably higher compared to the Traffic Light stress test, as the correlations assumed are much higher and the diversification effects lower.<sup>27</sup>
- 5.32 In the **United Kingdom** IORPs have on average a deficit of all assets (including sponsor support and PPF) relative to risk free technical provisions (including risk margin) plus SCR of 24% of risk-free liabilities, a sum of 527 billion euro under the 99.5% confidence level. Under a 95% confidence level the shortfall is reduced to 20%. Whilst sponsor support and the PPF provide substantial loss-absorbency, it is insufficient to reduce the SCR to zero. It is important to remember that under the benchmark scenario technical provisions are calculated on a different basis than under the current UK regime as well as that under the holistic balance sheet sponsor support is included. As a result, the shortfall of 527 billion euro under the 99.5% confidence level is not directly comparable to deficits under the current UK regime.

---

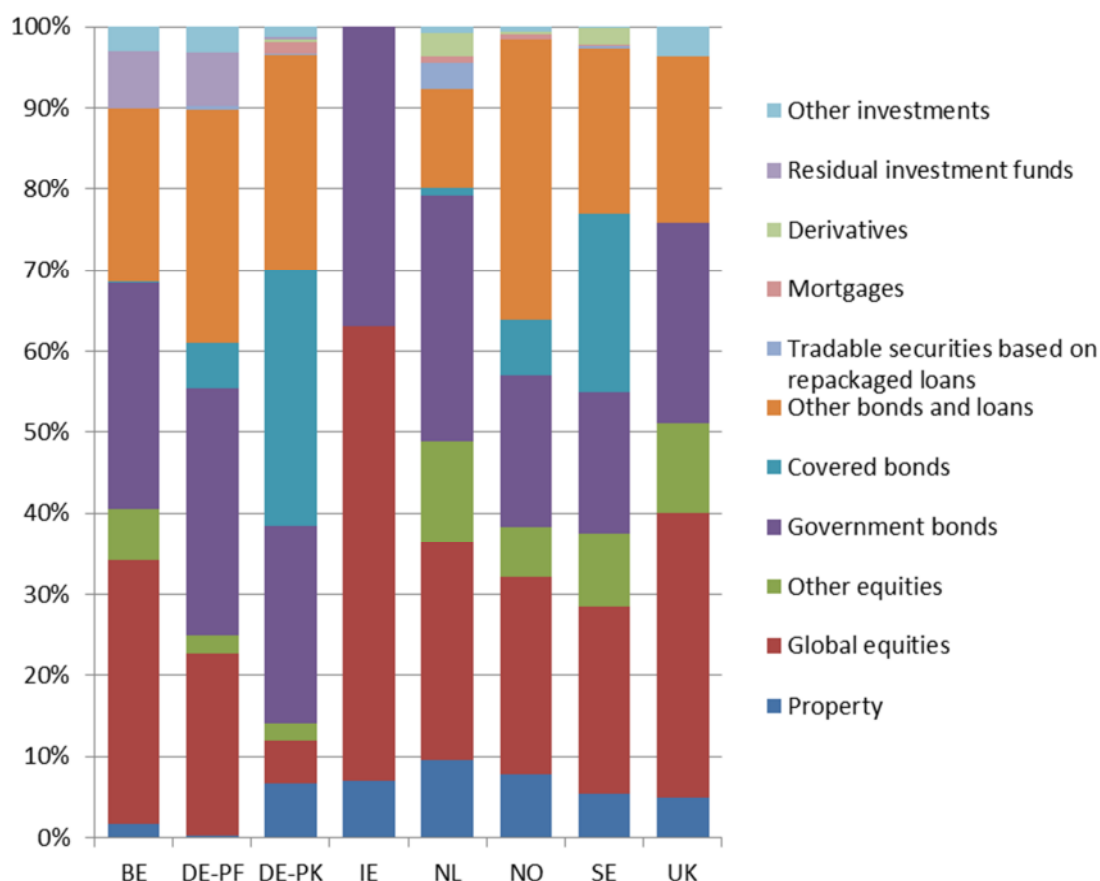
<sup>27</sup> For more information about the Traffic Light stress test regime please refer to Annex C.

## 5.1.2 Assets

5.33 In this QIS exercise, IORPs had to value their investment portfolio on a market-consistent basis, which is already common practice in most countries. Only in Germany this requirement resulted in an increase in the value of assets. This is mainly caused by the effect of applying market values to the assets of Pensionskassen instead of book values (amortized costs). The reclassification of some assets from reinsurance recoverables to investment assets for Pensionsfonds in the QIS, with a corresponding increase in investments, is only a presentational issue.

5.34 The portfolio compositions of IORPs are shown in figure 5.35. Investments in real assets (property and equities) range from 14% for Pensionskassen in Germany to over 60% for IORPs in Ireland. Pensionskassen in Germany and IORPs in Norway and Sweden have relatively large holdings of covered bonds. Participants were asked to apply a look-through approach to investments funds for the purpose of the SCR calculations. Belgian IORPs and German Pensionsfonds reported a significant proportion of residual investment funds.

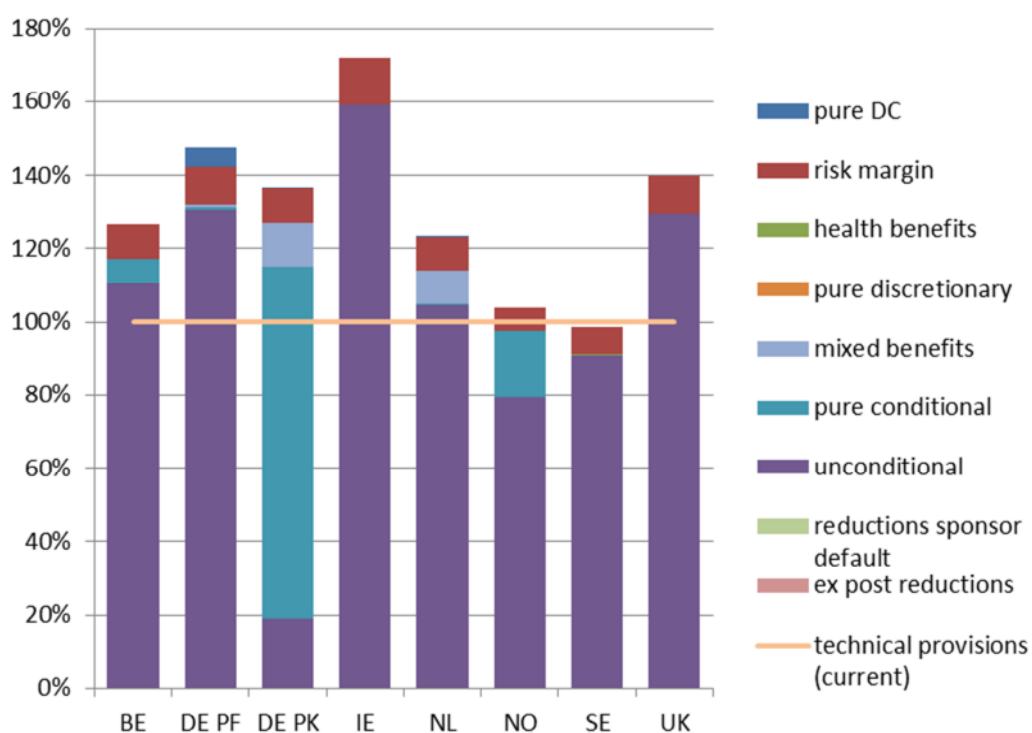
5.35 Benchmark scenario (set 3A): Asset allocation of IORPs, % total investments<sup>28</sup>



<sup>28</sup> Asset allocation refers to investments other than investments for pure DC. Data are compiled for the purpose of this QIS and do not correspond to data from official sources in at the end of December 2011.

### 5.1.3 Technical provisions

- 5.36 Market-consistent valuation of liabilities results in most countries in a steep rise of technical provisions under the benchmark set 3A. The impact is comparatively modest in Norway where technical provisions are 4% higher and Sweden where technical provisions are 1% lower compared to the current regime. The same result holds true for the Swedish Article 4 insurance company leaving technical provisions only marginally lower.
- 5.37 In Germany over two-thirds of technical provisions of Pensionskassen consist of pure conditional benefits containing the ex-ante reduction mechanism. Norwegian IORPs also have substantial pure conditional benefits reflecting that investment returns above the minimum guarantee are allocated to the customer as a conditional bonus. There is one Belgian IORP in the sample that manages a specific type of pension promise for independent workers which has been qualified by the IORP as a conditional benefit. The impact of this IORP on the Belgian figures is disproportionate due to its large relative size in the sample and given the fact that there are only very few IORPs that manage pension promises for independent workers. The best estimate of Pensionskassen in Germany and the Netherlands contains a significant proportion of mixed benefits.
- 5.38 Benchmark scenario (set 3A): Components of technical provisions, % current technical provisions



- 5.39 In some countries the most important reason for the strong increase in technical provisions is the use of the basic risk-free interest rate. In Belgium IORPs may use any discount rate ranging from a risk-free interest rate to the expected return on assets. In Germany the expected returns employed by Pensionsfonds and the fixed discount rates used by Pensionskassen are well above the basic risk-free rate. In Ireland the discount rate is based on expected returns. In the United Kingdom the discount rate may be based on the expected return on assets as long

as it is prudently chosen by trustees, which for most IORPs leads to significantly higher discount rates than used in the QIS.

- 5.40 The impact of the basic risk-free interest rate is relatively modest in the Netherlands, Norway and Sweden. The Netherlands already uses a risk-free swap curve that is comparable (though not identical) with the basic risk-free discount curve in set 3A of this QIS and therefore the impact on the technical provisions is limited.

In Norway the liabilities are currently discounted with the contractual guaranteed interest rate, which at the end of 2011 was below the risk free interest rate for most maturities. Also in Sweden the discount curve – an average between the government bond curve and the covered bond (AAA) curve – is lower than the risk-free curve in the benchmark scenario.

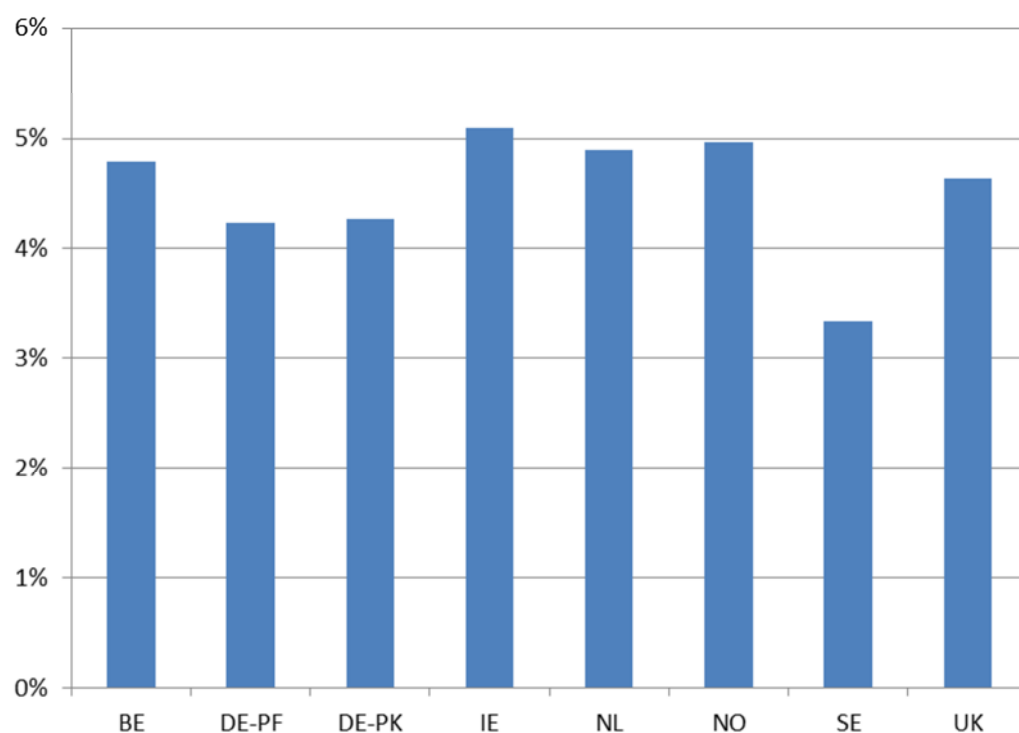
- 5.41 The risk margin based on the cost-of-capital concept is also an important reason for the increase in technical provisions. The technical specifications provided a default simplification, in which the risk margin is approximated as 8% of the best estimate. Pension funds in Norway have calculated the risk margin using two different methods. Some pension funds have calculated their risk margin using a Solvency II methodology. This method has resulted in a significant lower risk margin ranging from 1.2% to 1.65% of the calculated best estimate. The other participating pension funds have calculated their risk margin using the default simplification.
- 5.42 In Germany Pensionskassen included a grossed up value of ex-ante benefit adjustment mechanisms of -1.9 billion euro in the benchmark. This means that future benefit reductions with a value of 1.9 billion euro were taken into account in the QIS, resulting in correspondingly lower technical provisions. This value is small, because ex-ante benefit adjustment mechanisms are only taken into account in the holistic balance sheet as far as no sponsor support (or, of course, other assets) is available to cover liabilities.

### **5.1.4 Level B best estimate**

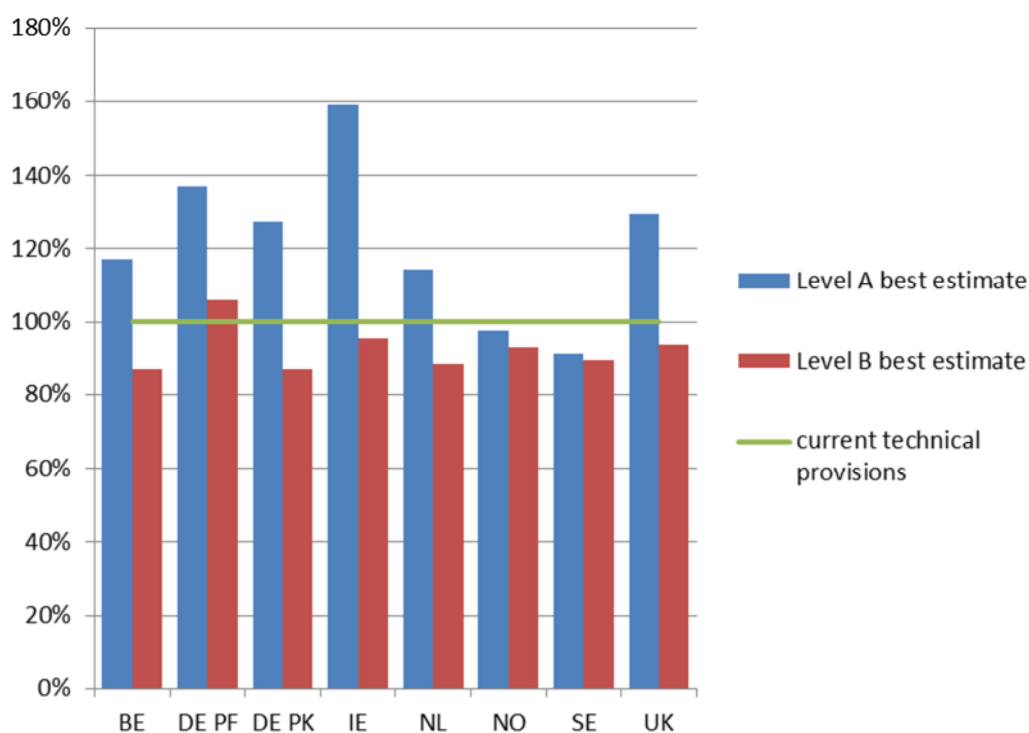
- 5.43 QIS participants were asked to report the Level B best estimate of technical provisions based on the expected return on assets.
- 5.44 The average expected returns mostly range between 4 and 5% (see Figure 5.46). The expected return in Sweden is significantly lower, which can be explained by the short duration of the Swedish government bonds index as compared to bond indices in the euro area and lower yields as such as compared to Norway and the United Kingdom. The yield of the AAA government bonds bucket underlying the expected return on assets was around 1.5% in Sweden compared to about 3% in the euro area, Norway and the United Kingdom.
- 5.45 In almost all countries the Level B best estimate of technical provisions lies (on average) below the current value of technical provisions in benchmark set 3A (see Figure 5.47).



5.46 Benchmark scenario (set 3A): Level B expected return on assets, % <sup>29</sup>

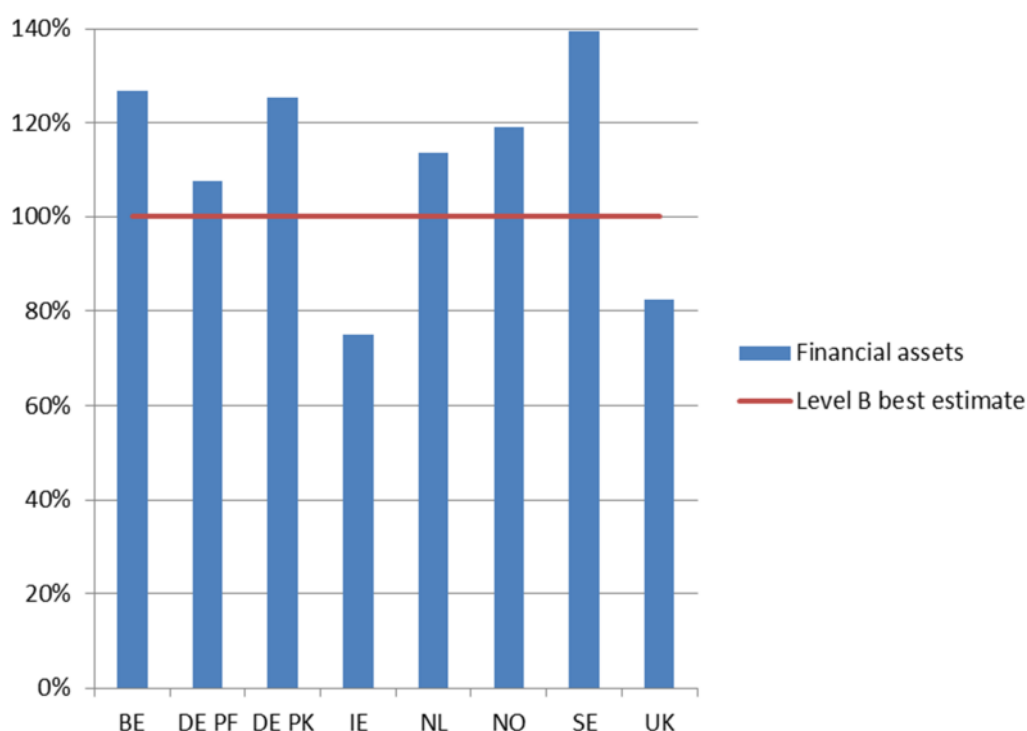


5.47 Benchmark scenario (set 3A): Level A and B best estimate, % current technical provisions



<sup>29</sup> The Level B results for the Netherlands should be considered as indicative only, as they were not validated in detail.

- 5.48 An exception are Pensionsfonds in Germany for which the Level B best estimate is about the same level as the technical provisions in the current system, as that follows the same concept. That the Level B best estimate in the United Kingdom is lower than the current value of technical provisions reflects a higher than average discount rate for Level B compared to current funding assumptions, which require prudent assumptions rather than best estimates.
- 5.49 For the Swedish Article 4 insurance company the level B best estimate is slightly higher than for the aggregated pension funds, as a result of asset composition, but still below current technical provisions.
- 5.50 IORPs in most countries would be able to cover the Level B best estimate with financial assets, i.e. without including any security mechanisms (see Figure 5.51). In Ireland and the United Kingdom the gap between the Level B best estimate using the QIS technical specifications and financial assets would be lower than the funding shortfall under the current supervisory regime.
- 5.51 Benchmark scenario (set 3A): Financial assets and Level B best estimate, % Level B best estimate <sup>30</sup>



### 5.1.5 Sponsor support and pension protection schemes

- 5.52 The reported values of sponsor support in benchmark set 3A range from on average 0.2% in Belgium to 31% of liabilities in the United Kingdom. The supervisor in Ireland has not included any value for sponsor support, as it is categorised as 'limited conditional'.<sup>31</sup> Norway did not include any value for sponsor support either as it was considered limited conditional as well.

<sup>30</sup> Financial assets are defined as investments plus the category 'other assets'.

<sup>31</sup> Limited conditional sponsor support is defined in the technical specifications as sponsor support where its legal nature means that the sponsor has the opportunity to choose to no longer provide support.

- 5.53 The value of the pension protection scheme amounts to 1.8% of liabilities for Pensionsfonds in Germany and 0.6% in the UK.

Table 5.1: Benchmark scenario (set 3A): Value of security mechanisms, % liabilities								
	BE	DE PF	DE PK	IE	NL	NO	SE	UK
Pension protection scheme	0	2	0	0	0	0	0	1
Sponsor support	0	20	16	0	8	0	2	31
Maximum value of sponsor support	552	820	290	0	57	0	28	127
Liabilities (billion EUR)	17	33	162	100	972	13	23	2155

- 5.54 In **Belgium** many IORPs have a sponsor that provides unlimited support. The reported value of sponsor support is close to zero on average. It should be noted though that there is a lot of variation behind this average. Two large IORPs have no or no effective recourse to sponsor support and did not report any on the holistic balance sheet. Some other IORPs have recognised a substantial negative value for sponsor support (up to -44% of liabilities). The reason is that these IORPs have substantial surpluses that are expected to be returned to the sponsor at some future stage in the form of lower contributions. These negative values more or less cancel out the positive values for sponsor support included by many other IORPs (up to 35% of liabilities). If only the IORPs had been considered that report a positive value for sponsor support, the value would have been 18% of liabilities.
- 5.55 In **Germany** a value of sponsor support of 32 billion euro is included in the grossed up holistic balance sheets of Pensionskassen and Pensionsfonds combined. The value of the pension protection scheme in the grossed up holistic balance sheets of Pensionsfonds is 0.6 billion euro. This rather "small" value may be influenced by the fact that there are very strong sponsoring undertakings, which leads to a small remaining gap in the HBS "before pension protection schemes", and the pension protection scheme is taken into account only in so far as it is needed to close this small gap. It should be noted that without the pension protection scheme the holistic balance sheet of Pensionsfonds would not be balanced (see the description of sets 12 and 13 in Section 8.7).
- 5.56 The value for sponsor support in the **Netherlands** equals 8% of liabilities. The number of IORPs for which the employer has provided guarantees is very limited. The sponsor support for most IORPs would be classified as limited conditional for which the technical specifications prescribed a value of zero. However, considering that for many pension schemes there is a (realistic) expectation that the sponsoring undertaking will provide additional funding in situations of underfunding, Dutch IORPs have included the expected value of sponsor support. The quality of the value (of the maximum) of sponsor support was difficult to assess.
- 5.57 In **Sweden** only defined benefit schemes of pension funds are backed by sponsor support. In some cases Finansinspektionen has made the tentative conclusion that sponsor support may not be legally enforceable and has no value for the purpose of this QIS. This results in only a few pension funds having sponsor support

included on the holistic balance sheet, amounting to 2% of liabilities. The sponsors are not in a position to decide on a restitution of the current surplus. In doing the calculation this results in a positive value of sponsor support in the balance sheet for all concerned funds despite the surplus over the SCR. Negative values of sponsor support would have been obtained if the sponsor had been in a position to decide on the surplus. The values of sponsor support are relatively small as the concerned pension funds are fully funded without taking sponsor support into account. For the funds with sponsor support, the benchmark scenario would have shown a positive surplus even without including sponsor support.

- 5.58 The Swedish pension protection scheme only applies to pension foundations, for which a partial result of the benchmark scenario is available. The technical provisions for the employer increase with 11%. However, for the credit insurer, calculating exposure with the discount rate employed by an insurance company (2%) in case of default, there is no change. As the credit insurance covers all technical provisions and with the assumption made in the QIS about guarantee schemes having zero default risk, the technical provisions as well as the SCR are fully covered in all scenarios.
  
- 5.59 Sponsor support in the **United Kingdom** as valued using the QIS technical specifications amounts to around 650 billion euro (or 550 billion pounds) or around 70% of the Level A shortfall and is therefore not able to balance the holistic balance sheet in respect to all UK schemes, leaving a substantial gap. An important reason is that for many IORPs, the value of sponsor support is capped by the maximum amount of support the employer is capable of paying. It should be noted, however, that the value of maximum sponsor support varies considerably for individual IORPs. Around 50% of individual UK IORPs have sponsor wealth that exceeds their Level A shortfall and approximately 25% of individual UK IORPs do not have enough sponsor wealth to cover 50% of Level A deficits.
  
- 5.60 One critical assumption for valuing sponsor support in the United Kingdom is the annual probability of default for a scheme sponsor. Most UK sponsors do not have credit ratings. For the purpose of this QIS, the UK supervisor assumed that unrated sponsors have the same probability of insolvency as a BBB-rated company, as this is considered appropriate from the UK experience. Based on the experience of the number of schemes entering the UK PPF, this gives a reasonable overall measure of the risk for the entities concerned. However, it should be noted that this is one of the most critical assumptions made in the UK QIS calculations, as using a different default probability could significantly increase or decrease the overall funding shortfall in the UK. For example, if the UK supervisor has assumed that unrated sponsors had the same insolvency probabilities as a B-rated company, the overall UK shortfall (including SCR) under the holistic balance sheet would increase by an additional £300bn.
  
- 5.61 The value of the pension protection scheme as calculated for the QIS is small relative to the aggregate liabilities in the United Kingdom. The main reason is that it is likely that most UK IORPs will have a surplus on a PPF basis, because of the assumption that sponsor support is based on contributions to reach Level A. This means that the funding level of IORPs would rapidly exceed that required to meet the PPF level, so that the exposure of the PPF is limited.

### 5.1.6 Recoverables from insurance contracts

- 5.62 IORPs in Belgium, Germany, and the Netherlands included recoverables from insurance contracts on the asset-side of the holistic balance sheet. However, the amounts recognised are with 0.01%-2% of liabilities relatively small (see Table 5.2).

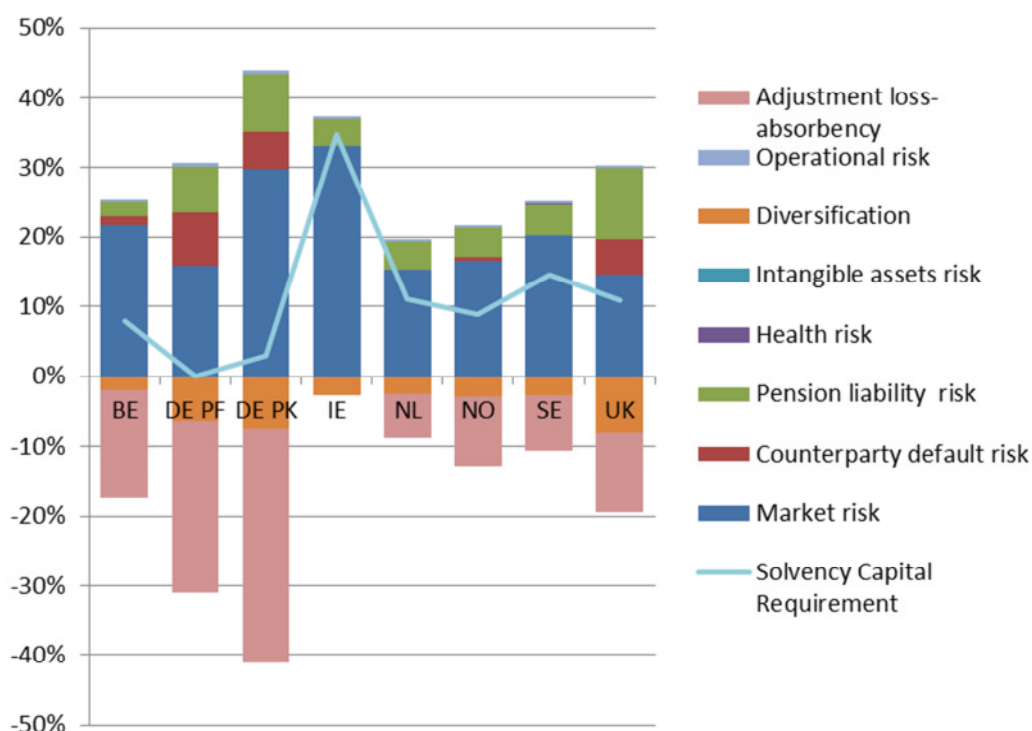
Table 5.2: Benchmark scenario (set 3A): Value of insurance recoverables, % liabilities								
	BE	DE PF	DE PK	IE	NL	NO	SE	UK
Recoverables from insurance	0	1	2	0	1	0	0	0
Liabilities (billion EUR)	17	33	162	100	972	13	10	2155

- 5.63 The amounts of (re-)insurance recoverables shown in the benchmark scenario for Pensionsfonds in Germany are lower than in the current regime. This is a presentational issue. The background for this is that in the current regime data, as reported for the QIS, Pensionsfonds have classified investments in "capital redemption operations" as "reinsurance recoverables". Since these products are economically comparable to loans or bonds, they have no risk mitigating effects. Therefore Pensionsfonds made the decision not to present those assets as reinsurance recoverables, but as investment assets in the sets of the QIS. This has no impact on the actual results of the QIS.
- 5.64 The valuation of insurance contracts was ignored in Ireland, Sweden and the United Kingdom. The Irish supervisor is only aware of IORPs insuring mortality risk which is an insignificant risk compared to longevity risk. Swedish pension funds do not insure risks related to the pension obligations. The UK supervisor considered this item not to be material, although it could be relevant for some individual IORPs.

### 5.1.7 Solvency capital requirement

- 5.65 In benchmark set 3A the solvency capital requirement with a 99.5% confidence level ranges from 0% of liabilities for German Pensionsfonds to 35% in Ireland (see Figure 5.70). German Pensionsfonds achieve full loss-absorbency through sponsor support and the pension protection scheme, which acts to absorb any residual risk. In Ireland on the other hand sponsor support and last resort benefit reductions have not been taken into account in this set.
- 5.66 The SCR for Pensionskassen in Germany and IORPs in other countries is partially reduced through the loss-absorbing capacity of adjustment and security mechanisms. The SCR is reduced for IORPs in Belgium through the loss-absorbing capacity of sponsor support and pure conditional benefits, for Pensionskassen in Germany through sponsor support, the pure conditional reduction mechanism and mixed benefits and for IORPs in the Netherlands through sponsor support and mixed benefits, Norway through pure conditional benefits, Sweden through sponsor support and the United Kingdom through sponsor support and the pension protection scheme.

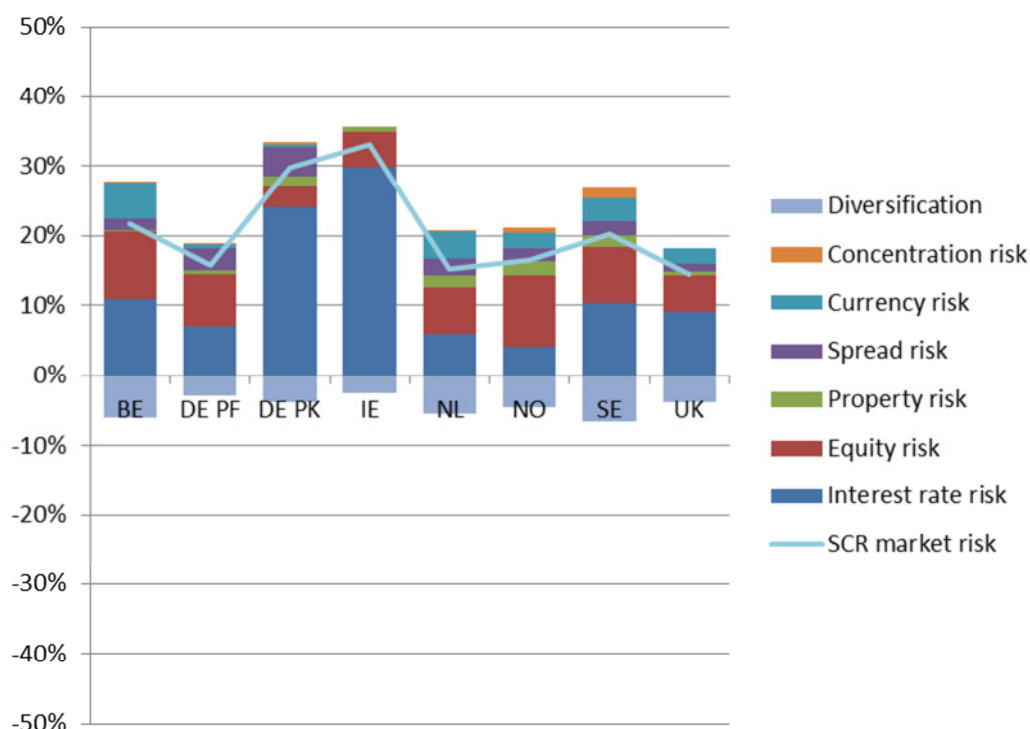
- 5.67 In Norway the downward adjustment of the SCR due to the loss-absorbing capacity of technical provisions is on average 54 percent of the basic solvency capital requirement, which reflects that the risk mitigation effect of conditional benefits has a huge impact for the Norwegian with-profit products.
- 5.68 IORPs in Belgium, Ireland and German Pensionskassen have the highest SCR for market risk. The United Kingdom has the most substantial SCR for pension liability risk. Germany and the United Kingdom have a significant capital requirement for counterparty default risk, which is related to the sponsor's credit risk. In the Netherlands there was also a significant level of sponsor support included on the holistic balance sheet, but the counterparty risk charge is negligible.
- 5.69 The capital charge for operational risk equals 0.5-0.6% of liabilities for German IORPs and 0.4% of liabilities in other countries. Only Swedish IORPs dispose of health benefits resulting in a capital requirement of on average 0.3% of liabilities. No country reported a capital charge for intangible asset risk.
- 5.70 Benchmark scenario (set 3A): Decomposition of solvency capital requirement with a 99.5% confidence level, % liabilities



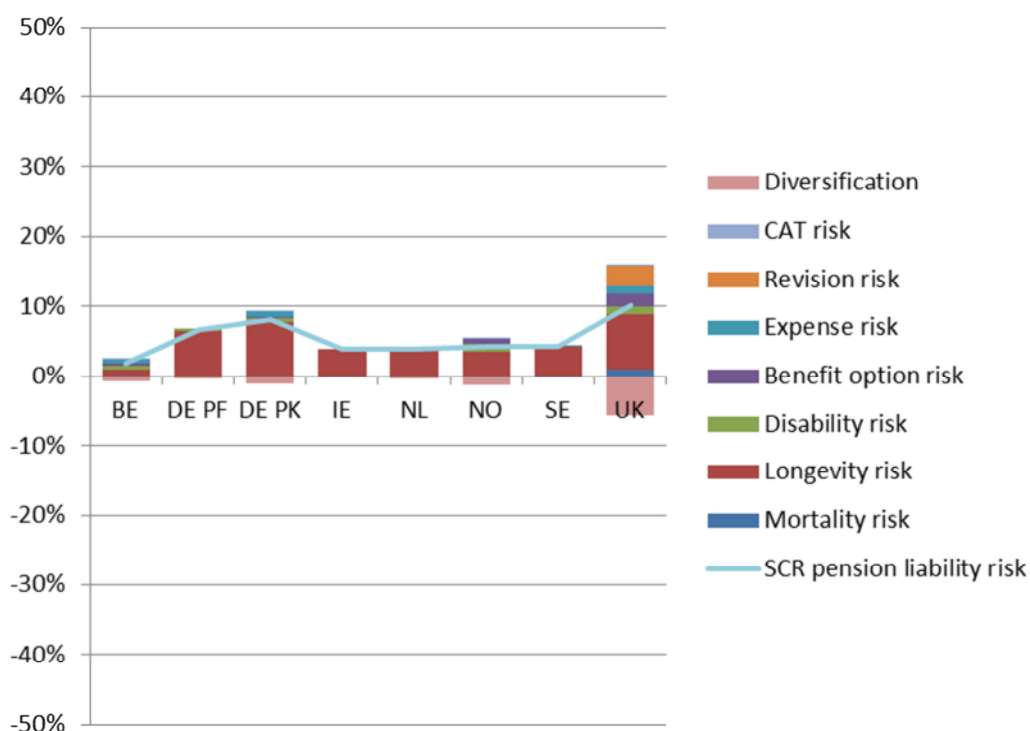
- 5.71 The high SCR for market risk for German Pensionskassen and Irish IORPs is explained by the relatively high interest rate risk. These IORPs report the highest duration of pension liabilities: 22 years for Pensionskassen and 20 year for Irish IORPs. Participating IORPs in the Netherlands reported that 60% (unweighted average) of interest rate risk is hedged. In the United Kingdom the proportion of interest rate risk hedged is 32% and in Belgium, Germany, Norway and Sweden this proportion lies between 0% and 10%.
- 5.72 The reported capital charges for currency risk range from 0% in Ireland to 5% of liabilities in Belgium. The proportion of currency risk hedged is the largest in the

United Kingdom (92%) followed by the Netherlands (about two thirds), Germany and Sweden (about half), Norway (about one third) and Belgium (8%).

#### 5.73 Benchmark scenario (set 3A): Decomposition of SCR market risk, % liabilities



#### 5.74 Benchmark scenario (set 3A): Components of SCR pension liability risk, % liabilities

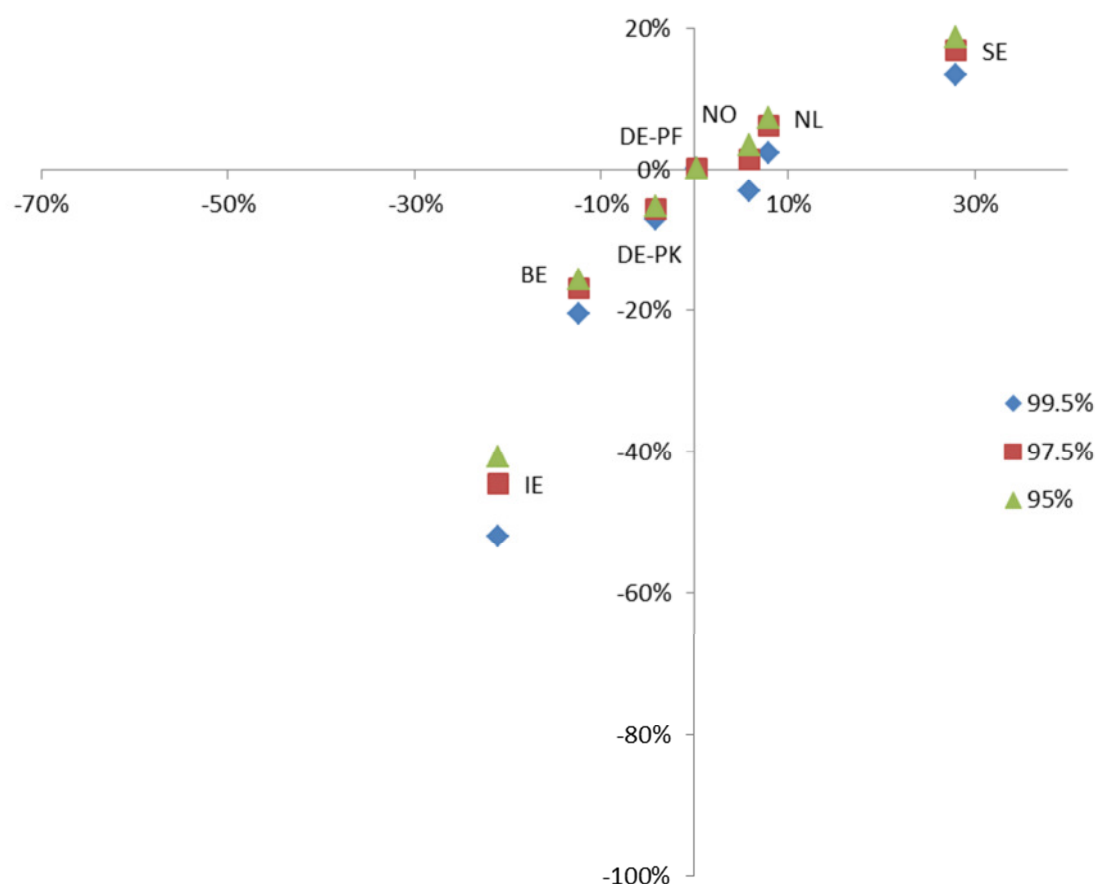


- 5.75 Longevity risk is the predominant pension liability risk for IORPs in the different countries. The gross SCR for longevity risk ranges from 1% of liabilities in Belgium to 8% in the United Kingdom. Most IORPs in Belgium provide for lump sum payments at retirement, which reduces the exposure to longevity risk. The UK supervisor applied its own simplified methods to the pension liability risk module. The capital requirement for longevity risk was assumed to be 8% of technical provisions, for revision risk 3% of technical provisions, for catastrophe risk 0.15% of technical provisions and for all other risks 1-2% of technical provisions.

## 5.2 Benchmark set 3B

### 5.2.1 Overall impact

- 5.76 In the benchmark set 3B IORPs in Sweden have more than sufficient financial assets to cover liabilities and to comply with the solvency capital requirement (SCR) (see Figure 5.77 as well as Annex A for the amounts in euros). IORPs in Norway have (on average) sufficient financial assets to cover liabilities and to meet the SCR at the 95% and 97.5% confidence level. However, IORPs are not able to satisfy the SCR at the 99.5% confidence level.
- 5.77 Benchmark scenario (set 3B): excess of assets over liabilities (horizontal axis) and surplus over solvency capital requirement (vertical axis), in % liabilities<sup>32</sup>



<sup>32</sup> See Annex A for the corresponding outcomes in billions of euros.



- 5.78 Pensionsfonds in Germany have (on average) a slight positive excess of assets over liabilities as well as a positive surplus over the SCR. Pensionsfonds are backed up by sponsor support as well as a pension protection scheme which acts as a balancing item on the holistic balance sheet. These security mechanisms also provide for full loss-absorbency in adverse scenarios and effectively reduce the SCR to zero. German Pensionskassen experience a negative excess of assets over liabilities as well as a shortfall with respect to the SCR. In most cases Pensionskassen are also covered by sponsor support. The pension protection scheme does not cover Pensionskassen. Some Pensionskassen do manage to balance the holistic balance sheets and to meet the SCR through the allowance to reduce benefits included in pension contracts. This ex ante reduction mechanism is able to absorb all risks and to reduce the SCR to zero.
- 5.79 The Netherlands also show a positive excess of assets over liabilities and a surplus over the SCR in set 3B. The main reason is that many IORPs in the Netherlands have, in the benchmark scenario, taken into account ex post benefit reductions. This last resort mechanism allows for a reduction in accrued pensions when assets are insufficient relative to liabilities and affords strong loss-absorbency in the calculation of the SCR. The adjustment mechanism even results in significant surpluses due to the asymmetric nature of the ex post reduction mechanism. Pensions are decreased in negative economic scenarios, but not increased in positive scenarios. Dutch IORPs have also included a value for sponsor support, even though it is often limited conditional or non-automatic.
- 5.80 Both the excess of assets over liabilities as well as the surplus are negative for IORPs in Belgium and Ireland. Ireland has also included ex post benefit reductions in set 3B, but the adjustment mechanism is not strong enough to close the gap on the holistic balance sheet. Only accrued rights of active and deferred members can be cut and not the pensions of retirees. In addition, pensions can only be reduced up to the level of liabilities under current, national valuation standards. Ireland has not included a value for sponsor support, because it is limited conditional in nature.
- 5.81 Most IORPs in Belgium are covered by unlimited sponsor support. The value of sponsor support recognised is in most cases not enough to close the gap between liabilities and financial assets. The reason is that there is some probability that in a future scenario the sponsor is no longer capable of supporting the pension promise. The outcomes for Belgium are distorted due to the presence of two large IORPs without any effective recourse to sponsor support. The shortfalls with regard to liabilities and the SCR would have been substantially smaller without these two IORPs.

### **Change in excess of assets over liabilities compared to current regime**

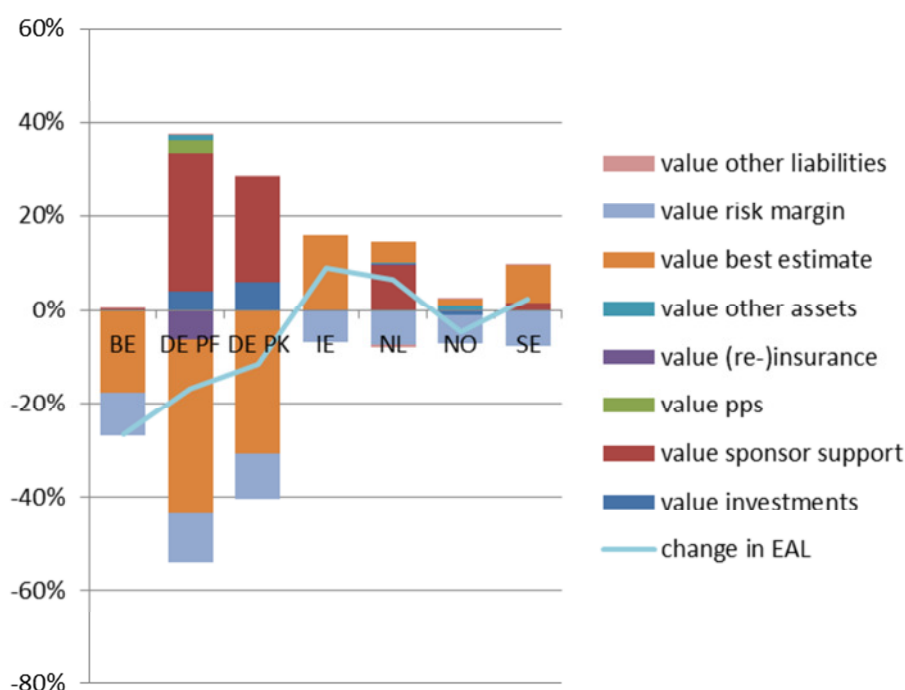
- 5.82 The excess of assets over liabilities declines in Belgium, Germany and Norway in comparison with the situation under the current supervisory regimes (see Figure 5.84). In Ireland, the Netherlands and Sweden the excess of assets over liabilities improves in benchmark set 3B.
- 5.83 In Belgium and Germany technical provisions increase by on average 25 to 50%. The most important driver is the introduction of market valuation of technical provisions. Many IORPs in Belgium and the Pensionsfonds in Germany currently

use a discount rate based on the expected return on assets, which exceeds the basic risk-free interest rate curve. The same holds true for the fixed discount rates currently employed by German Pensionskassen.

In four countries the best estimate of technical provisions declines compared to the current regime. In Ireland the risk-free interest rate is also considerably lower than the current discount rates, which are based on the expected return on assets. However, the best estimate of technical provisions decreases by almost 20% in Ireland through the inclusion of ex post benefit reductions in set 3B. Dutch IORPs already use an (adjusted) interest rate swap curve comparable (though not identical) with the one used in the benchmark scenario. A more significant impact for Dutch IORPs is the inclusion of mixed benefits in technical provisions. Still, the best estimate of technical provisions in set 3B declines in the Netherlands by almost 5% due to the inclusion of ex post benefit reductions. The best estimate of technical provisions declines in Norway and Sweden, because the basic risk-free interest rate curve exceeds the contractual guaranteed interest rate in Norway and the risk-free bond curve in Sweden. However, the value of technical provisions increases in Norway due to the inclusion of the risk margin.

The inclusion of the risk margin in technical provisions also has an upward effect on the value of liabilities in all other countries considered in set 3B.

#### 5.84 Benchmark scenario (set 3B): Decomposition of change in excess of assets over liabilities compared to current regime, % current liabilities



#### 5.85 In Germany the possibility to value future sponsor support as an asset on the holistic balance sheet compensates to an important extent for the increase in technical provisions. The contribution of the pension protection scheme that covers German Pensionsfonds is relatively modest. In Belgium many IORPs are backed by unlimited sponsor support, but its average value is negligible. The explanation is that a couple of Belgian IORPs dispose of large surpluses. These

IORPs have included a negative value for sponsor support on the holistic balance sheet as it is expected that these excess funds will be returned to sponsor in the future. In Sweden a few participating IORPs have recourse to unlimited sponsor support. However, the dependence on future sponsor contributions is small as IORPs are well-funded with financial assets.

- 5.86 In Ireland and Norway no sponsor support is included as it is limited conditional in nature. Also in the Netherlands there is often no legal obligation for the sponsor to recover funding shortfalls. Still, Dutch IORPs reported a substantial value for sponsor support, which more than compensates for the slight increase in technical provisions.
- 5.87 The IORPs in **Belgium** have on average a negative excess of assets over liabilities (EAL) of 12% of liabilities, while experiencing a positive EAL of 11% under the current supervisory regime. Technical provisions rise due to the use of the risk-free discount rate (+18% compared to the current regime) and the inclusion of the risk margin (+9%). Sponsor support amounts to 0.2% on average and cannot compensate for the higher liabilities. The overall impact is strongly influenced by two large IORPs with no or no effective recourse to sponsor support. If these IORPs were excluded, the result would have been a negative EAL of 0.2%. The other IORPs recognised sponsor support and reported either a small negative excess of assets over liabilities, in which case sponsor support reduces the negative EAL where the remaining deficit is due to the default risk of the sponsor, or a positive EAL, in which sponsor support is recognised as a negative asset and, hence, reduces the positive EAL. The IORPs with a deficit need on average 18% of sponsor support.
- 5.88 In **Germany** technical provisions also increase strongly, driven mainly by the use of a risk free interest rate curve instead of the currently used discount rates and by the introduction of a separate risk margin.
- Pensionsfonds can offset this increase by including sponsor support and the pension protection scheme, which acts as a balancing item on the holistic balance sheets. This leads to a reduced, but still (marginally) positive excess of assets over liabilities.
  - Pensionskassen, where there is no protection by a pension protection scheme, can only partly offset the increase in technical provisions by including the value of sponsor support and the possibility to reduce benefits (ex-ante mechanism). This results in a negative overall excess of assets over liabilities of 4% of liabilities compared to a positive excess of assets over liabilities of 6% in the current situation. The excess of assets over liabilities is not negative for all Pensionskassen: some can close the gap in the holistic balance sheet, but don't have a positive excess of assets over liabilities.
- 5.89 In **Ireland** IORPs would experience a negative excess of assets over liabilities of 21% of liabilities compared to a negative EAL of 28% of liabilities under the current regime. Technical provisions would decline compared to the current situation due to the inclusion of a large value for ex post benefit reductions. This more than compensates for the upward effect on technical provisions of the risk-free discount curve – instead of an expected return on assets – and the inclusion of the risk margin. Ireland did not include a value for limited conditional sponsor support on the holistic balance sheet.

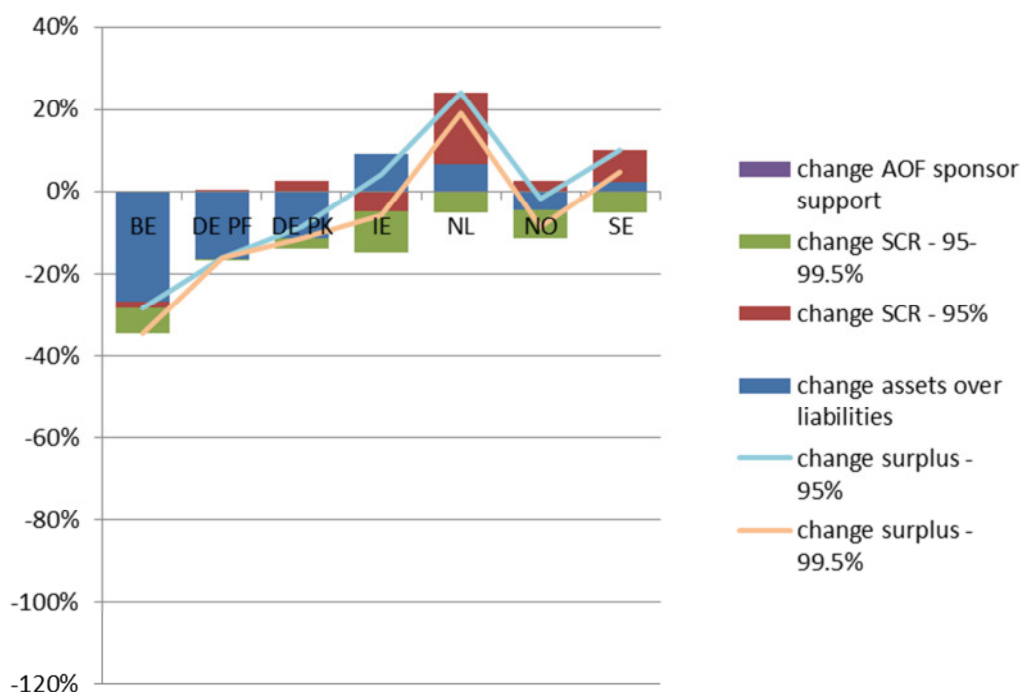
- 5.90 For the **Netherlands** the current positive excess of assets over liabilities of 2% of liabilities would in set 3B increase to 8% of liabilities. This is mainly due to the inclusion of a substantial amount of ex post benefit reductions and to a lesser extent sponsor support. The last resort benefit reductions almost offset the increase in technical provisions due to the lower discount curve and the inclusion of mixed benefits and a risk margin.
- 5.91 In **Norway** the excess of assets over liabilities declines from 11% to 6% of liabilities. The decrease in the best estimate due to a higher discount curve is more than offset by the inclusion of the risk margin in technical provisions. No enforceable sponsor support is available to compensate for the higher liabilities.
- 5.92 In **Sweden** the excess of assets over liabilities increases. The best estimate of technical provisions decreases compared to the current situation by 8% due to a higher discount curve. However, the decrease is more or less offset by the inclusion of the risk margin, leaving technical provisions only slightly lower. Moreover, some pension funds can recognise sponsor support as an asset on the holistic balance sheet. Although the aggregate result for pension fund IORPs in Sweden is positive, the variation in the (size of) results between IORPs is large.
- 5.93 For the Article 4 insurance company the benchmark scenario results in approximately the same effect on the excess of assets over liabilities as for the aggregated pension funds, excluding the effect of sponsor support. The reduction of the best estimate of technical provisions due to a higher discount rate curve is more or less offset by the addition of the risk margin.

#### **Change in surplus over the capital requirement compared to current regime**

- 5.94 In the Netherlands and Sweden the surplus over the SCR in set 3B increases compared to the current regime (see Figure 5.96). In both member states the excess of assets over liabilities increases and the SCR is lower than the present buffer requirements (FTK in the Netherlands and the traffic light stress test in Sweden). The SCR in the Netherlands is lowered through the loss-absorbing capacity of sponsor support, mixed benefits and ex post benefit reductions, in Sweden through the loss-absorbing capacity of sponsor support. The SCR for German Pensionsfonds and Pensionskassen is also lower than the present capital requirements through the loss-absorbency of security and adjustment mechanisms, but the impact of this on the surplus is insufficient to compensate for the decline in the excess of assets over liabilities. In Norway the SCR with a confidence level of 95% is lower than the existing capital requirement, the SCR with a confidence level of 99.5% higher.
- 5.95 In Belgium and Ireland the SCR in set 3B is higher than the present capital requirements regardless of the confidence level. In Belgium sponsor support (and pure conditional benefits in case of the IORP managing the pension scheme for independent worker) provides for substantial loss-absorbency, but insufficient to reduce the SCR below the current capital requirements. In Ireland the loss-absorbing capacity of adjustment and security mechanisms in set 3B is zero. Limited conditional sponsor support is not included and the best estimate of technical provisions already contains the maximum attainable value of ex post benefit reductions. Further ex post benefit reductions are not possible in the adverse scenarios underlying the calculation of the SCR. Still, the surplus over the

SCR with a 95% confidence level turns out higher in comparison to the current regime as a consequence of the rise in the excess of assets over liabilities.

5.96 Benchmark scenario (set 3B): Decomposition of change in surplus under 95% and 99.5% confidence levels compared to current regime, % current liabilities <sup>33</sup>



5.97 In **Belgium** a surplus of 9% of liabilities under the present funding requirements turns into a negative surplus (or shortfall) of 20% under the 99.5% confidence level and 16% under the 95% confidence level. Again, these results are strongly influenced by two large IORPs that have no (effective) recourse to the loss-absorbing capacity of sponsor support. If these IORPs were excluded from the sample the results would have been -1.2% and 0.2% respectively.

5.98 The Pensionsfonds in **Germany** would not only have a positive excess of assets over liabilities, but would also be able to meet the SCR. Sponsor support and the pension protection scheme provide for full loss-absorbency and effectively reduce the SCR to zero. Some Pensionskassen would also be able to achieve a zero SCR through the loss-absorbing capacity of sponsor support and conditional benefits, but not all of them. On average, a negative surplus results of 7% of liabilities under the SCR with a 99.5% confidence level. Lowering the confidence level will diminish the shortfall, but never to zero.

5.99 In **Ireland** the shortfall of 41% liabilities in the current regime would increase to shortfall in set 3B of 52% of liabilities relative to the SCR with a 99.5% confidence level. The excess of assets over liabilities increase due inclusion of a large amount of ex post benefit reductions. However, the increase in the EAL is insufficient to compensate for the rise in the capital requirement. The shortfall relative to the

<sup>33</sup> This QIS tests SCRs with a 99.5%, 97.5% and 95% confidence level. The figure only displays the impact for the higher (99.5%) and lower (95%) confidence levels to keep it comprehensible.

SCR with a 95% confidence level diminishes as the increase in the SCR is in that case more than offset by the increase in the excess of assets over liabilities.

- 5.100 In the **Netherlands** the shortfall with regard to the funding requirement of 17% of liabilities under the current regime (based on 97.5% confidence level) turns in set 3B into a surplus of 2% under the 99.5% confidence level. The reasons are the increase in the excess of assets over liabilities and that the substantial reduction of SCR in the benchmark scenario through the loss-absorbing capacity of ex post benefit reductions and to a lesser extent sponsor support. As a result the SCR with a 99.5% confidence level is much lower than the existing buffer requirement Netherlands with a 97.5% confidence level.
- 5.101 In **Norway** the introduction of the SCR with a 99.5% confidence level would imply that the current average surplus would turn into a shortfall of 3% of liabilities. Five of the seven participating pension funds would not have sufficient capital to meet the SCR. The aggregate solvency position (available capital divided by SCR) under the benchmark scenario is 65% (99.5% confidence level), while the current position under Solvency I (available solvency margin divided by required solvency margin) is 333.5%. Norwegian IORPs would on average have a surplus under the 97.5% and 95% confidence levels.
- 5.102 In **Sweden** the average surplus for pension funds increases from 8% of liabilities to 13% over the SCR (99.5% confidence interval). This implies a rise of 58% in the benchmark scenario compared to the current situation. The increase is entirely due to sponsor support. However, sponsor support is only recognized at a few of the participating pension funds, who achieve full loss-absorbency through this and consequently report no capital requirement. They are therefore strongly influencing the overall impact. Excluding sponsor support, surplus over SCR would decrease by 55% compared to the current situation, from 8% of liabilities to 4%. Several individual pension funds, where sponsor support has no value, report negative surpluses in the benchmark scenario.

For the Swedish Art 4 insurance company the gross capital requirement for market risks remains more or less unchanged while the capital requirement for pension liability risks increases somewhat in the benchmark scenario compared to the current regime. Like for the pension funds, the biggest effect on total capital requirements comes from the lower diversification benefit, translating into a similar increase in the SCR in relation to the current situation. Due to the higher EAL, the surplus over the SCR (99.5% confidence level) relative to liabilities therefore remains above the aggregated surplus of the pension funds.

- 5.103 The SCR calculation for the benchmark scenario has two very distinctive effects in relation to the current Traffic Light stress test (one year horizon, 99.5% confidence interval). The much lower stress on equities more or less halves the capital required, while the higher stress on interest rates doubles the capital required, in total more or less balancing each other out for capital required for market risks. The effect of a lower capital requirement for equity risk however results in lower total SCR requirements for individual pension funds with very high allocation to equities.

5.104 Overall, the total SCR capital requirements (excluding sponsor support) are considerably higher compared to the Traffic Light stress test, as the correlations assumed are much higher and the diversification effects lower.<sup>34</sup>

## 5.2.2 Assets

5.105 In this QIS exercise, IORPs had to value their investment portfolio on a market-consistent basis, which is already common practice in most countries. Only in Germany this requirement resulted in an increase in the value of assets. This is mainly caused by the effect of applying market values to the assets of Pensionskassen instead of book values (amortized costs). The reclassification of some assets from reinsurance recoverables to investment assets for Pensionsfonds in the QIS, with a corresponding increase in investments, is only a presentational issue.

5.106 Benchmark scenario (3B): Asset allocation of IORPs, % total investments<sup>35</sup>



5.107 The portfolio compositions of IORPs are shown in figure 5.106. Investments in real assets (property and equities) range from 14% for Pensionskassen in Germany to over 60% for IORPs in Ireland. Pensionskassen in Germany and IORPs in Norway and Sweden have relatively large holdings of covered bonds. Participants were asked to apply a look-through approach to investments funds

<sup>34</sup> For more information about the Traffic Light stress test regime please refer to Annex C.

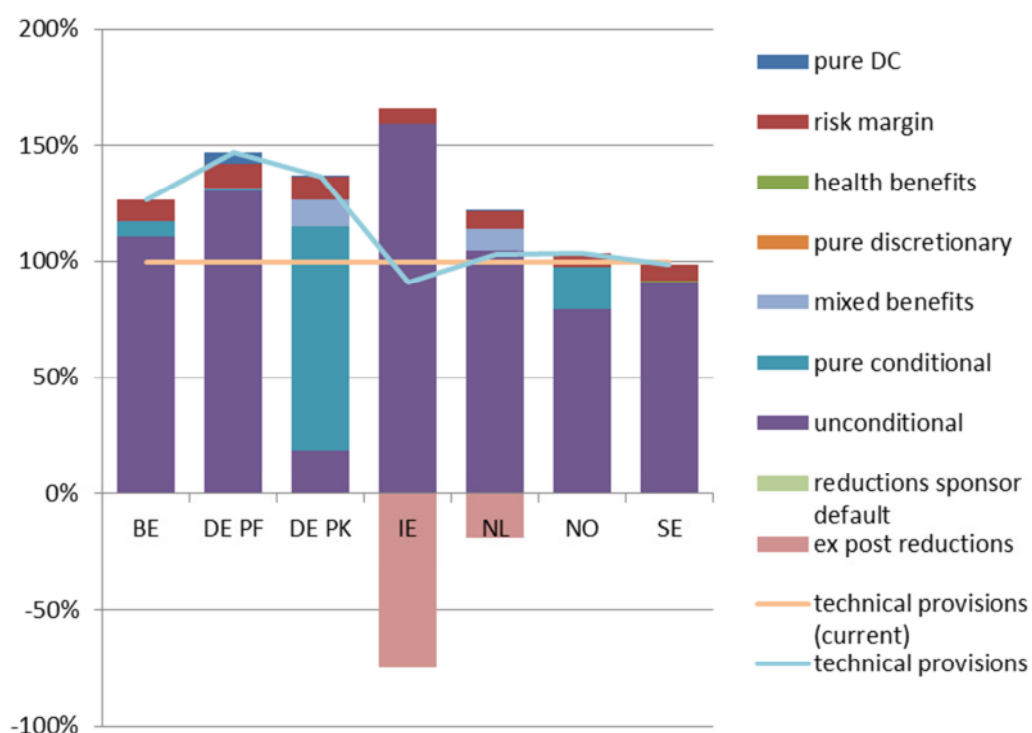
<sup>35</sup> Asset allocation refers to investments other than investments for pure DC. Data are compiled for the purpose of this QIS and do not correspond to data from official sources in at the end of December 2011.

for the purpose of the SCR calculations. Belgian IORPs and German Pensionsfonds reported a significant proportion of residual investment funds.

### 5.2.3 Technical provisions

5.108 Technical provisions rise steeply in Belgium and Germany compared to the current situation (see Figure 5.109). The impact is relatively modest in Ireland, Netherlands, Norway and Sweden under benchmark set 3B.

5.109 Benchmark scenario (set 3B): Components of technical provisions, % current technical provisions



5.110 The strong increase in technical provisions in Belgium and Germany is governed by the use of the basic risk-free interest rate. In Belgium IORPs may use any discount rate ranging from a risk-free interest rate to the expected return on assets. In Germany the expected returns employed by Pensionsfonds and the fixed discount rates used by Pensionskassen are well above the basic risk-free rate. Pensionskassen also have to include a significant portion of mixed benefits, which is only partly offset by the benefit adjustment through the ex-ante reduction mechanism contained in pure conditional benefits.

5.111 In Ireland the introduction of the risk-free interest rate curve also has major impact on the value of unconditional benefits as present discount rates are based on the expected return on assets. However, the upward effect of the discount rate is more than compensated by the estimated value of ex post benefit reductions in set 3B of 75% of current technical reserves. IORPs in the Netherlands included a value for ex post benefit reductions of almost 20% of current liabilities on the holistic balance sheet. This exceeds the increase in technical provisions mainly due to the inclusion of mixed benefits and the risk margin. The Netherlands already uses a risk-free swap curve that is comparable (though not identical) with



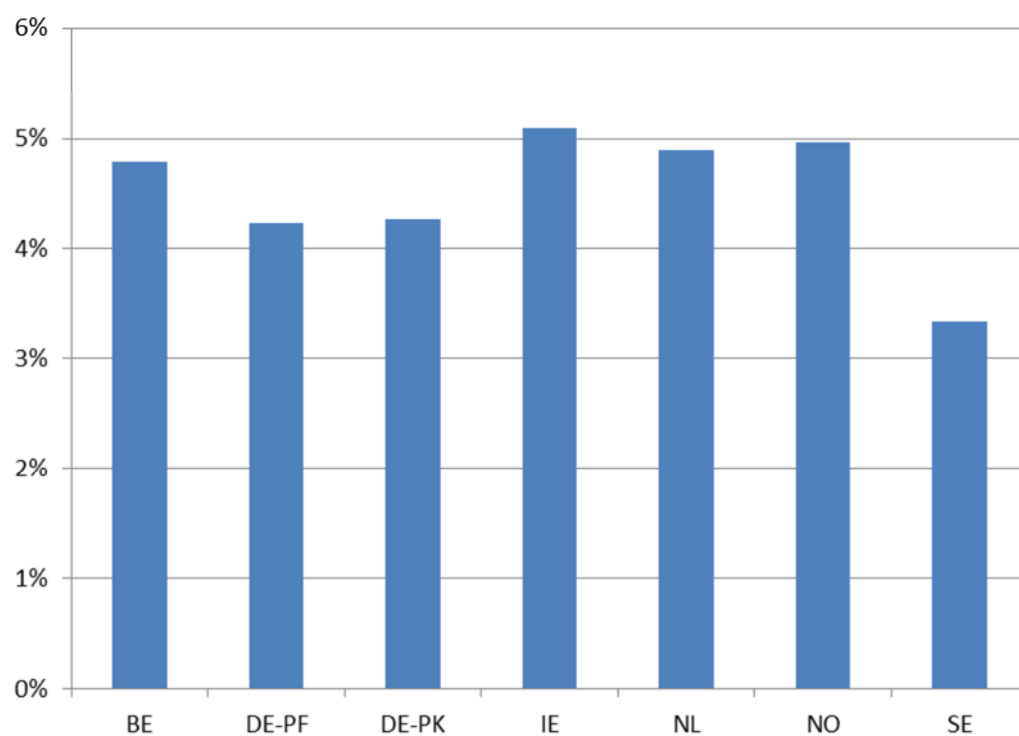
the basic risk-free discount curve in this QIS and therefore the impact of the discount rate is limited.

- 5.112 In Sweden the discount curve – an average between the government bond curve and the covered bond (AAA) curve – is lower than the risk-free curve in the benchmark scenario. In Norway the liabilities are currently discounted with the contractual guaranteed interest rate, which at the end of 2011 was also below the risk free interest rate for most maturities.
- 5.113 The risk margin based on the cost-of-capital concept is also an important reason for the increase in technical provisions. The technical specifications provided a default simplification, in which the risk margin is approximated as 8% of the best estimate. Pension funds in Norway have calculated the risk margin using two different methods. Some pension funds have calculated their risk margin using a Solvency II methodology. This method has resulted in a significant lower risk margin ranging from 1.2% to 1.65% of the calculated best estimate. The other participating pension funds have calculated their risk margin using the default simplification.
- 5.114 In Germany Pensionskassen included a grossed up value of ex-ante benefit adjustment mechanisms of -1.9 billion euro in the benchmark. This means that future benefit reductions with a value of 1.9 billion euro were taken into account in the QIS, resulting in correspondingly lower technical provisions. This value is small, because ex-ante benefit adjustment mechanisms are only taken into account in the holistic balance sheet as far as no sponsor support (or, of course, other assets) is available to cover liabilities.

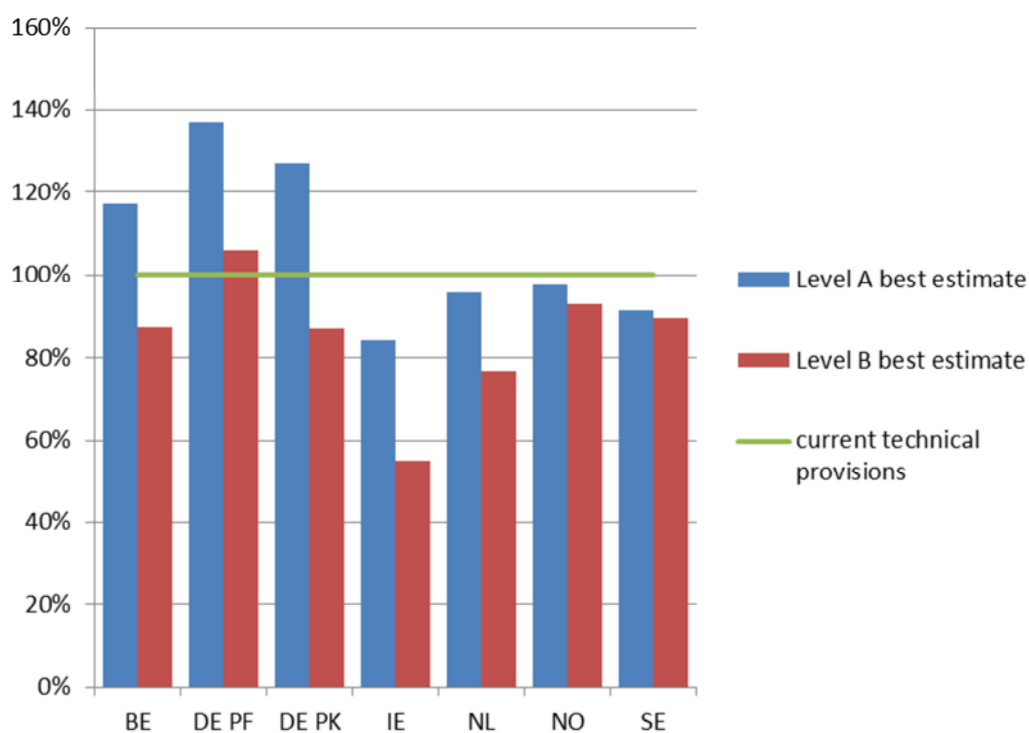
## **5.2.4 Level B best estimate**

- 5.115 QIS participants were asked to report the Level B best estimate of technical provisions based on the expected return on assets.
- 5.116 The average expected returns mostly range between 4 and 5% (see Figure 5.120). The expected return in Sweden is significantly lower, which can be explained by the short duration of the Swedish government bonds index as compared to bond indices in the euro area and lower yields as such as compared to Norway. The yield of the AAA government bonds bucket underlying the expected return on assets was around 1.5% in Sweden compared to about 3% in the euro area and Norway.
- 5.117 In the benchmark set 3B the Level B best estimate of technical provisions lies (on average) below the current value of technical provisions for almost all countries (see Figure 5.121).
- 5.118 An exception are Pensionsfonds in Germany for which the Level B best estimate is about the same level as the technical provisions in the current system, as that follows the same concept.
- 5.119 For the Swedish Article 4 insurance company the level B best estimate is slightly higher than for the aggregated pension funds, as a result of asset composition, but still below current technical provisions.

5.120 Benchmark scenario (set 3B): Level B expected return on assets, % <sup>36</sup>



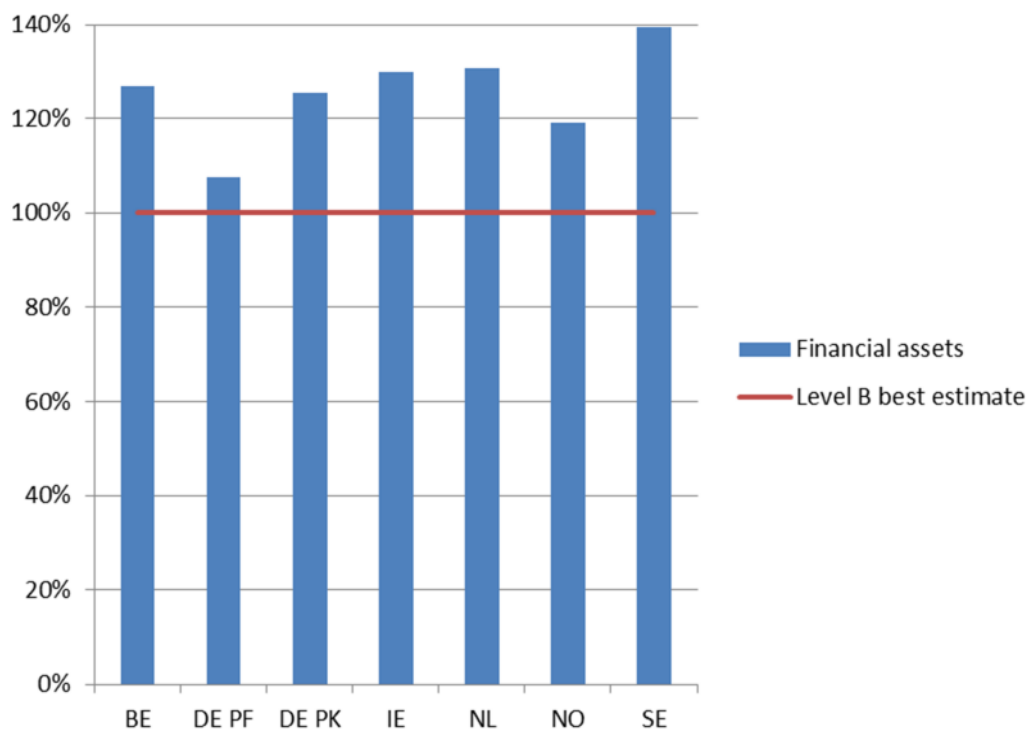
5.121 Benchmark scenario (set 3B): Level A and B best estimate, % current technical provisions



<sup>36</sup> The Level B results for the Netherlands should be considered as indicative only, as they were not validated in detail.

5.122 IORPs in all countries would be able to cover the Level B best estimate with financial assets, i.e. without including any security mechanisms, in benchmark set 3B (see Figure 5.123).

5.123 Benchmark scenario (set 3B): Financial assets and Level B best estimate, % Level B best estimate <sup>37</sup>



## 5.2.5 Sponsor support and pension protection schemes

5.124 In the benchmark set 3B the values for sponsor support range from on average 0.2% in Belgium to 20% of liabilities for Pensionsfonds in Germany. The supervisor in Ireland has not included any value for sponsor support, as it is categorised as 'limited conditional'.<sup>38</sup> Norway did not include any value for sponsor support either as it was considered limited conditional as well.

5.125 The value of the pension protection scheme amounts to 1.8% of liabilities for Pensionsfonds in Germany.

5.126 In **Belgium** many IORPs have a sponsor that provides unlimited support. The reported value of sponsor support is close to zero on average. It should be noted though that there is a lot of variation behind this average. Two large IORPs have no or no effective recourse to sponsor support and did not report any on the holistic balance sheet. Some other IORPs have recognised a substantial negative value for sponsor support (up to -44% of liabilities). The reason is that these IORPs have substantial surpluses that are expected to be returned to the sponsor at some future stage in the form of lower contributions. These negative values more or less cancel out the positive values for sponsor support included by many

<sup>37</sup> Financial assets are defined as investments plus the category 'other assets'.

<sup>38</sup> Limited conditional sponsor support is defined in the technical specifications as sponsor support where its legal nature means that the sponsor has the opportunity to choose to no longer provide support.

other IORPs (up to 35% of liabilities). If only the IORPs had been considered that report a positive value for sponsor support, the value would have been 18% of liabilities.

**Table 5.3: Benchmark scenario (set 3B): Value of security mechanisms, % liabilities**

	BE	DE PF	DE PK	IE	NL	NO	SE
Pension protection scheme	0	2	0	0	0	0	0
Sponsor support	0	20	16	0	9	0	2
Maximum value of sponsor support	552	820	290	0	64	0	28
Liabilities (billion EUR)	17	33	162	53	813	13	23

5.127 In **Germany** a value of sponsor support of 32 billion euro is included in the grossed up holistic balance sheets of Pensionskassen and Pensionsfonds combined. The value of the pension protection scheme in the grossed up holistic balance sheets of Pensionsfonds is 0.6 billion euro. This rather “small” value may be influenced by the fact that there are very strong sponsoring undertakings, which leads to a small remaining gap in the HBS “before pension protection schemes”, and the pension protection scheme is taken into account only in so far as it is needed to close this small gap. It should be noted that without the pension protection scheme the holistic balance sheet of Pensionsfonds would not be balanced (see the description of sets 12 and 13 in Section 8.7).

5.128 The value for sponsor support in the **Netherlands** equals 9% of liabilities. The number of IORPs for which the employer has provided guarantees is very limited. The sponsor support for most IORPs would be classified as limited conditional for which the technical specifications prescribed a value of zero. However, considering that for many pension schemes there is a (realistic) expectation that the sponsoring undertaking will provide additional funding in situations of underfunding, Dutch IORPs have included the expected value of sponsor support. The quality of the value (of the maximum) of sponsor support was difficult to assess.

5.129 In **Sweden** only defined benefit schemes of pension funds are backed by sponsor support. In some cases Finansinspektionen has made the tentative conclusion that sponsor support may not be legally enforceable and has no value for the purpose of this QIS. This results in only a few pension funds having sponsor support included on the holistic balance sheet, amounting to 2% of liabilities. The sponsors are not in a position to decide on a restitution of the current surplus. In doing the calculation this results in a positive value of sponsor support in the balance sheet for all concerned funds despite the surplus over the SCR. Negative values of sponsor support would have been obtained if the sponsor had been in a position to decide on the surplus. The values of sponsor support are relatively small as the concerned pension funds are fully funded without taking sponsor support into account. For the funds with sponsor support, the benchmark scenario would have shown a positive surplus even without including sponsor support.

The Swedish pension protection scheme only applies to pension foundations, for which a partial result of the benchmark scenario is available. The technical provisions for the employer increase with 11%. However, for the credit insurer,

calculating exposure with the discount rate employed by an insurance company (2%) in case of default, there is no change. As the credit insurance covers all technical provisions and with the assumption made in the QIS about guarantee schemes having zero default risk, the technical provisions as well as the SCR are fully covered in all scenarios.

## 5.2.6 Recoverables from insurance contracts

5.130 In benchmark set 3B IORPs in Belgium, Germany and the Netherlands included recoverables from insurance contracts on the asset-side of the holistic balance sheet. However, the amounts recognised are with 0.01%-2% of liabilities relatively small (see Table 5.4).

<b>Table 5.4: Benchmark scenario (set 3B): Value of insurance recoverables, % liabilities</b>							
	BE	DE PF	DE PK	IE	NL	NO	SE
Recoverables from insurance	0	1	2	0	2	0	0
Liabilities (billion EUR)	17	33	162	53	813	13	10

5.131 The amounts of (re-)insurance recoverables shown in the benchmark scenario for Pensionsfonds in Germany are lower than in the current regime. This is a presentational issue. The background for this is that in the current regime data, as reported for the QIS, Pensionsfonds have classified investments in "capital redemption operations" as "reinsurance recoverables". Since these products are economically comparable to loans or bonds, they have no risk mitigating effects. Therefore Pensionsfonds made the decision not to present those assets as reinsurance recoverables, but as investment assets in the sets of the QIS. This has no impact on the actual results of the QIS.

5.132 The valuation of insurance contracts was ignored in Ireland and Sweden. The Irish supervisor is only aware of IORPs insuring mortality risk which is an insignificant risk compared to longevity risk. Swedish pension funds do not insure risks related to the pension obligations.

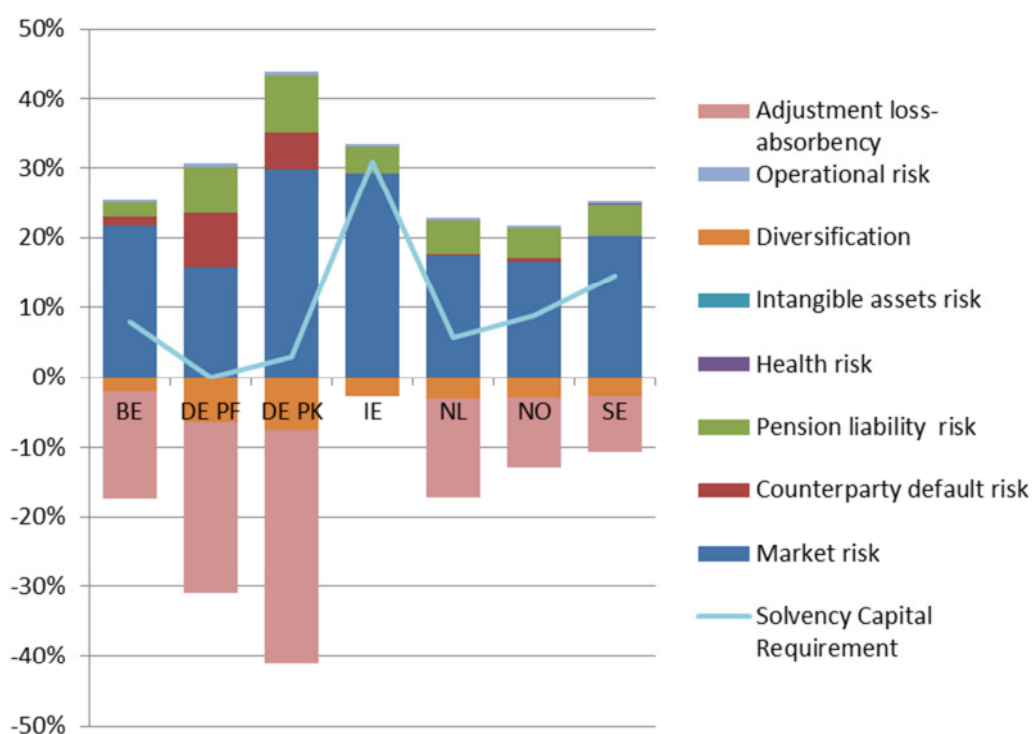
## 5.2.7 Solvency capital requirement

5.133 In the benchmark set 3B the solvency capital requirement with a 99.5% confidence level ranges from 0% of liabilities for German Pensionsfonds to 31% in Ireland (see Figure 5.138). German Pensionsfonds achieve full loss-absorbency through sponsor support and the pension protection scheme, which acts to absorb any residual risk. In Ireland on the other hand sponsor support has not been recognised because it is limited conditional in nature. The loss-absorbency of ex post benefit reductions is zero in Ireland, since these reductions were already incorporated to the maximum extent possible in the best estimate of technical provisions.

5.134 The SCR for Pensionskassen in Germany and IORPs in other countries is partially reduced through the loss-absorbing capacity of adjustment and security mechanisms. The SCR is reduced for IORPs in Belgium through the loss-absorbing capacity of sponsor support and pure conditional benefits, for Pensionskassen in

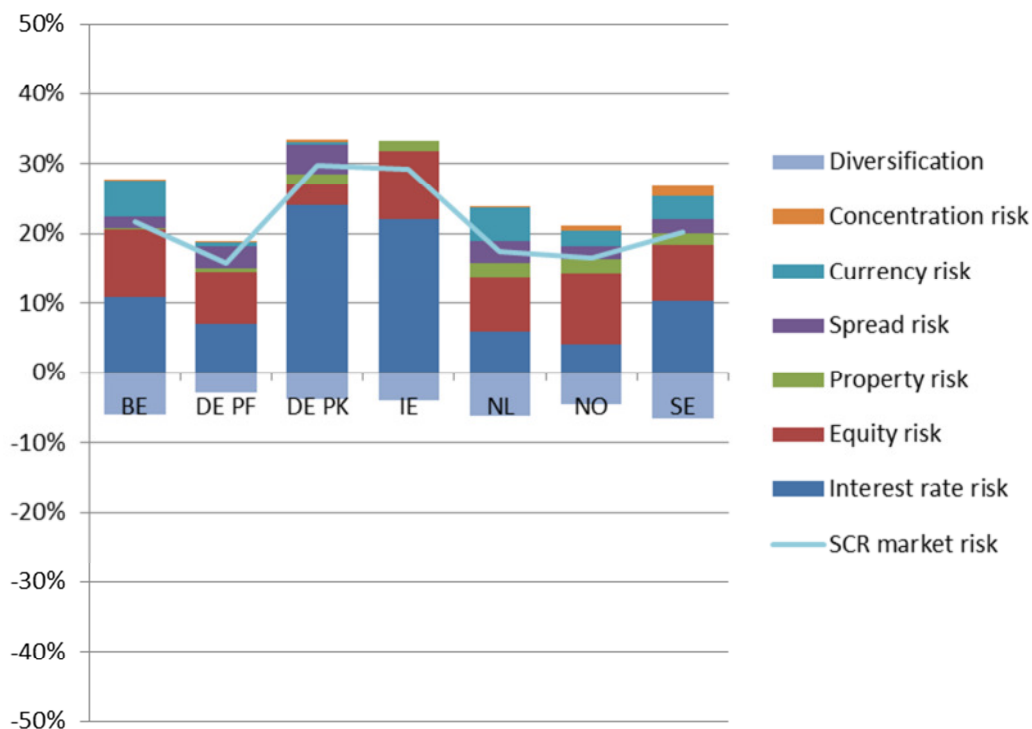
Germany through sponsor support, the pure conditional reduction mechanism and mixed benefits and for IORPs in the Netherlands through sponsor support, mixed benefits and ex post benefit reductions, Norway through pure conditional benefits and Sweden through sponsor support.

- 5.135 In Norway the downward adjustment of the SCR due to the loss-absorbing capacity of technical provisions is on average 54 percent of the basic solvency capital requirement, which reflects that the risk mitigation effect of conditional benefits has a huge impact for the Norwegian with-profit products.
- 5.136 IORPs in Belgium, Ireland and German Pensionskassen have the highest SCR for market risk. In Germany IORPs reported the highest capital charge for pension liability risk and have a significant capital requirement for counterparty default risk, the latter being related to the sponsor's credit risk. In the Netherlands there was also a significant level of sponsor support included on the holistic balance sheet, but the counterparty risk charge is negligible.
- 5.137 The capital charge for operational risk equals 0.5-0.6% of liabilities for German IORPs and 0.4% of liabilities in other countries. Only Swedish IORPs dispose of health benefits resulting in a capital requirement of on average of 0.3% of liabilities. No country reported a capital charge for intangible asset risk.
- 5.138 Benchmark scenario (set 3B): Decomposition of solvency capital requirement with a 99.5% confidence level, % liabilities

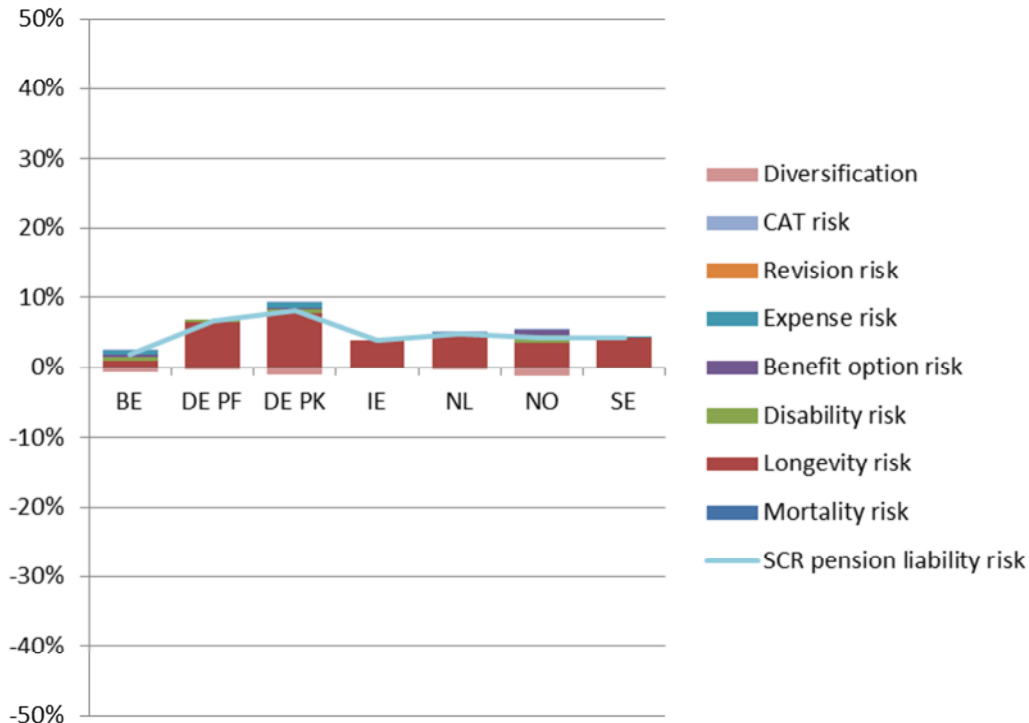


- 5.139 The high SCR for market risk for German Pensionskassen and Irish IORPs is explained by the relatively high interest rate risk. These IORPs report the highest duration of pension liabilities: 22 years for Pensionskassen and 20 year for Irish IORPs. Participating IORPs in the Netherlands reported that 60% (unweighted average) of interest rate risk is hedged. In Belgium, Germany, Norway and Sweden the proportion of interest rate risk hedged lies between 0% and 10%.

5.140 Benchmark scenario (set 3B): Decomposition of SCR market risk, % liabilities



5.141 Benchmark scenario (set 3B): Components of SCR pension liability risk, % liabilities



5.142 The reported capital charges for currency risk range from 0% in Ireland to 5% of liabilities in Belgium. The proportion of currency risk hedged is the largest in the Netherlands (about two thirds) followed by Germany and Sweden (about half), Norway (about one third) and Belgium (8%).

5.143 Longevity risk is the predominant pension liability risk for IORPs in the different countries. The gross SCR for longevity risk ranges from 1% of liabilities for IORPs in Belgium to 8% of liabilities for Pensionskassen in Germany. Most Belgian IORPs provide for lump sum payments at retirement, which reduces the exposure to longevity risk. German IORPs on the other hand dispose of a relatively young membership, which increases exposure to longevity risk.

## 6 Upper bound scenario (set 1)

6.1 Participants were asked to use the following assumptions in the upper bound scenario:

- use the basic risk-free interest rate curve based on a convergence speed to the ultimate forward rate of 90 years irrespective of the last liquid point (LLP) to the ultimate forward rate (UFR)
- include all types of pension benefits, including pure discretionary benefits
- exclude ex post benefit reductions
- include a risk margin based on the cost-of-capital concept
- include sponsor support as an ancillary own fund item and exclude pension protection schemes
- use the equity dampener in the equity risk sub-module where the duration of liabilities exceeds 12 years
- include the inflation module in interest rate risk sub-module

6.2 Unlike set 3, there is only one group of calculations for set 1, which includes results for all participating countries.

### 6.1 Overall impact

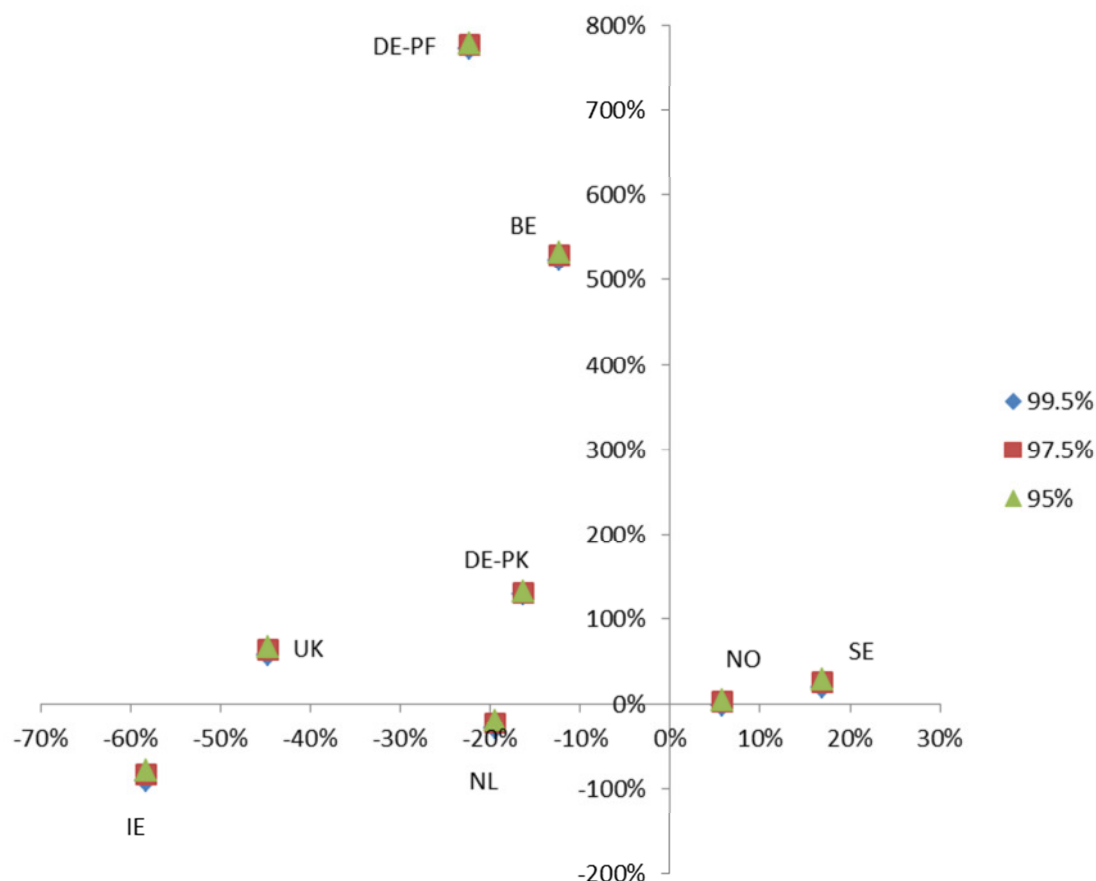
6.3 An important change compared to the benchmark scenario is that under the upper bound scenario IORPs are no longer allowed to recognise sponsor support and pension protection schemes as an asset on the holistic balance sheet. Sponsor support is recognised off-balance sheet as an ancillary own fund item, which may be used to cover the solvency capital requirement (SCR).

6.4 A second change is that the basic risk-free interest rate is established using a longer convergence period to the UFR of 4.2% of 90 years from now instead of 10 years after the LLP in the benchmark scenario. This has a negative impact on the interest rate curve, but the precise impact depends on the LLP and specificities of the swap curve before the LLP for the different currencies:

- In the euro area there is a maximum negative effect of 40 bps after the LLP of 20 years.
- In Norway there is maximum negative effect of 10 bps after the LLP of 10 years.
- In Sweden there is maximum negative effect of 60 bps after the LLP of 10 years.
- In the UK there is a maximum negative effect of 10 bps after the LLP of 50 years.



- 6.5 Other relevant changes in the upper bound scenario are the inclusion of pure discretionary benefits in the best estimate of technical provisions, the exclusion of ex post benefit reductions, the replacement of the duration-based equity shock by the equity stress with symmetric adjustment and the exclusion of the inflation module.
- 6.6 Upper bound scenario (set 1): excess of assets over liabilities (horizontal axis) and surplus over solvency capital requirement (vertical axis), in % liabilities <sup>39</sup>



- 6.7 IORPs in Belgium, Germany, the Netherlands, Sweden and the United Kingdom experience a deterioration of the excess of assets over liabilities compared to the benchmark as sponsor support, pension protection schemes and ex post benefit reductions can no longer be recognised on the balance sheet. Overall the effect is very small for Belgian IORPs because they included on average almost no sponsor support in the benchmark scenario. As a consequence, German Pensionsfonds are no longer able to balance the holistic balance sheet (see Figure 6.6). IORPs in Sweden continue to have a positive excess of assets over liabilities in the upper bound scenario. In Ireland the excess of assets over liabilities deteriorates in comparison with the benchmark scenario including ex post benefit reductions, but not in comparison with the benchmark scenario excluding them.
- 6.8 Despite the decrease in the excess of assets over liabilities, IORPs in Belgium, Germany, Sweden and the United Kingdom record on average higher surpluses over the SCR. The reason is that in the upper bound scenario the maximum

<sup>39</sup> See Annex A for the corresponding outcomes in billions of euros.

amount of sponsor support is recognised as an ancillary own funds item that may cover the SCR. As a consequence, IORPs with unlimited sponsor support and a sufficiently wealthy sponsor will show high surpluses. Belgian IORPs, German Pensionskassen and UK IORPs have a large surplus over the SCR in the upper bound scenario, instead of a shortfall. It should be remembered though that the technical specifications did not contain any tiering rules for the extent to which ancillary own funds may be used to cover the SCR.

- 6.9 The surplus over the SCR in the Netherlands is more negative in the upper bound scenario than in the benchmark scenario. The maximum amount of sponsor support reported by Dutch IORPs cannot compensate for the decline in the excess of assets over liabilities and the higher SCR due to the absence of the loss-absorbing capacity of sponsor support and ex post benefit reductions. In Norway the outcomes in the upper bound scenario are the same as in the benchmark scenario as no sponsor support was recognised. In Ireland the results are also similar when compared to the benchmark scenario without ex post benefit reductions. However, the shortfall with respect to the SCR becomes much more negative when compared to the benchmark scenario with ex post benefit reductions.

#### **Change in excess of assets over liabilities compared to current regime**

- 6.10 In the upper bound scenario the excess of assets over liabilities declines in all countries (see Fig 6.13). In Belgium, Germany, Ireland, the Netherlands and the United Kingdom technical provisions increase by 25% to 70% on average due to the introduction of the basic risk-free interest rate curve, the risk margin and the inclusion of mixed benefits for German Pensionskassen and Dutch IORPs. In contrast to the benchmark scenario, sponsor support, pension protection schemes and ex post benefit reductions cannot be included on the holistic balance sheet in the upper bound scenario. In Norway and Sweden the basic risk-free interest rate curve in the upper bound scenario exceeds the existing national discount rates. In both countries the inclusion of the risk margin is responsible for the increase in liabilities.
- 6.11 In **Belgium** the impact is similar to the benchmark scenario as IORPs included on average almost no sponsor support. The excess of assets over liabilities equals on average -12% of liabilities compared to a positive excess of 11% under the current regime. The variation in outcomes is considerable though. A few IORPs did not report any sponsor support in the benchmark scenario. These IORPs have – as in the benchmark scenario – a substantial negative excess of assets over liabilities. IORPs that did recognise positive sponsor support in the benchmark scenario will experience a substantial negative excess of assets over liabilities of on average 19% of liabilities. IORPs with negative sponsor support have a substantial positive excess of assets over liabilities.
- 6.12 In **Germany** Pensionsfonds and Pensionskassen have under the upper bound scenario a negative excess of assets over liabilities of respectively 22% and 16% of liabilities compared to positive excesses of 17% and 6% under the current regime. The strong increases in technical provisions can no longer be compensated by sponsor support and the pension protection scheme. Pensionskassen can still use the ex-ante reduction mechanism.

6.13 Upper bound scenario (set 1): Decomposition of change in excess of assets over liabilities compared to the current regime, % current liabilities



6.14 **Ireland** experiences a deterioration in the excess of assets over liabilities from -28% of liabilities in the current regime to -58% of liabilities in the upper bound scenario. Technical provision increase strongly through the introduction of the basic risk-free interest rate and the risk margin. Ex post benefit reductions cannot be taken into account in this scenario.

6.15 The **Netherlands** are confronted with a negative excess of assets over liabilities of 19% of liabilities compared to the slight positive excess under the current regime. Technical provisions rise due to the lower interest rate curve, the inclusion of the risk margin, mixed benefits and some discretionary benefits. In the upper bound scenario sponsor support and ex post benefit reductions cannot be recognised on the holistic balance sheet.

6.16 In **Norway** there is no change in the upper bound scenario compared to the benchmark scenario. The reason is that Norwegian IORPs do not dispose of enforceable sponsor support and last resort mechanisms. The interest rate curve decreases only slightly compared to the benchmark. In comparison to the benchmark scenario, the upper bound scenario only results in a higher net present value of unconditional benefits and a lower net present value of conditional benefits. These effects offset each other, so the overall effect on technical provisions is negligible.

6.17 In **Sweden** IORPs have an excess of assets over liabilities of 17% under the upper bound scenario, as compared to 25% in the current situation. The new extrapolation method affects the basic risk-free rate for the SEK the most. Some IORPs cannot put the value of sponsor support on their balance sheet anymore.

The upper bound scenario represents the worst scenario for the Art 4 insurance company. The effects on the best estimate of technical provisions are less

favourable than in the benchmark scenario due to the longer convergence period in determining the discount curve, translating into higher liabilities. Furthermore, applying a symmetric adjustment rather than a duration-based equity stress increases the capital requirements compared to the current regime more than in the benchmark scenario. As sponsor support, reported as ancillary own funds in the upper bound scenario, is not available this does not influence the result in the same way as for the Swedish pension funds.

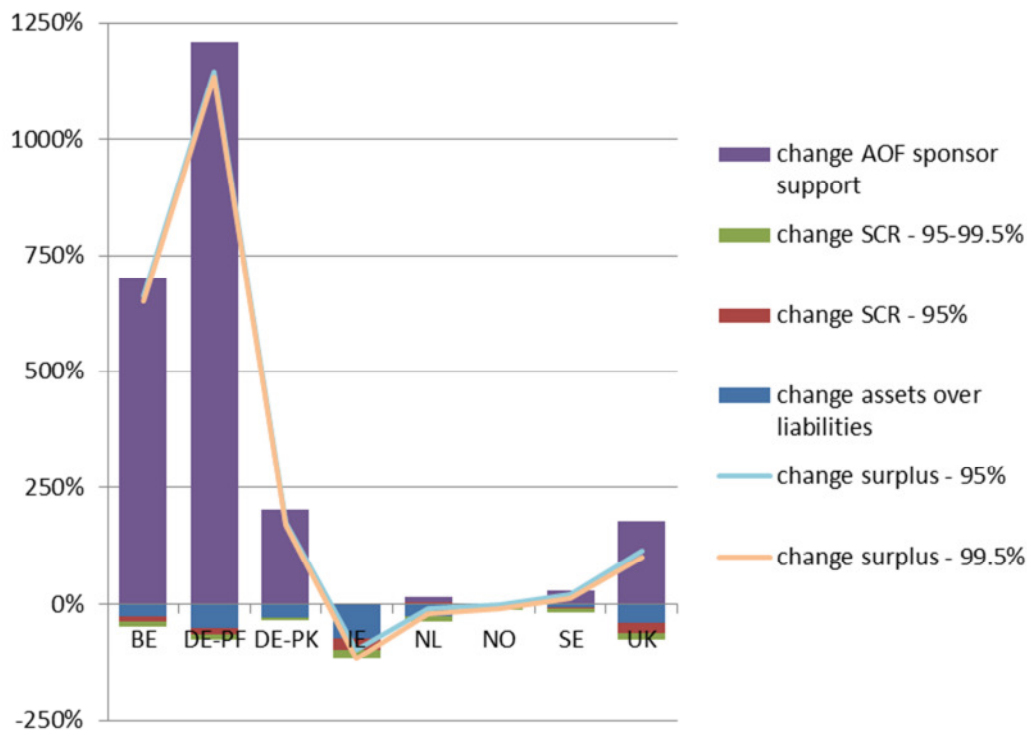
- 6.18 IORPs in the **United Kingdom** have a negative excess over liabilities of 45% of liabilities, or 963 billion euro, in the upper bound scenario. The increase in technical provisions is not compensated by the value of sponsor support and pension protection schemes on the asset side of the holistic balance sheet. This is because sponsor support is not included as an asset, but as an ancillary own fund.

### **Change in surplus over the capital requirement compared to the current regime**

- 6.19 The surplus over the capital requirement increases sharply compared to the current regime in Belgium, Germany and the United Kingdom and to a lesser extent in Sweden (see Figure 6.24). The reason is that the maximum amount of support is recognised as an ancillary own fund that can cover the SCR. In these four countries the maximum amount of sponsor support outweighs the decrease in the excess of assets over liabilities and the increase in the capital requirement. In Ireland, the Netherlands and Norway the surplus over the capital requirement declines in the upper bound scenario in comparison to the current regime as the maximum amount of sponsor support is either zero or limited.
- 6.20 In **Germany** the value of sponsor support as ancillary own funds is about 508 billion euro, the maximum value of sponsor support is about 743 billion euro. The values differ, because some IORPs stated a smaller value than the calculated maximum value of sponsor support as the value of sponsor support as ancillary own funds. Even though those values do not seem implausible, small changes in valuation methodology or underlying data could result in material changes of these values, due to the difficulties in valuation.
- 6.21 The same care should be applied with respect to the results in **Belgium**. Some IORPs used the simplification which sets the maximum value equal to the technical provisions. Other IORPs used the expected future cash flows, which can be very large for a wealthy sponsor.
- 6.22 The **Netherlands** have a negative surplus of 29% of liabilities over the SCR (VaR 99.5%) as compared to a negative surplus of 17% under the current regime. The decrease in the excess of assets over liabilities and the increase of the SCR in the upper bound scenario is only partially compensated by the recognition of sponsor support as ancillary own fund, which has a positive effect on the surplus of 11% of current liabilities.
- 6.23 In **Norway** the negative surplus of 3% of liabilities is the same as in the benchmark scenario. The excess of assets over liabilities and the SCR did not change. IORPs in Norway did not include the duration-based dampener in the benchmark scenario since the sponsor has the opportunity to terminate or transfer all or part of the scheme at any time at contractual values. The inflation

risk module is not relevant for Norwegian pension funds since pension liabilities are not linked to price inflation.

- 6.24 Upper bound scenario (set 1): Decomposition of change in surplus under 95% and 99.5% confidence levels compared to the current regime, % current liabilities <sup>40</sup>



- 6.25 In **Sweden** the overall surplus over the SCR (99.5% confidence interval) increases from 8% of liabilities in the current situation to 19% in the upper bound scenario, despite lower excess of assets over liabilities. This is due to the inclusion of sponsor support as ancillary own funds. The full amount of maximum sponsor support, corresponding to 29% of liabilities, is included when calculating surplus over SCR. This is in contrast to the benchmark scenario, where sponsor support mainly reduces the SCR and only to a small amount appears on the holistic balance sheet since the pensions funds are fully funded. The full amount of maximum sponsor support in this case being very large therefore more or less distorts the results for surplus over SCR in the upper bound scenario. Similar to the benchmark scenario, several individual pension funds, where there is no sponsor support, report negative surpluses in the upper bound scenario.
- 6.26 In the **United Kingdom** total sponsor wealth (based on the QIS technical specifications) is estimated to be 2,750 billion euro (or £2,300 billion), although this figure is subject to considerable uncertainty.

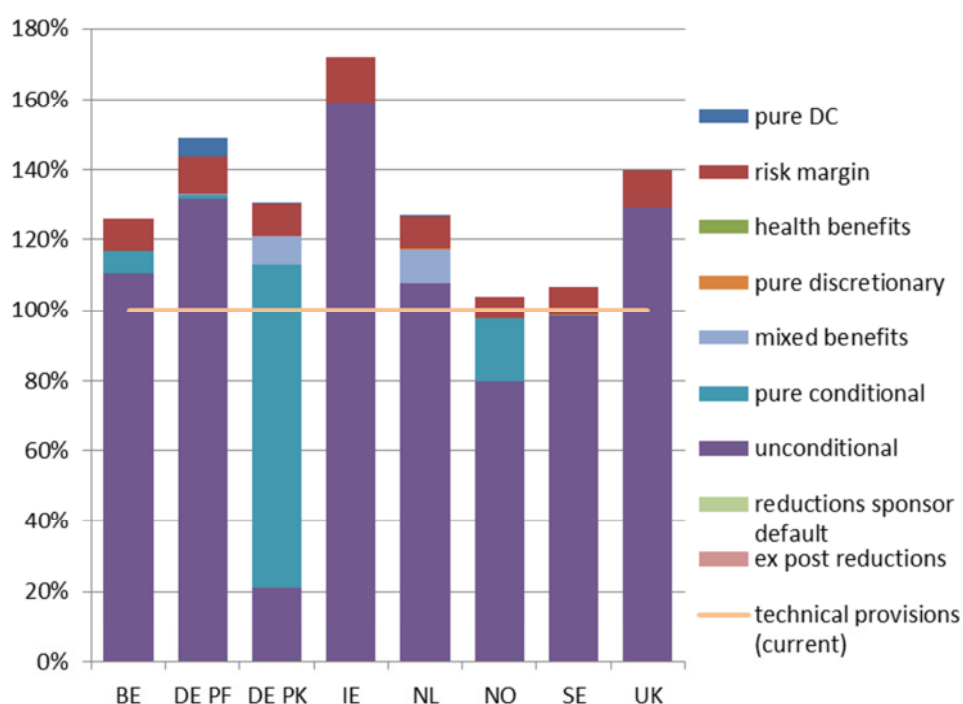
## 6.2 Technical provisions

- 6.27 In Germany, the Netherlands and especially Sweden technical provisions increase in the upper bound scenario due to the longer convergence to the UFR in the determination of basic risk-free interest rate as compared to the benchmark

<sup>40</sup> This QIS tests SCRs with a 99.5%, 97.5% and 95% confidence level. The figure only displays the impact for the higher (99.5%) and lower (95%) confidence levels to keep it comprehensible.

scenario. Still, the technical provisions end up lower for German Pensionskassen as the exclusion of sponsor support results in an increased reliance on benefit reductions using the pure conditional ex ante mechanisms. In the Netherlands the best estimate ends up much higher compared to the benchmark scenario as some pure discretionary benefits have been added, but predominantly because ex post benefit reductions are not taken into account in the upper bound scenario. In Ireland technical provisions remain the same when compared to the benchmark without ex post benefit reductions, but increase strongly when compared to the benchmark with ex post benefit reductions.

#### 6.28 Upper bound scenario (set 1): Components of technical provisions, % current technical provisions



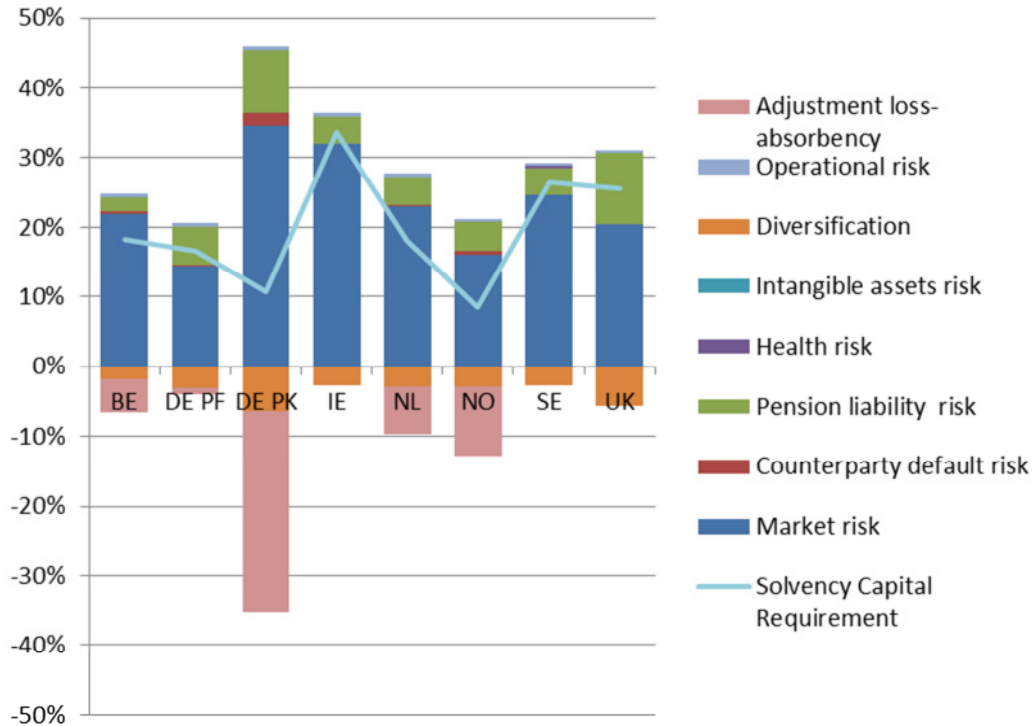
## 6.3 Solvency capital requirement

6.29 In the upper bound scenario the solvency capital requirement increases for IORPs in all countries as compared to the benchmark scenario with the exception of Norway. IORPs in Norway did not include the duration-based equity shock in the benchmark scenario due to the fact that the sponsor may terminate or transfer all or part of the scheme at any time at contractual values. The inflation risk module is not relevant for Norwegian pension funds, since pension liabilities are not linked to price inflation.

6.30 The replacement of the duration-based equity shock by the standard equity shock with symmetric adjustment increases the SCR for market risk. The exclusion of the inflation module further increases the charge for market risk in the Netherlands and the UK where pension liabilities are linked to inflation (see explanation of results of set 18 in the UK in Section 8). The SCR for counterparty default risk decreases substantially in Belgium, Germany and the United Kingdom because sponsor support is not recognised on the balance sheet in the upper bound scenario. The most important reason for the rise in the SCR is the

reduction in loss-absorbency as sponsor support, pension protection schemes and ex post benefit reductions are no longer included on the holistic balance sheet. The adjustment for loss-absorbency applied by German Pensionskassen remains at a relatively high level as reliance on the pure conditional ex ante mechanism increased in the upper bound scenario.

6.31 Upper bound scenario (set 1): Decomposition of solvency capital requirement with a 99.5% confidence level, % liabilities



## 7 Lower bound scenario (set 2)

7.1. The lower bound scenario is very similar to the benchmark scenario. There are two important differences:

- Mixed benefits should not to be included
- No risk margin is included in technical provisions

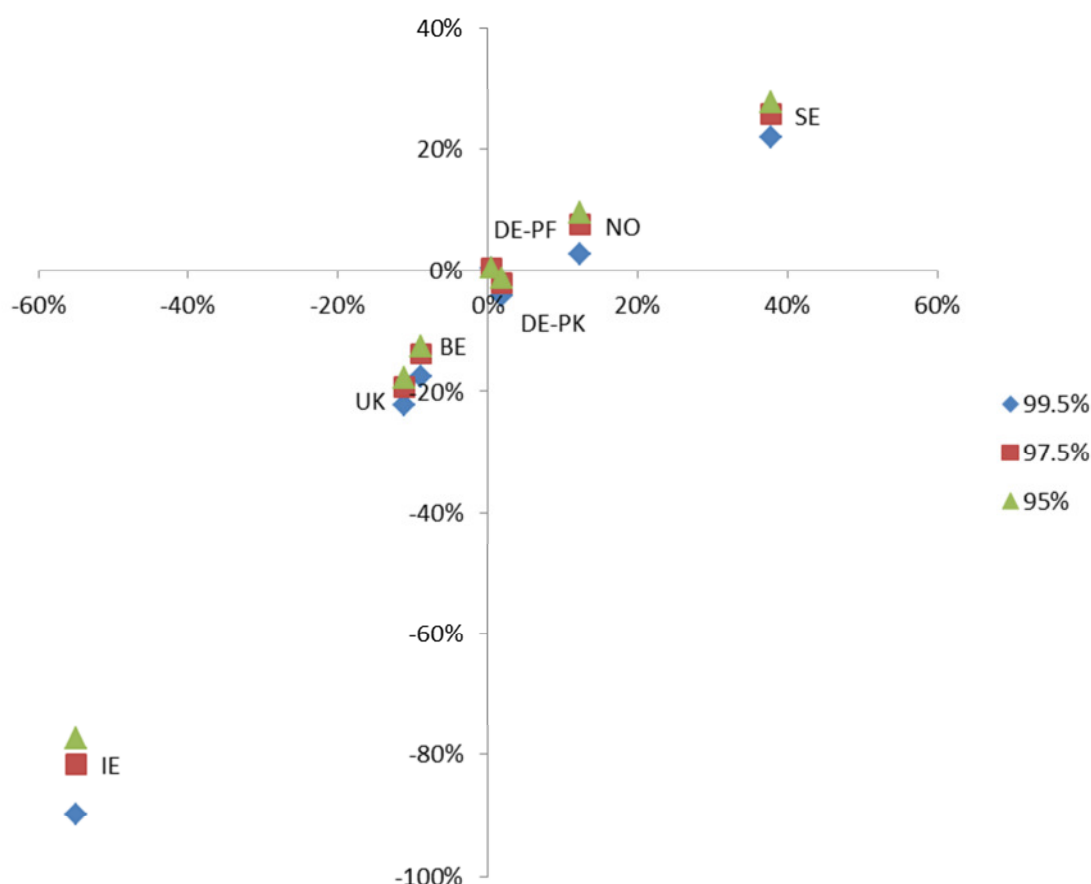
7.2. The results for set 2 are divided into two sets in the same way as for set 3:

- The calculations for Belgium, Germany, Norway, and Sweden are included in both groups.
- Set 2A does not take account of ex post benefit reductions and reductions in case of sponsor support. It includes the benchmark calculations for the United Kingdom, and includes the corresponding calculations for Ireland. Unlike benchmark set 3A, there are no calculations for the Netherlands in this set.
- Set 2B takes account of ex post benefit reductions and reductions in case of sponsor default, and includes the benchmark calculations for the Netherlands, and calculations for Ireland. There are no calculations in this set for the United Kingdom.

## 7.1 Lower bound set 2A

### 7.1.1 Overall impact

- 7.3. In the lower bound set 2A the excess of assets over liabilities increases in all countries as compared to the benchmark set 3A due to the exclusion of the risk margin. Pensionskassen in Germany benefit even more from this scenario as mixed benefits do not have to be included in the best estimate. However, exclusion of mixed benefits also reduces the loss-absorbency of technical provisions, which means that the surplus over the SCR increases by less than the excess of assets over liabilities.
- 7.4. German Pensionskassen have on average a positive excess of assets over liabilities in the lower bound scenario. However, many of them still experience a negative excess of assets over liabilities. In addition, Pensionskassen are on average still not able to comply with the SCR, irrespective of the confidence level.
- 7.5. Lower bound scenario (set 2A): excess of assets over liabilities (horizontal axis) and surplus over solvency capital requirement (vertical axis), in % liabilities <sup>41</sup>



### Change in excess of assets over liabilities compared to current regime

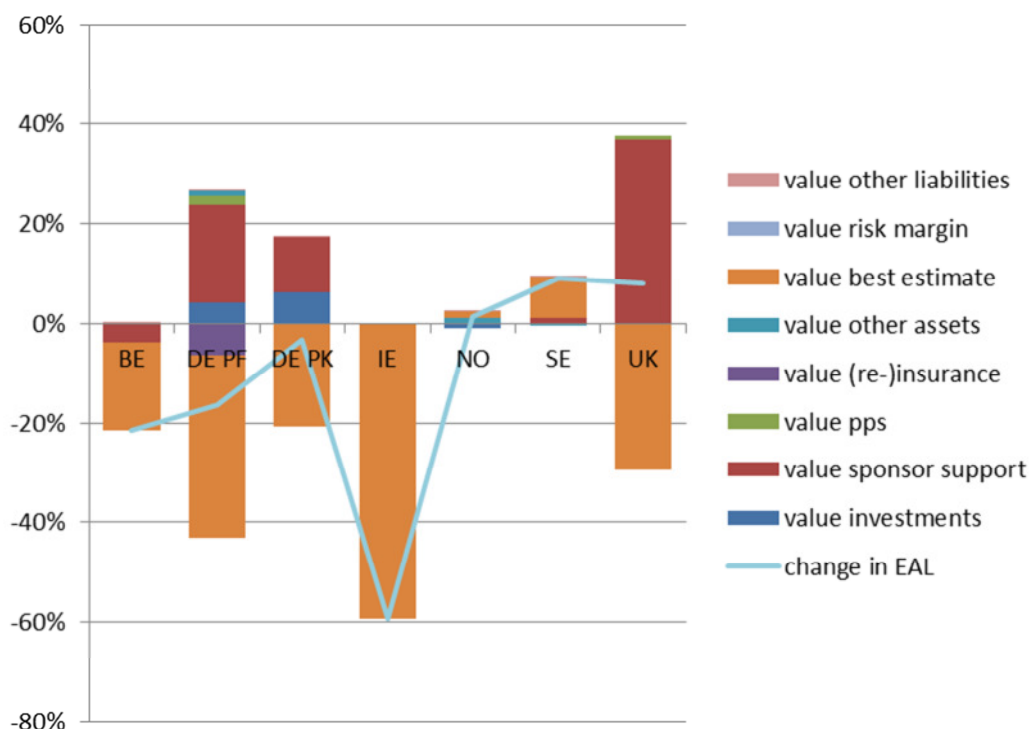
- 7.6. The change in the excess of assets over liabilities in set 2A compared to the current regime is positive in Norway, Sweden and the United Kingdom and negative in Belgium, Germany and Ireland (see Figure 7.7). Technical provisions

<sup>41</sup> See Annex A for the corresponding outcomes in absolute amounts.



increase by 20% to 60% on average due to the introduction of market valuation in most countries. The exceptions are Norway and Sweden where technical provisions decrease.

- 7.7. Lower bound scenario (set 2A): Decomposition of change in excess of assets over liabilities compared to the current regime, % current liabilities



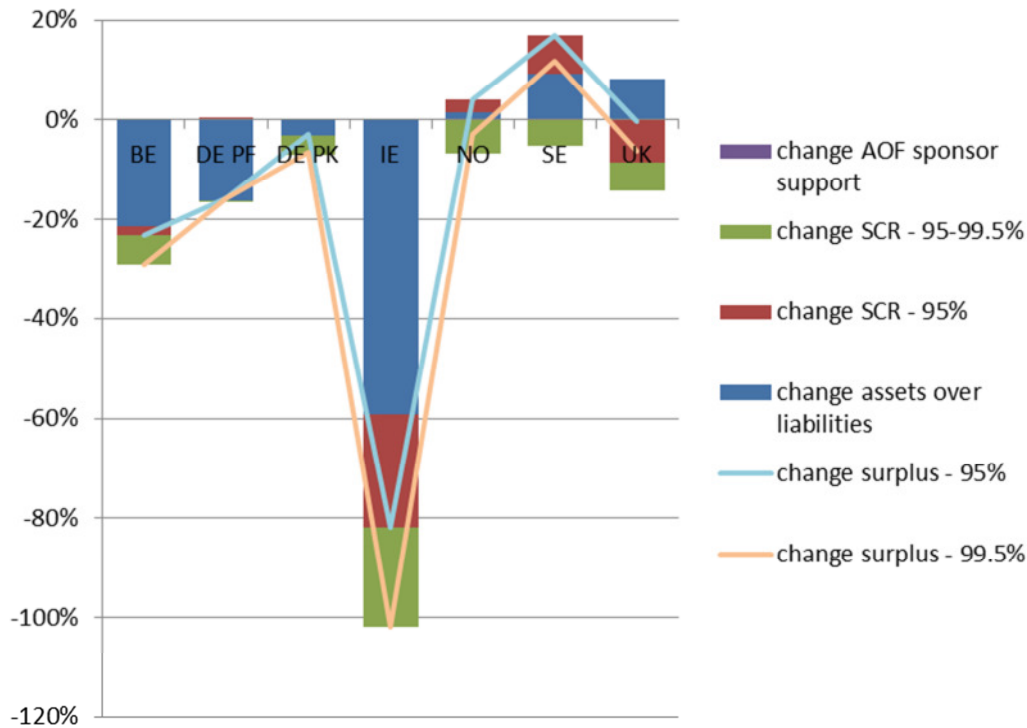
- 7.8. The effect on the Art 4 insurance company in Sweden is substantially better than in the other baseline scenarios. Liabilities are reduced due to the same higher discount rates as in the benchmark scenario, but without the addition of a risk margin. Therefore, the EAL increases significantly compared with the current regime. This more than offsets the increase in the SCR, translating into a slightly better solvency position compared with the current regime.
- 7.9. The recognition of sponsor support and pension protection schemes compensates for the rise in liabilities in Germany and the United Kingdom. The value for sponsor support is negative in Belgium. The negative sponsor support for a couple of IORPs with large surpluses exceeds the positive sponsor support included by other IORPs. In Ireland sponsor support has not been included on the holistic balance sheet as it is limited conditional in nature.

### Change in surplus over the capital requirement compared to current regime

- 7.10. The surplus over the capital requirement in set 2A declines in all countries except Sweden in case of the SCR with a 99.5% confidence level (see Figure 7.11). The 99.5% SCR is higher than the existing capital requirements for Belgian IORPs, German Pensionskassen and IORPs in Ireland, Norway and the United Kingdom. The SCR with a 99.5% confidence level in set 2A is lower than the current capital requirements for German Pensionsfonds and Swedish IORPs. Under the SCR with a 95% confidence level the change in the surplus turns positive for Norwegian

IORPs as the 95% SCR is lower than the existing solvency requirement. In the United Kingdom the negative effect of the SCR with a 95% confidence level would offset the positive effect of the increase in the excess of assets over liabilities in the lower bound scenario.

- 7.11. Lower bound scenario (set 2A): Decomposition of change in surplus under 95% and 99.5% confidence levels compared to the current regime, % current liabilities<sup>42</sup>

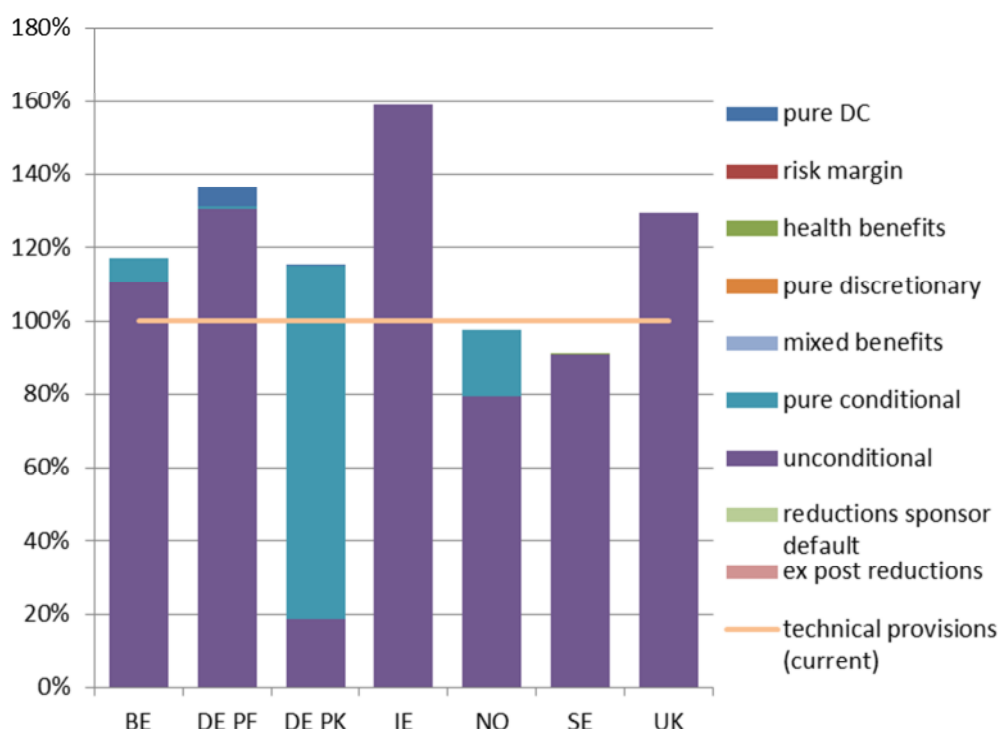


## 7.1.2 Technical provisions

- 7.12. The exclusion of the risk margin lowers the value of technical provisions in set 2A as compared to the benchmark set 3A. Technical provisions are further reduced for Pensionskassen in Germany as mixed benefits are no longer taken into account in the valuation of the best estimate. This is partly offset by lower ex ante benefit reductions by Pensionskassen as the improved excess of assets over liabilities lessens the need to reduce benefits.

<sup>42</sup> This QIS tests SCRs with a 99.5%, 97.5% and 95% confidence level. The figure only displays the impact for the higher (99.5%) and lower (95%) confidence levels to keep it comprehensible.

7.13. Lower bound scenario (set 2A): Components of technical provisions, % current technical provisions



### 7.1.3 Sponsor support and pension protection scheme

7.14. The value of sponsor support and pension protection schemes in set 2A decreases compared to the benchmark scenario in Belgium, Germany, Sweden and the United Kingdom. The lower level of technical provisions implies that IORPs will be less dependent on these security mechanisms. In Belgium the average value of sponsor support even turns negative. This again is the result of the composition of the sample. When excluding the IORPs with excess funding, the value of sponsor support would be 4% of liabilities instead of -3%. When also excluding the IORPs with no or no effective sponsor support, the value would be 11%.

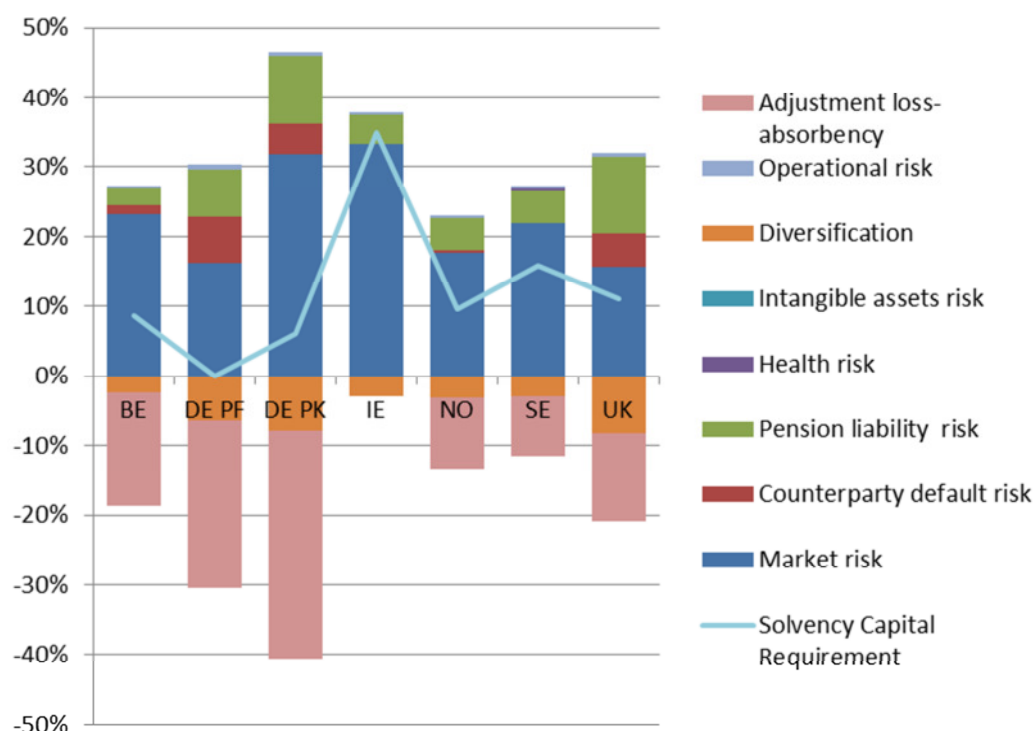
**Table 7.1: Lower bound scenario (set 2A): Value of security mechanisms, % liabilities**

	BE	DE PF	DE PK	IE	NO	SE	UK
Pension protection scheme	0	1	0	0	0	0	0
Sponsor support	-3	14	9	0	0	1	29
Maximum value of sponsor support	596	886	337	0	0	30	137
Liabilities (billion EUR)	16	31	140	92	13	9	1995

## 7.1.4 Solvency capital requirement

7.15. The SCR increases for German Pensionskassen as compared to the benchmark scenario. The loss-absorbing capacity decreases, mainly because mixed benefits are no longer included on the balance sheet.

7.16. Lower bound scenario (set 2A): Decomposition of solvency capital requirement with a 99.5% confidence level, % liabilities



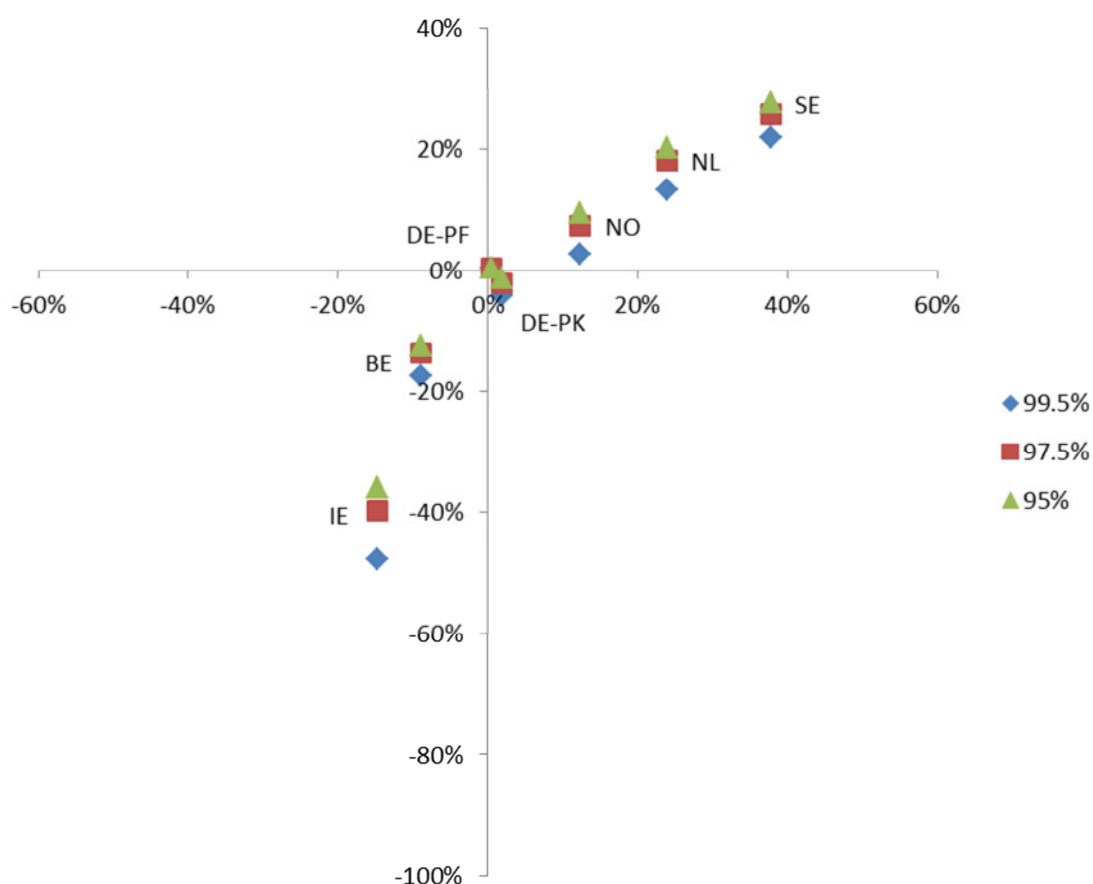
## 7.2 Lower bound set 2B

### 7.2.1 Overall impact

7.17. In the lower bound set 2B the excess of assets over liabilities increases in all countries as compared to the benchmark set 3B due to the exclusion of the risk margin. German Pensionskassen and Dutch IORPs benefit even more from this scenario as mixed benefits do not have to be included in the best estimate. However, exclusion of mixed benefits also reduces the loss-absorbency of technical provisions, which means that the surplus over the SCR increases by less than the excess of assets over liabilities.

7.18. German Pensionskassen have on average a positive excess of assets over liabilities in the lower bound scenario. However, many of them still experience a negative excess of assets over liabilities. In addition, Pensionskassen are on average still not able to comply with the SCR, irrespective of the confidence level.

7.19. Lower bound scenario (set 2B): excess of assets over liabilities (horizontal axis) and surplus over solvency capital requirement (vertical axis), in % liabilities <sup>43</sup>



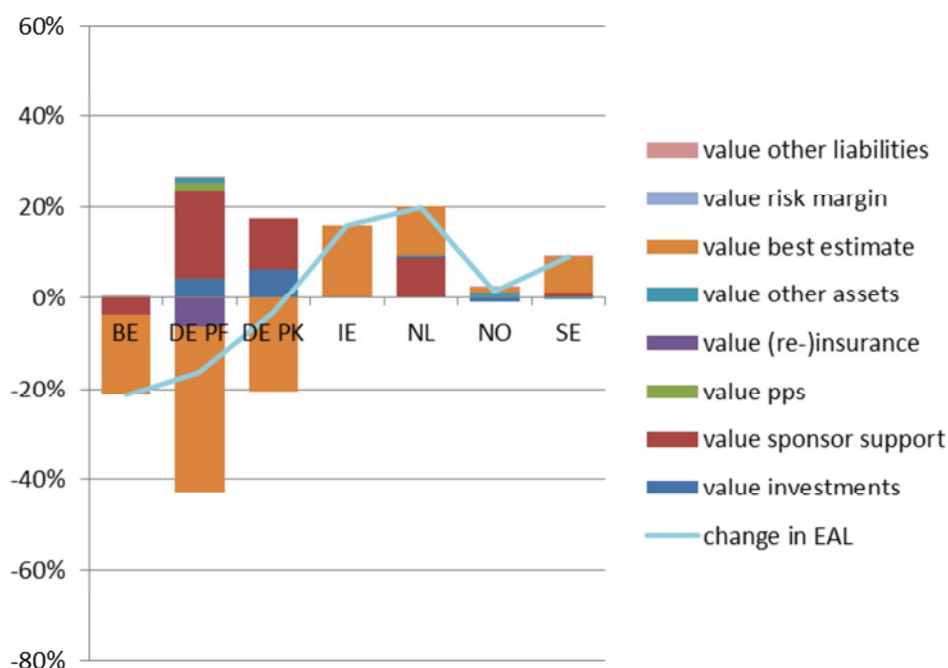
### Change in excess of assets over liabilities compared to current regime

7.20. The change in the excess of assets over liabilities in set 2B compared to the current regime is positive in Ireland, the Netherlands, Norway and Sweden and negative in Belgium and Germany (see Figure 7.23). In the latter two countries technical provisions increase by on average 20% to 40% due to the introduction of market valuation. The risk-free discount curve also has strong positive effect on technical provision in Ireland, but that is more than offset by the negative effect of including ex post benefit reductions. In the Netherlands significant last resort benefit reductions outweigh the positive effect on technical provisions of a slightly lower interest rate curve. In Norway and Sweden the discount curve used in the lower bound scenario exceeds the rate presently used under their national regimes.

7.21. The effect on the Art 4 insurance company in Sweden is substantially better than in the other baseline scenarios. Liabilities are reduced due to the same higher discount rates as in the benchmark scenario, but without the addition of a risk margin. Therefore, the EAL increases significantly compared with the current regime. This more than offsets the increase in the SCR, translating into a slightly better solvency position compared with the current regime.

<sup>43</sup> See Annex A for the corresponding outcomes in absolute amounts.

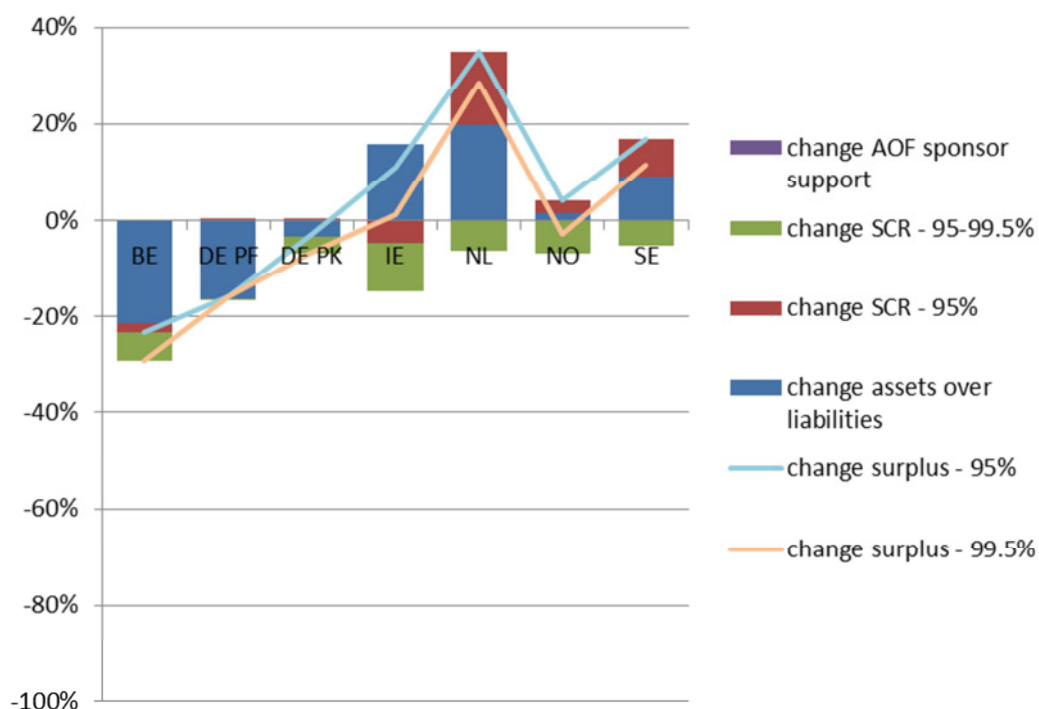
- 7.22. The recognition of sponsor support diminishes the negative impact of the rise in liabilities in Germany. The value for sponsor support is very limited in Sweden and even negative in Belgium. The negative sponsor support for a couple of IORPs with large surpluses exceeds the positive sponsor support included by other IORPs. No value for sponsor support has been included in Ireland and Norway. Sponsor support in the Netherlands is predominantly limited conditional, but IORPs reported nevertheless a considerable amount of sponsor support.
- 7.23. Lower bound scenario (set 2B): Decomposition of change in excess of assets over liabilities compared to the current regime, % current liabilities



### Change in surplus over the capital requirement compared to current regime

- 7.24. The surplus over the capital requirement in set 2B declines in Belgium, Germany and Norway in case of the SCR with a 99.5% confidence level (see Figure 7.25). The SCR with a 99.5% confidence level is higher than the existing capital requirements for Belgian IORPs, German Pensionskassen and IORPs in Ireland and Norway. Still, the surplus over the SCR increases in set 2B in Ireland compared to the current regime as the increase in the excess of assets over liabilities dominates. The 99.5% SCR is lower than the current capital requirements for German Pensionsfonds and IORPs in the Netherlands and Sweden due to loss-absorbing capacity of security and adjustment mechanisms. Under the SCR with a 95% confidence level the change in the surplus turns positive for Norwegian IORPs as the 95% SCR is lower than the existing solvency requirement.

7.25. Lower bound scenario (set 2B): Decomposition of change in surplus under 95% and 99.5% confidence levels compared to the current regime, % current liabilities

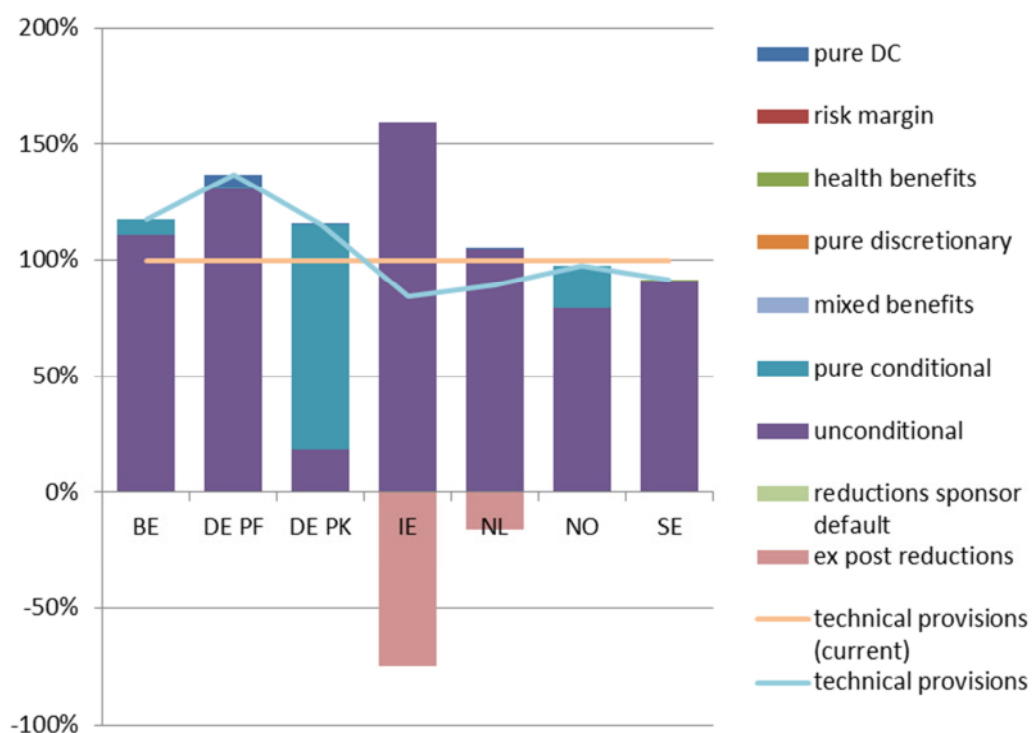


## 7.2.2 Technical provisions

7.26. The exclusion of the risk margin lowers the value of technical provisions in set 2B as compared to the benchmark set 3B. Technical provisions are further reduced for Pensionskassen in Germany and IORPs in the Netherlands as mixed benefits are no longer taken into account in the valuation of the best estimate. This is partly offset by lower ex ante benefit reductions by Pensionskassen and ex post benefits in the Netherlands as the improved excess of assets over liabilities lessens the need to reduce benefits.

<sup>44</sup> This QIS tests SCRs with a 99.5%, 97.5% and 95% confidence level. The figure only displays the impact for the higher (99.5%) and lower (95%) confidence levels to keep it comprehensible.

7.27. Lower bound scenario (set 2B): Components of technical provisions, % current technical provisions



### 7.2.3 Sponsor support and pension protection scheme

7.28. The value of sponsor support and pension protection schemes in set 2B decreases compared to the benchmark scenario in Belgium, Germany and Sweden. The lower level of technical provisions implies that IORPs will be less dependent on these security mechanisms. In Belgium the average value of sponsor support even turns negative. This again is the result of the composition of the sample. When excluding the IORPs with excess funding, the value of sponsor support would be 4% of liabilities instead of -3%. When also excluding the IORPs with no or no effective sponsor support, the value would be 11%. The value of sponsor support in the Netherlands decreases in set 2B in absolute terms, but slightly increases as a percentage of liabilities compared to the benchmark set 3B.

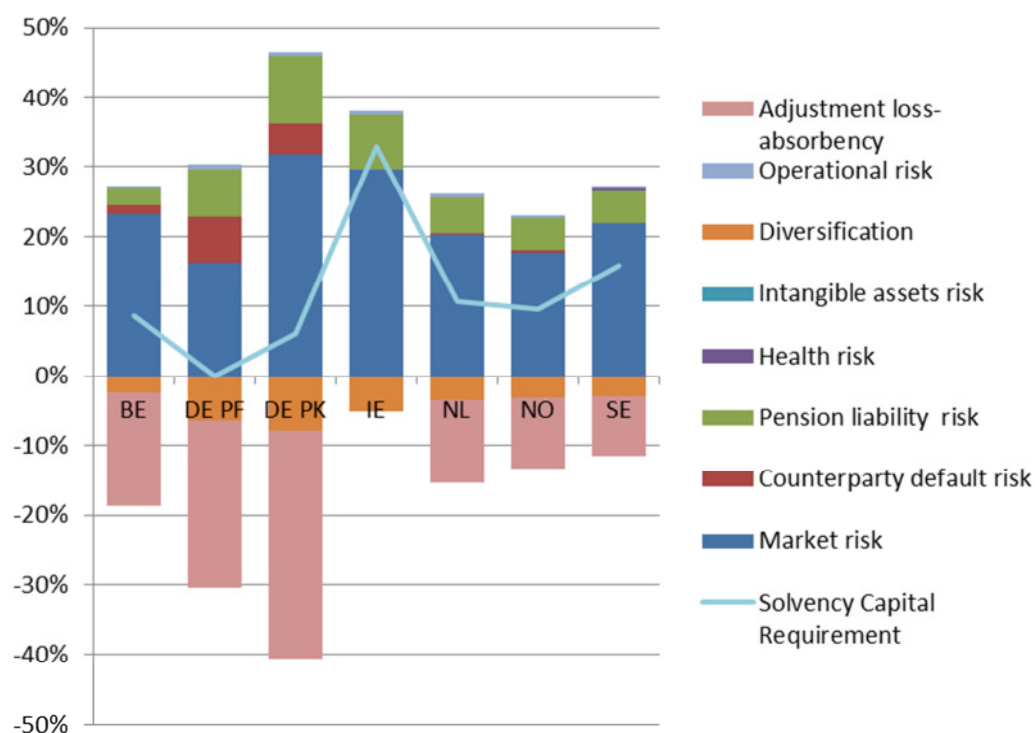
Table 7.2: Lower bound scenario (set 2B): Value of security mechanisms, % liabilities							
	BE	DE PF	DE PK	IE	NL	NO	SE
Pension protection scheme	0	1	0	0	0	0	0
Sponsor support	-3	14	9	0	10	0	1
Maximum value of sponsor support	596	886	337	0	73	0	30
Liabilities (billion EUR)	16	31	140	49	704	13	9



## 7.2.4 Solvency capital requirement

7.29. The SCR increases for German Pensionskassen and Dutch IORPs as compared to the benchmark set 3B. The loss-absorbing capacity decreases, mainly because mixed benefits are no longer included on the balance sheet.

7.30. Lower bound scenario (set 2B): Decomposition of solvency capital requirement with a 99.5% confidence level, % liabilities



## 8 Sets with specific options

8.1. The impact of sets 4 to 18 with specific options will not be discussed for all participating countries. The first reason is that some sets are not relevant in some countries. The second reason is that sometimes only a limited number of IORPs have completed a given set, which means that the aggregate outcomes may not be representative. The sets that will not be discussed for a given country are marked red in table 8.1 below. The overall impact of the sets is measured by means of the excess of assets over liabilities and the surplus over the SCR with a 99.5% confidence level only and is in some cases only discussed in qualitative terms. The overall impact is described in comparison to the benchmark scenario as well as the current regime.

8.2. The outcomes for sets 15 to 17 in Belgium are compared with (aggregated and scaled-up) subsets of the benchmark scenario and the current regime that contain the same sample of IORPs as the specific set under investigation. The reason is that not all IORPs completed these sets with specific options. Because the composition of the sample changed significantly for these three sets, it was not meaningful to compare the aggregate outcomes of these sets with the current regime and benchmark scenario as described in sections 4 and 5. As a consequence, the results for sets 15 to 17 are not comparable amongst each

other. The outcomes for set 9 were replaced with the outcomes in the lower bound scenario (set 2). As no mixed benefits were reported in Belgium, the lower bound scenario is equivalent to set 9.

**Table 8.1: Overview of sets presented**

Scenario	BE	DE	IE	NL	NO	SE	UK
<b>Set 1</b> Upper bound							
<b>Set 2A</b> Lower bound							
<b>Set 2B</b> Lower bound							
<b>Set 3A</b> Benchmark							
<b>Set 3B</b> Benchmark							
<b>Set 4</b> Convergence speed 40 years							
<b>Set 5</b> Include CCP							
<b>Set 6</b> Matching adjustment							
<b>Set 7</b> Matching adj. and CCP							
<b>Set 8</b> Risk margin adverse deviation							
<b>Set 9</b> Exclude risk margin							
<b>Set 10</b> Include pure discretionary							
<b>Set 11</b> Exclude mixed benefits							
<b>Set 12</b> PPS reducing default risk							
<b>Set 13</b> Exclude PPS							
<b>Set 14</b> Exclude ex post reductions							
<b>Set 15</b> Exclude sponsor support / PPS							
<b>Set 16</b> Equity dampener - symmetric							
<b>Set 17</b> Equity dampener - none							
<b>Set 18</b> Exclude inflation module							

8.3. A number of the sets are not relevant for the Swedish Art 4 mutual insurance company (set 10, 11 and 14), which only dispose of unconditional liabilities. Only participating insurance companies have conditional liabilities in Sweden. There is no sponsor support or PPS (set 12, 13 and 15). Matching adjustments have not been applied. No adverse deviation is calculated for the risk margin, which means that the result for set 8 is the same as for the benchmark scenario. As there are no mixed benefits the result of set 9 is the same as for the lower bound scenario. The inflation risk module has not been used since the company has no inflation linked obligations and the result for set 18 is therefore the same as for the benchmark scenario.

8.4. The calculations of the results for sets 4 to 18 are based on the approach adopted for ex post benefit reductions by participating countries in set 3 - the Netherlands has included these reductions, the United Kingdom has not included any reductions, and Ireland has prepared results on both bases. The Irish sets excluding ex post benefit reductions are denoted with suffix A and including such reductions with suffix B.

## 8.1 Convergence speed of 40 years (set 4)

- 8.5. In the benchmark scenario the items on the holistic balance sheet are valued using the basic risk-free interest rate that is based on a convergence speed to the ultimate forward rate (UFR) of 10 years after the last liquid point (LLP). Set 4 tests an extension of the convergence period to 40 years.
- 8.6. The effect of the longer convergence period depends on the LLP and the curvature of the swap curve before the LLP of the currency relevant for the IORP:
- The EUR basic risk-free interest rate decreases by a maximum of around 30 bps after the LLP of 20 years.
  - The NOK basic risk-free interest rate decreases by a maximum of around 10 bps after the LLP of 10 years.
  - The SEK basic risk-free interest rate decreases by a maximum of around 40 bps after the LLP of 10 years.
  - The GBP basic risk-free interest rate decreases by a maximum of around 10 bps after the LLP of 50 years.
- 8.7. The lower interest rates for maturities beyond the LLP increase the value of technical provisions. In Germany and Sweden this impact is mitigated by an increase in the value of sponsor support. The impact on Norwegian IORPs is negligible.
- 8.8. The lower interest rates do not affect the outcomes in Ireland and the United Kingdom. In Ireland the supervisor has calculated the value of technical provisions using a duration approach. Since the last liquid point exceeds the average duration, the interest rate at that maturity remains unchanged. The impact in the United Kingdom is negligible as the LLP for the GBP is 50 years, so changing the convergence from that point on has hardly any effect. The UK supervisor estimates that total UK technical provisions are 85 billion euro lower (or £70 billion) with a LLP for the UK of 20 years in line with the euro zone.

<b>Table 8.2: Set 4 - Change in excess of assets over liabilities and surplus compared to benchmark (% liabilities benchmark)</b>									
	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
EAL (benchmark)	-12%	0%	-4%	-58%	-21%	8%	6%	28%	-14%
change EAL	-1%	0%	0%	0%	0%	-1%	0%	-4%	0%
- assets	-1%	1%	4%	0%	0%	0%	0%	1%	0%
- liabilities	0%	1%	4%	0%	0%	1%	0%	5%	0%
EAL (set 4)	-14%	0%	-4%	-58%	-21%	7%	6%	24%	-14%
Surplus (benchmark)	-20%	0%	-7%	-93%	-52%	2%	-3%	13%	-24%
Change surplus	-2%	0%	0%	0%	0%	-1%	0%	-5%	0%
- change EAL	-1%	0%	0%	0%	0%	-1%	0%	-4%	0%
- change SCR	0%	0%	0%	0%	0%	0%	0%	1%	0%
Surplus (set 4)	-22%	0%	-8%	-93%	-52%	1%	-3%	8%	-24%
Liabilities (billion EUR)	17	33	162	100	53	813	13	10	2155

- 8.9. IORPs in Sweden are affected the most in absolute terms. The excess of assets over liabilities declines from 28% to 24% of liabilities, the surplus over the SCR with a confidence level of 99.5% from 13% to 8% of liabilities. For the Art 4 insurance company the impact on the best estimate of technical provisions is less favourable than in the benchmark scenario. This reduces the surplus over the SCR significantly compared to the benchmark scenario as well as to the current regime.

#### Outcomes set 4 compared to current regime

- 8.10. The change in the excess of assets over liabilities in set 4 compared to the current regime is positive in Ireland when ex post reductions are included, the Netherlands and the United Kingdom and negative in Belgium, Germany, Ireland when ex post reductions are excluded, Norway and Sweden (see Table 8.3). In Belgium, Germany, Ireland and the United Kingdom the basic risk-free discount curve results in a strong increase in technical provisions. In the Irish set 4B this strong increase is more than offset by the inclusion of ex post benefit reductions. In the Netherlands significant last resort benefit reductions dampen the positive effect on technical provisions of the inclusion of mixed benefits, the risk margin and a slightly lower interest rate curve compared to benchmark set 3B. The basic risk-free interest rate curve in set 4 is also lower than the risk-free rate currently used in Sweden and somewhat higher than the one used in Norway. The risk margin has a positive impact on liabilities in all countries.
- 8.11. The recognition of sponsor support as an asset has a strong positive impact on the excess of assets over liabilities in Germany and the United Kingdom and a small to moderate impact in Belgium, the Netherlands and Sweden. Pensionsfonds in Germany and the United Kingdom have also recognised a small value for the pension protection scheme relative to aggregate liabilities. In the United Kingdom the value of security mechanisms exceeds the increase in technical provisions and, hence, the excess of assets over liabilities is higher than under the current regime.
- 8.12. The surplus over the SCR increases in set 4 in the Netherlands and remains the same in Sweden. In both countries the SCR with a 99.5% confidence level is lower than the present national capital requirements, as the SCR takes into account the loss-absorbing capacity of security and benefit adjustment mechanisms. The SCR for Pensionsfonds and Pensionskassen in Germany is more or less comparable to their existing capital requirements.

**Table 8.3: Set 4 - Change in EAL and surplus compared to current regime (% liabilities current regime)**

	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
- contribution assets	2%	32%	33%	0%	0%	10%	0%	2%	43%
- contribution liabilities	-27%	-49%	-45%	-72%	9%	-4%	-5%	-4%	-40%
Change in EAL	-25%	-17%	-12%	-72%	9%	6%	-5%	-2%	4%
- contribution SCR 99.5%	-8%	0%	0%	-47%	-15%	12%	-4%	2%	-15%
Change in surplus	-34%	-16%	-12%	-119%	-6%	18%	-9%	0%	-12%
Liabilities (billion EUR)	14	22	116	58	58	785	13	10	1542

## 8.2 Include CCP of 100 bps (set 5)

- 8.13. Set 5 provides an assumption for the counter-cyclical premium (CCP) by performing a vertical shift of 100 bps to the basic risk-free interest rate curve for all maturities, compared to the benchmark scenario. The risk that the CCP will no longer be triggered has to be included in the calculation of the solvency capital requirement.
- 8.14. The higher discount curve in set 5 results in a decrease of liabilities by around 10 to 18% of liabilities compared to the benchmark scenario. In the Netherlands this negative effect on liabilities is partly offset by lower ex post benefit reductions. In Norway the overall effect is negligible as the impact on unconditional benefits is almost fully compensated by an increase in conditional benefits. The discount rate at the end of 2011 was above the contractual interest rate for most maturities. In all countries – except Ireland and Norway – a decrease in the value of sponsor support mitigates the overall effect on the excess of assets over liabilities.
- 8.15. The CCP substantially diminishes the negative excess of assets over liabilities in Belgium, Ireland and the United Kingdom. The negative excess of assets over liabilities for German Pensionskassen in the benchmark scenario even turns into a positive excess of assets over liabilities of on average 1% of liabilities.

<b>Table 8.4: Set 5 - Change in excess of assets over liabilities and surplus compared to benchmark (% liabilities benchmark)</b>									
	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
EAL (benchmark)	-12%	0%	-4%	-58%	-21%	8%	6%	28%	-14%
change EAL	7%	0%	5%	18%	11%	4%	0%	13%	6%
- assets	-5%	-10%	-13%	0%	0%	-2%	0%	-1%	-9%
- liabilities	-12%	-10%	-18%	-18%	-11%	-6%	0%	-14%	-14%
EAL (set 5)	-5%	0%	1%	-41%	-10%	12%	6%	41%	-8%
Surplus (benchmark)	-20%	0%	-7%	-93%	-52%	2%	-3%	13%	-24%
Change surplus	6%	0%	4%	29%	16%	4%	2%	12%	8%
- change EAL	7%	0%	5%	18%	-11%	4%	0%	13%	6%
- change SCR	2%	0%	1%	-11%	-6%	0%	-1%	1%	-2%
Surplus (set 5)	-15%	0%	-3%	-64%	-36%	6%	-1%	26%	-17%
Liabilities (billion EUR)	17	33	162	100	53	813	13	10	2155

- 8.16. The supervisors in Ireland and the United Kingdom and a substantial part of German IORPs have not taken into account CCP risk in the calculation of the SCR in set 5. In the case of the United Kingdom, this is because TPR has concerns over the methodology. CCP risk is the risk that conditions become unstressed, so that it should be negatively correlated to the other stresses. The SCR decreases in Ireland and the United Kingdom as a consequence of the lower value of technical provisions, which decreases the capital charge for interest rate and pension liability risk. In Germany this negative impact on the gross SCR is fully compensated by a decline in the loss-absorbency of adjustment and security mechanisms and as a result the SCR remains largely unchanged.

- 8.17. In Belgium and Sweden the SCR increases slightly in set 5 as the positive effect of including CCP risk in the SCR dominates the negative effect on the SCR of the lower level of technical provisions.
- 8.18. In all countries the surplus over the SCR rises in set 5. The size of the increase depends on whether CCP risk was included and on the strength of security and benefit adjustment mechanisms available to the IORP. The surplus over the SCR remains negative for Pensionskassen in Germany and IORPs in Belgium, Ireland, Norway and the United Kingdom.

### Outcomes set 5 compared to current regime

- 8.19. The change in the excess of assets over liabilities in set 5 compared to the current regime is positive in Ireland when ex post reductions are included, the Netherlands, Sweden and the United Kingdom and negative in Belgium, Germany, Ireland when ex post reductions are excluded and Norway (see Table 8.5). In Belgium, Germany, Ireland and the United Kingdom the basic risk-free discount curve adjusted for the CCP results in set 5 in a strong increase in technical provisions. In the Irish set 5B this strong increase is more than offset by the inclusion of ex post benefit reductions. In the Netherlands the positive effect on liabilities of including mixed benefits is offset by ex post benefit reductions and a higher interest rate curve. The basic risk-free interest rate curve including the CCP is also higher than the discount rates currently used in Sweden and Norway. The risk margin has a positive impact on liabilities in all countries.
- 8.20. The recognition of sponsor support as an asset has a strong positive impact on the excess of assets over liabilities in set 5 in Germany and the United Kingdom and a moderate to small impact in Belgium, the Netherlands and Sweden. In Belgium the impact of sponsor support is on average negative. Pensionsfonds in Germany and the United Kingdom have also recognised a small value for the pension protection scheme relative to aggregate liabilities. In the United Kingdom the value of security mechanisms exceeds the increase in technical provisions and, hence, the excess of assets over liabilities is higher than under the current regime.

Table 8.5: Set 5 - Change in EAL and surplus compared to current regime (% liabilities current regime)									
	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
- contribution assets	-6%	17%	11%	0%	0%	8%	0%	0%	31%
- contribution liabilities	-12%	-33%	-15%	-42%	19%	3%	-4%	15%	-20%
Change in EAL	-17%	-17%	-4%	-42%	19%	11%	-4%	15%	12%
- contribution SCR 99.5%	-10%	0%	-1%	-27%	-10%	12%	-3%	2%	-12%
Change in surplus	-27%	-16%	-6%	-69%	9%	23%	-7%	17%	-1%
Liabilities (billion EUR)	14	22	116	58	58	785	13	10	1542

- 8.21. The surplus over the SCR increases in the Irish set 5B with benefit reductions, the Netherlands and Sweden. In the latter two countries the SCR with a 99.5% confidence level is lower than present national capital requirements, as the SCR takes into account the loss-absorbing capacity of security and benefit adjustment

mechanisms. The SCR for Pensionsfonds and Pensionskassen in Germany is more or less comparable to their existing capital requirements.

- 8.22. The Swedish Art 4 insurance company experiences a significant reduction of best estimate of technical provisions compared to the current regime. The major increase of the EAL translates into an increase in surplus over the SCR as well as an improved solvency position, despite the fact that the capital requirement in set 5 is even higher than in the benchmark scenario.

### 8.3 Matching adjustment (set 6 and 7)

- 8.23. In sets 6 and 7 IORPs were asked to apply the matching adjustment to the basic risk-free interest rate curve irrespective of whether they complied with the conditions regarding the eligibility of liabilities, asset-liability matching requirements and assets admissible to the replicating portfolio.

- 8.24. The matching adjustment equals the spread over the risk-free rate on the fixed income portfolio of the IORP less an estimate of the fundamental spread. Two versions of the fundamental spread were tested:

- The credit spread corresponding to the probability of default of the assets and the expected loss from a downgrading of the assets with a floor of 75% of the long-term average of the spread (set 6).
- The credit spread corresponding to the probability of default of the assets (set 7).

IORPs should include the risk of an increase in the fundamental spread in the spread risk sub-module of the SCR standard formula.

**Table 8.6: Set 6 and 7 - Change in excess of assets over liabilities and surplus compared to benchmark (% liabilities benchmark)**

	Set 6	Set 7
	UK	UK
EAL (benchmark)	-14%	-14%
change EAL	4%	6%
- assets	-2%	-9%
- liabilities	-7%	-14%
EAL (set 6/7)	-9%	-8%
Surplus (benchmark)	-24%	-24%
Change surplus	5%	10%
- change EAL	4%	6%
- change SCR	0%	-4%
Surplus (set 6/7)	-20%	-15%
Liabilities (billion EUR)	2155	2155

- 8.25. In none of the participating countries did a sufficient number of IORPs complete these sets. In Belgium almost half of the IORPs completed these sets but the quality of the calculations was compromised because of the complexity of the technical specifications and the lack of time, and therefore the results for these sets are not included in this report. In the United Kingdom the supervisor did undertake the calculations for the two versions of the matching adjustment on the

basis that IORPs would not have to comply with the conditions, in particular with the ring-fencing condition.

- 8.26. In the United Kingdom liabilities decrease by 7% and 14% respectively under the first and second option in 8.24 which is equivalent to 125 and 275 billion euro respectively. The impact on the excess of assets over liabilities is mitigated to some extent by a simultaneous decline of the value of sponsor support. The lower holistic balance sheet totals reduce the SCR. Overall the excess of assets over liabilities increases by around 5% of liabilities and the surplus over the SCR by 5 to 10% of liabilities.

#### **Outcomes set 6 and 7 compared to current regime**

- 8.27. The excess of assets over liabilities increases in sets 6 and 7 in the United Kingdom. Liabilities increase by 20 to 30% depending on the type of matching adjustment applied to the basic risk-free interest rate curve. However, the increase in liabilities is more than compensated by the recognition of sponsor support on the holistic balance sheet. The SCR with a 99.5% confidence level exceeds the present funding requirement, as IORPs are currently only required to have sufficient assets to cover technical provisions. On balance the surplus decreases by 5% of current liabilities in set 6 and increases by 2% in set 7.

**Table 8.7: Set 6 and 7 – Change in EAL and surplus compared to current regime (% liabilities current regime)**

	Set 6	Set 7
	UK	UK
- contribution assets	40%	31%
- contribution liabilities	-31%	-20%
Change in EAL	10%	12%
- contribution SCR 99.5%	-15%	-10%
Change in surplus	-5%	2%
Liabilities (billion EUR)	1542	1542

## **8.4 Risk margin (set 8 and 9)**

- 8.28. The technical specifications prescribe that the risk margin for adverse deviation should be equal to 8% of the best estimate of technical provisions for the purpose of this QIS, i.e. the same simplification as for the cost-of-capital risk margin in the benchmark scenario. The outcomes for set 8 are therefore in principle the same as for the benchmark scenario.
- 8.29. In Norway, however, some IORPs used the more elaborate method from Solvency II to calculate the risk margin in the benchmark scenario. This resulted in a lower risk margin compared to the standard risk margin that is calculated as 8% of the best estimate. This implies that the risk margin for adverse deviation in this set will increase the overall level of technical provisions. As a consequence, the excess of assets over liabilities in this set declines by 2% of liabilities to an average of 4% of liabilities.



<b>Table 8.8: Set 8 – Change in excess of assets over liabilities and surplus compared to benchmark (% liabilities benchmark)</b>									
	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
EAL (benchmark)							6%		
change EAL							-2%		
- assets							0%		
- liabilities							2%		
EAL (set 8)							4%		
Surplus (benchmark)							-3%		
Change surplus							-1%		
- change EAL							-2%		
- change SCR							-1%		
Surplus (set 8)							-4%		
Liabilities (billion EUR)							13		

### Outcomes set 8 compared to current regime

8.30. In set 8 the excess of assets over liabilities decreases in Norway by 6% of liabilities compared to the current regime. This can be fully explained by the inclusion of the fixed risk margin for adverse deviation in technical provisions. The SCR with a 99.5% confidence level exceeds the current solvency requirement in Norway. As a consequence, the surplus over the capital requirement decreases by more than the change in the excess of assets over liabilities.

<b>Table 8.9: Set 8 - Change in EAL and surplus compared to current regime (% liabilities current regime)</b>									
	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
- contribution assets							0%		
- contribution liabilities							-6%		
Change in EAL							-6%		
- contribution SCR 99.5%							-3%		
Change in surplus							-10%		
Liabilities (billion EUR)							13		

8.31. In set 9 the impact is analysed of excluding the risk margin from the benchmark scenario altogether. Exclusion of the risk margin reduces the value of technical provisions by around 7% of total liabilities. The effect is somewhat lower in Germany with substantial conditional benefits, which are adjusted upwards in response to the increase in basic own funds. The effect is somewhat lower in Norway as well, but this is due to the fact that some pension funds used another method to calculate the risk margin in the benchmark scenario. In the Netherlands the decline in technical provisions is only 2% of liabilities. The removal of the risk margin results in a better financial position of pension funds and, hence, lower ex post benefit reductions. The impact on the excess of assets

over liabilities is further mitigated by the simultaneous decline in the value of sponsor support in all countries except Ireland and Norway.

- 8.32. The risk margin has in set 9 a negligible effect on the SCR in most countries. As a consequence, the increase in the surplus over the SCR is similar to the increase in the excess of assets over liabilities.

**Table 8.10: Set 9 - Change in excess of assets over liabilities and surplus compared to benchmark (% liabilities benchmark)**

	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
EAL (benchmark)	-12%	0%	-4%	-58%	-21%	8%	6%	28%	-14%
change EAL	4%	0%	1%	7%	7%	2%	6%	7%	3%
- assets	-3%	-7%	-5%	0%	0%	-1%	0%	0%	-4%
- liabilities	-7%	-7%	-6%	-7%	-7%	-2%	-6%	-7%	-7%
EAL (set 9)	-8%	0%	-3%	-51%	-14%	10%	12%	35%	-10%
Surplus (benchmark)	-20%	0%	-7%	-93%	-52%	2%	-3%	13%	-24%
Change surplus	4%	0%	1%	10%	8%	2%	6%	7%	4%
- change EAL	4%	0%	1%	7%	7%	2%	6%	7%	3%
- change SCR	0%	0%	0%	-2%	0%	0%	0%	0%	-1%
Surplus (set 9)	-16%	0%	-6%	-83%	-44%	4%	3%	20%	-21%
Liabilities (billion EUR)	17	33	162	100	53	813	13	10	2155

### Outcomes set 9 compared to current regime

- 8.33. The change in the excess of assets over liabilities in set 9 compared to the current regime is positive in Ireland when ex post reductions are included, the Netherlands, Norway, Sweden and the United Kingdom and negative in Belgium, Germany and Ireland when ex post reductions are excluded (see Table 8.11). In Belgium, Germany, Ireland and the United Kingdom the basic risk-free discount curve results in a strong increase in technical provisions. In the Irish set 9B this strong increase is more than offset by the inclusion of ex post benefit reductions. In the Netherlands significant last resort benefit reductions largely offset the positive effect on technical provisions of the inclusion of mixed benefits and a slightly lower interest rate curve. The basic risk-free interest rate curve is slightly higher than the risk-free rate currently used in Norway and Sweden.
- 8.34. The recognition of sponsor support as an asset has a strong positive impact on the excess of assets over liabilities in Germany and the United Kingdom and a small to moderate impact in Belgium, the Netherlands and Sweden. In Belgium the impact of sponsor support is on average negative. Pensionsfonds in Germany and the United Kingdom have also recognised a small value for the pension protection scheme relative to aggregate liabilities. In the Netherlands and the United Kingdom the value of sponsor support exceeds the increase in technical provisions and, hence, the excess of assets over liabilities is higher than under the current regime.
- 8.35. The surplus over the SCR increases in the Irish set 9B with benefit reductions, the Netherlands and in Sweden. In the latter two member states the SCR with a 99.5% confidence level is lower than the present national capital requirements, as the SCR takes into account the loss-absorbing capacity of security and benefit

adjustment mechanisms. The SCR for Pensionsfonds and Pensionskassen in Germany is more or less comparable to their existing capital requirements.

<b>Table 8.11: Set 9 - Change in EAL and surplus compared to current regime (% liabilities current regime)</b>									
	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
- contribution assets	-3%	20%	21%	0%	0%	10%	0%	1%	38%
- contribution liabilities	-18%	-37%	-31%	-59%	16%	-1%	1%	8%	-29%
Change in EAL	-21%	-17%	-10%	-59%	16%	9%	2%	9%	8%
- contribution SCR 99.5%	-7%	0%	0%	-43%	-15%	12%	-4%	3%	-14%
Change in surplus	-29%	-16%	-10%	-102%	1%	21%	-3%	12%	-6%
Liabilities (billion EUR)	14	22	116	58	58	785	12	10	1542

## 8.5 Include discretionary benefits (set 10)

- 8.36. In set 10 the impact is analysed of including pure discretionary benefits in the best estimate of technical provisions. Pure discretionary benefits have only been reported by IORPs in the Netherlands. However, their value is with 0.4% of liabilities so small that the impact of this set would not have been visible in the standard tables without showing decimal places.
- 8.37. The inclusion of pure discretionary benefits in set 10 would in qualitative terms result in higher liabilities and a lower excess of assets over liabilities. Pure discretionary benefits have a loss-absorbing capacity in the calculation of the SCR. As a result, the negative impact on the surplus is smaller than the negative impact on the excess of assets over liabilities.

## 8.6 Exclude mixed benefits (set 11)

- 8.38. Set 11 analyses the impact of excluding mixed benefits from the best estimate of technical provisions in the benchmark scenario. German Pensionskassen included 14 billion euro worth of mixed benefits in the benchmark scenario and Dutch IORPs included 72 billion euro.
- 8.39. The exclusion of mixed benefits reduces the value of liabilities by respectively 8% and 10% of liabilities for Pensionskassen in Germany and IORPs in the Netherlands compared to benchmark set 3B. The positive impact on the excess of assets over liabilities in Germany is mitigated by a decrease in the value of sponsor support.
- 8.40. The decline in liabilities reduces the gross SCR, but the exclusion of mixed benefits also reduces the loss-absorbing capacity of technical provisions. On balance the SCR increases by 3% of liabilities in both Germany and the Netherlands and diminishes the positive impact on the surplus.

**Table 8.12: Set 11 - Change in excess of assets over liabilities and surplus compared to benchmark (% liabilities benchmark)**

	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
EAL (benchmark)			-4%			8%			
change EAL			4%			9%			
- assets			-4%			0%			
- liabilities			-8%			-10%			
EAL (set 11)			0%			17%			
Surplus (benchmark)			-7%			2%			
Change surplus			1%			6%			
- change EAL			4%			9%			
- change SCR			3%			3%			
Surplus (set 11)			-6%			9%			
Liabilities (EUR)			162			813			

**Outcomes set 11 compared to current regime**

8.41. In set 11 the excess of assets over liabilities decreases for German Pensionskassen and increases for Dutch IORPs compared to the current regime. Technical provisions of Pensionskassen rise by almost 30% due to the introduction of the basic risk-free interest rate curve and the risk margin. In the Netherlands the negative effects of a slightly lower discount curve and the risk margin are more than offset by the inclusion of ex post benefit reductions. The recognition of sponsor support as an asset has a positive effect on the excess of assets over liabilities in both countries. The SCR with a 99.5% confidence level is higher than the current capital requirement for Pensionskassen and lower than the present capital requirement in the Netherlands. As a result, the change in the surplus over the SCR is worse than the decrease in the EAL for Pensionskassen and better than the increase in the EAL for IORPs in the Netherlands.

**Table 8.13: Set 11- Change in EAL and surplus compared to current regime (% liabilities current regime)**

	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
- contribution assets			23%			10%			
- contribution liabilities			-28%			6%			
Change in EAL			-6%			16%			
- contribution SCR 99.5%			-4%			9%			
Change in surplus			-9%			26%			
Liabilities (billion EUR)			116			785			

**8.7 Pension protection schemes (set 12 and 13)**

8.42. The technical specifications provide two options to take into account pension protection schemes. In the benchmark scenario they should be valued separately as an asset on the holistic balance sheet.

- 8.43. Set 12 analyses the option that the pension protection scheme reduces the default risk of the sponsor, i.e. increase the value of sponsor support. This option is especially relevant for Germany where Pensionsfonds are covered by a pension protection scheme that guarantees 100% of benefits. The option has no material impact on the excess of assets over liabilities. However, the removal of the pension protection scheme as an asset is not fully compensated by a rise in the value of sponsor support. The SCR will rise strongly due to a decline in the loss-absorbing capacity of the pension protection scheme, which is not fully compensated by an increase in the loss-absorbing capacity of sponsor support. This means that some Pensionsfonds have a negative excess of assets over liabilities and are not able to cover the SCR.
- 8.44. If the value of sponsor support decreases for other reasons than an increase in sponsor default risk (e.g. due to a reduction in expected future cash-flows of the sponsor), from the perspective of members and beneficiaries the value of the pension protection scheme should increase, because it offsets the weakening of the sponsor. In the option "PPS impacting on the default risk of the sponsor" this would not be the case.
- 8.45. Under this set there can be cases where the gap in the holistic balance sheet is not closed by the pension protection scheme. This is not appropriate in cases where the pension protection scheme pays benefits without any reductions, because in those cases the pension protection scheme will cover any shortfall between assets (including sponsor support) and liabilities.
- 8.46. If there are no data available about the sponsor and the value of sponsor support is set to zero because of this, the holistic balance sheet will be balanced by the pension protection scheme if included as an asset. In this set where the pension protection scheme impacts on the default risk of the sponsor the holistic balance sheet would not be balanced in this situation, because the value of sponsor support does not increase through the consideration of the pension protection scheme.

**Table 8.14: Set 12 and 13 - Change in excess of assets over liabilities and surplus compared to benchmark (% liabilities benchmark)**

	Set 12	Set 13	
	DE PF	DE PF	UK
EAL (benchmark)	0%	0%	-14%
change EAL	-1%	-2%	-1%
- assets	0%	-1%	-1%
- liabilities	1%	1%	0%
EAL (set 12/13)	-1%	-2%	-14%
Surplus (benchmark)	0%	0%	-24%
Change surplus	-14%	-13%	-2%
- change EAL	-1%	-2%	-1%
- change SCR	13%	11%	0%
Surplus (set 12/13)	-14%	-13%	-26%
Liabilities (billion EUR)	33	33	2155

- 8.47. Set 13 analyses the option of excluding pension protection schemes from the holistic balance sheet. German Pensionsfonds have included a total value of 0.6

billion euro for the pension protection scheme in the benchmark scenario, the United Kingdom a total value of 13.1 billion euro. Exclusion of the pension protection scheme results in a decline of the excess of assets over liabilities in both countries.

- 8.48. The value of the pension protection scheme is small in the United Kingdom relative to aggregate technical provisions. The assumption that sponsor support is based on contributions to reach Level A means that the funding level of IORPs would rapidly exceed that required to meet the PPF level. Therefore, in the UK the impact of excluding the PPF is limited.
- 8.49. For German Pensionsfonds the exclusion of the pension protection scheme in set 13 leads to a negative excess of assets over liabilities and a deficit in coverage of the SCR. The impact on the net SCR and the surplus is significantly higher compared to the benchmark scenario as pension protection schemes play an important role in absorbing losses in stress scenarios.

### Outcomes sets 12 and 13 compared to current regime

- 8.50. In set 12 and set 13 technical provisions of Pensionsfonds in Germany and IORPs in the United Kingdom increase by almost 50% and 40% respectively. The reasons are the use of a risk-free interest rate, instead of the expected return on assets, and to a lesser extent the inclusion of the risk margin. The recognition of sponsor support as an asset on the holistic balance sheet compensates for the increase in technical provisions. On balance the excess of assets over liabilities decreases in Germany and increases in the United Kingdom. The change in the excess of assets over liabilities of Pensionsfonds is slightly more negative in set 13 than in set 12. In set 13 the value of pension protection schemes cannot be included on the holistic balance sheet.
- 8.51. The SCR exceeds current funding requirements for Pensionsfonds and UK IORPs. As a result, the impact on the surplus over the SCR is less favourable than the change in the excess of assets over liabilities.

**Table 8.15: Set 12 and 13 - Change in EAL and surplus compared to current regime (% liabilities current regime)**

	Set 12	Set 13	
	DE PF	DE PF	UK
- contribution assets	31%	30%	43%
- contribution liabilities	-49%	-49%	-40%
Change in EAL	-18%	-19%	3%
- contribution SCR 99.5%	-19%	-16%	-16%
Change in surplus	-37%	-35%	-14%
Liabilities (billion EUR)	22	22	1542

## 8.8 Exclude ex post benefit reductions (set 14)

- 8.52. Set 14 analyses the impact of excluding ex post benefit reductions. Such reductions were included by Ireland and the Netherlands in benchmark set 3B.

- 8.53. The exclusion of the ex post benefit reductions results in an increase of technical provisions in Ireland and the Netherlands of respectively 89% and 20% of liabilities compared to the benchmark set 3B. The excess of assets over liabilities declines by an equivalent amount.
- 8.54. The SCR increases in Ireland due to the higher level of technical provisions, which increases interest rate and longevity risk. In the Netherlands the increase in the SCR results from a reduced loss-absorbing capacity of technical provisions as adverse scenarios can no longer be absorbed by reducing benefits. The surplus over the SCR declines in Ireland and the Netherlands by respectively 124% and 27% of liabilities compared to benchmark set 3B.

<b>Table 8.16: Set 14 - Change in excess of assets over liabilities and surplus compared to benchmark (% liabilities benchmark)</b>									
	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
EAL (benchmark)					-21%	8%			
change EAL					-89%	-20%			
- assets					0%	0%			
- liabilities					89%	20%			
EAL (set 14)					-110%	-12%			
Surplus (benchmark)					-52%	2%			
Change surplus					-124%	-27%			
- change EAL					-89%	-20%			
- change SCR					35%	7%			
Surplus (set 14)					-176%	-25%			
Liabilities (EUR)					53	813			

- 8.55. In the Netherlands the surpluses (both with respect to liabilities and the SCR) that appear in the benchmark set 3B will turn into significant shortfalls in set 14. In Ireland the exclusion of ex post benefit reductions in set 14 means that the shortfalls existing in benchmark set 3B become much bigger.

#### **Outcomes set 14 compared to current regime**

- 8.56. In set 14 technical provisions in Ireland rise by 72% of liabilities in the current regime. The higher level of technical provisions is mainly due to the introduction of the risk-free discount curve and to a lesser extent the inclusion of the risk margin. Liabilities in the Netherlands in set 14 increase by 24% compared to the current regime because of the inclusion of mixed benefits, the risk margin and a somewhat lower risk-free interest rate curve. The increase in liabilities is partly compensated by the recognition of a significant amount of sponsor support on the holistic balance sheet.
- 8.57. The SCR with a 99.5% confidence level in set 14 in Ireland is much higher than the capital requirement under the current regime. As a result, the surplus over the capital requirement deteriorates by as much as 119% of current liabilities. The SCR in set 14 for the Netherlands is lower than under the current regime, which moderates the decrease in the surplus over the capital requirement.

**Table 8.17: Set 14- Change in EAL and surplus compared to current regime (% liabilities current regime)**

	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
- contribution assets					0%	10%			
- contribution liabilities					-72%	-24%			
Change in EAL					-72%	-13%			
- contribution SCR 99.5%					-47%	5%			
Change in surplus					-119%	-9%			
Liabilities (billion EUR)					58	785			

## 8.9 Sponsor support as ancillary own fund (set 15)

8.58. In set 15 sponsor support is not recognised as an asset on the holistic balance sheet, as it was under the benchmark scenario, but treated as an off-balance ancillary own funds item. Pension protection schemes are excluded. Ireland and Norway have not included any sponsor support in the benchmark scenario.

**Table 8.18: Set 15 - Change in excess of assets over liabilities and surplus compared to benchmark (% liabilities benchmark)**

	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
EAL (benchmark)	-1%	0%	-4%			8%		28%	-14%
change EAL	-6%	-21%	-8%			-9%		-2%	-31%
- assets	-6%	-22%	-16%			-9%		-2%	-31%
- liabilities	0%	0%	-7%			0%		0%	0%
EAL (set 15)	-7%	-21%	-13%			-1%		26%	-45%
Surplus (benchmark)	-2%	0%	-7%			2%		13%	-24%
Change surplus	180%	790%	135%			0%		18%	87%
- change EAL	-6%	-21%	-8%			-9%		-2%	-31%
- change SCR	23%	17%	2%			1%		8%	9%
- change AOF	207%	829%	145%			10%		28%	127%
Surplus (set 15)	178%	791%	128%			2%		32%	62%
Liabilities (billion EUR)	17	33	162			813		10	2155

8.59. The exclusion of sponsor support and pension protection schemes reduces the excess of assets over liabilities compared to the benchmark scenario. The UK experiences the largest impact and Sweden the smallest. In Germany the removal of sponsor support for Pensionskassen is partially offset by a reduction in conditional pension obligations, but still leads to an increase of the negative excess of assets over liabilities. Pensionsfonds, with only very small amounts of conditional benefits, do not compensate the exclusion of sponsor support and the pension protection scheme. This means that Pensionsfonds have a large negative excess of assets over liabilities under this set compared to a small positive excess of assets over liabilities in the benchmark scenario.

8.60. The exclusion in set 15 of both security mechanisms reduces loss-absorbency in the SCR calculation and, as a consequence, the SCR rises. Despite the lower excess of assets over liabilities and the higher SCR the surplus rises considerably



in most countries. This reflects the recognition of sponsor support as an ancillary own funds item, calculated as the maximum amount of sponsor support. In the Netherlands the decline in the excess of assets over liabilities and the rise in the SCR are exactly offset by the value of maximum sponsor support.

### Outcomes set 15 compared to current regime

- 8.61. In set 15 liabilities increase by 24% to 47% in Belgium, Germany and the United Kingdom. IORPs will have to establish the best estimate of technical provisions using a risk-free interest curve instead of the expected return on assets or a fixed discount curve. In the Netherlands and Sweden the impact of the discount rate is much smaller in the QIS as liabilities already have to be calculated on a risk-free basis under the current regime. The basic risk-free interest rate curve is somewhat lower than the present (adjusted) swap curve in the Netherlands and somewhat higher than the risk-free rate used in Sweden. The inclusion of mixed benefits has significant upward effects on liabilities of German Pensionskassen and Dutch IORPs. All member states are negatively affected by the introduction of the risk margin.
- 8.62. In set 15 IORPs cannot include sponsor support and pension protection schemes as an asset on the holistic balance sheet. As a result, the excess of assets over liabilities drops sharply in Belgium, Germany and the United Kingdom. At the same time the surplus over the capital requirement increases, as the maximum sponsor support is recognised as an ancillary own funds item that may cover the SCR.

Table 8.19: Set 15 - Change in EAL and surplus compared to current regime (% liabilities current regime)									
	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
- contribution assets	0%	-1%	7%			1%		0%	0%
- contribution liabilities	-24%	-47%	-30%			-4%		1%	-40%
Change in EAL	-24%	-48%	-23%			-3%		1%	-40%
- contribution SCR 99.5%	-27%	-25%	-3%			11%		-5%	-28%
- contribution AOF	260%	1210%	204%			11%		28%	178%
Change in surplus	209%	1137%	178%			19%		23%	110%
Liabilities (billion EUR)	14	22	116			785		10	1542

## 8.10 Equity dampener (set 16 and 17)

- 8.63. In the benchmark scenario IORPs were allowed to use the duration-based equity shock in the SCR equity risk sub-module provided that the duration of liabilities exceeds 12 years. Set 16 analyses the impact of requiring IORPs to use the standard stress with symmetric adjustment under all circumstances. This implies an equity shock of 33% for global equities and 43% for other equities, instead of 22% for all equities under the duration-based equity shock as applied in the benchmark scenario. Norwegian IORPs did not use the duration-based equity

shock in the benchmark scenario since the sponsor has the opportunity to terminate or transfer all or part of the scheme at any time at contractual values.

- 8.64. The increase in the gross SCR ranges from 1% of liabilities to 4%. The resulting impact on the net SCR and surplus is for many countries lower, depending on the loss-absorbing capacity of security and adjustment mechanisms.

<b>Table 8.20: Set 16 - Change in excess of assets over liabilities and surplus compared to benchmark (% liabilities benchmark)</b>									
	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
Surplus (benchmark)	-15%	0%	-7%	-93%	-52%	2%		13%	-24%
Change surplus	-3%	0%	0%	-2%	-4%	-1%		-3%	-1%
- gross SCR	3%	-1%	2%	2%	4%	4%		4%	2%
- loss absorbency	0%	1%	-2%	0%	0%	-3%		-1%	-1%
Surplus (set 16)	-18%	0%	-7%	-95%	-56%	1%		10%	-25%
Liabilities (billion EUR)	17	33	162	100	53	813		10	2155

### **Outcomes set 16 compared to current regime**

- 8.65. The change in the excess of assets over liabilities in set 16 compared to the current regime is positive in Ireland when ex post reductions are included, the Netherlands, Sweden and the United Kingdom and negative in Belgium, Germany and Ireland when ex post reductions are excluded (see Table 8.21). In Belgium, Germany, Ireland and the United Kingdom the basic risk-free discount curve results in a strong increase in technical provisions. In the Irish set 16B this strong increase is more than offset by the inclusion of ex post benefit reductions. In the Netherlands significant last resort benefit reductions outweigh the positive effect on technical provisions of the inclusion of mixed benefits and a slightly lower interest rate curve. The basic risk-free interest rate curve in set 16 is slightly higher than the risk-free discount rate currently used in Sweden. The risk margin has an upward effect on liabilities in all countries.
- 8.66. The recognition of sponsor support as an asset has a strong positive impact on the excess of assets over liabilities in Germany and the United Kingdom and a small to moderate impact in Belgium, the Netherlands and Sweden. Pensionsfonds in Germany and the United Kingdom have also recognised a small value for the pension protection scheme, relative to aggregate liabilities. In the Netherlands and the United Kingdom the value of security mechanisms exceeds the increase in technical provisions and, hence, the excess of assets over liabilities is higher than under the current regime.
- 8.67. The surplus over the SCR in set 16 increases in the Netherlands and Sweden. In the Netherlands the SCR with a 99.5% confidence level is lower than the current national capital requirement, as the SCR takes into account the loss-absorbing capacity of adjustment and security mechanisms, and in Sweden about the same. The SCR for Pensionsfonds and Pensionskassen is more or less comparable to existing capital requirements.

**Table 8.21: Set 16- Change in EAL and surplus compared to current regime (% liabilities current regime)**

	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
- contribution assets	1%	32%	27%	0%	0%	10%		1%	43%
- contribution liabilities	-27%	-49%	-39%	-72%	9%	-4%		1%	-40%
Change in EAL	-26%	-17%	-12%	-72%	9%	7%		2%	4%
- contribution SCR 99.5%	-6%	0%	0%	-50%	-18%	11%		0%	-17%
Change in surplus	-32%	-16%	-12%	-121%	-9%	18%		2%	-13%
Liabilities (billion EUR)	14	22	116	58	58	785		10	1542

8.68. Set 17 analyses the impact of not including any adjustment in the calculation of the SCR for equity risk. This means that IORPs have to apply a standard shock of 39% for global equities and 49% for other equities.

8.69. The gross SCR increases from 0% for Pensionsfonds in Germany to 6% in the Irish set 17B with benefit reductions, the Netherlands and Sweden. The increase in the net SCR – and hence the decline in the surplus – is mitigated in a number of countries through the loss-absorbing capacity of adjustment and security mechanisms.

8.70. For the Swedish Article 4 insurance company set 16 gives a substantially higher capital requirement compared to the duration-based equity risk model. Set 17 further accentuates the effect. The result is a significantly lower surplus over the SCR compared to the benchmark scenario as well as to the current regime.

**Table 8.22: Set 17 - Change in excess of assets over liabilities and surplus compared to benchmark (% liabilities benchmark)**

	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
Surplus (benchmark)	-12%	0%	-7%	-93%	-52%	2%	-3%	13%	-24%
Change surplus	-3%	0%	0%	-3%	-6%	-2%	-1%	-7%	-1%
- gross SCR	4%	0%	1%	3%	6%	6%	1%	6%	3%
- loss absorbency	-1%	0%	-1%	0%	0%	-5%	0%	1%	-1%
Surplus (set 17)	-15%	0%	-7%	-96%	-58%	1%	-4%	6%	-26%
Liabilities (billion EUR)	17	33	162	100	53	813	13	10	2155

### Outcomes set 17 compared to current regime

8.71. The change in the excess of assets over liabilities in set 17 compared to the current regime is positive in Ireland when ex post reductions are included, the Netherlands, Sweden and the United Kingdom and negative in Belgium, Germany and Ireland when ex post reductions are excluded and Norway (see Table 8.23). In Belgium, Germany, Ireland and the United Kingdom the basic risk-free discount curve results in a strong increase in technical provisions. In the Irish set 17B this strong increase is more than offset by the inclusion of ex post benefit reductions. In the Netherlands significant last resort benefit reductions outweigh the positive effect on technical provisions of the inclusion of mixed benefits and a slightly

lower interest rate curve. The basic risk-free interest rate curve in set 17 is slightly higher than the discount rates currently used in Norway and Sweden. The risk margin increases liabilities in all countries.

- 8.72. The recognition of sponsor support as an asset has a strong positive impact on the excess of assets over liabilities in Germany and the United Kingdom and a small to moderate impact in Belgium, the Netherlands and Sweden. Pensionsfonds in Germany and the United Kingdom have also recognised a small value for the pension protection scheme, relative to aggregate liabilities. In the Netherlands and the United Kingdom the value of security mechanisms exceeds the increase in technical provisions and, hence, the excess of assets over liabilities is higher than under the current regime.

<b>Table 8.23: Set 17- Change in EAL and surplus compared to current regime (% liabilities current regime)</b>									
	BE	DE PF	DE PK	IE A	IE B	NL	NO	SE	UK
- contribution assets	0%	32%	27%	0%	0%	10%	0%	1%	43%
- contribution liabilities	-27%	-49%	-39%	-72%	9%	-4%	-5%	1%	-40%
Change in EAL	-27%	-17%	-12%	-72%	9%	7%	-5%	2%	4%
- contribution SCR 99.5%	-5%	0%	0%	-51%	-20%	11%	-5%	-5%	-17%
Change in surplus	-33%	-16%	-12%	123%	-11%	17%	10%	-2%	-14%
Liabilities (billion EUR)	14	22	116	58	58	785	12	10	1542

- 8.73. The surplus over the SCR increases in set 17 in the Netherlands, as the SCR with a 99.5% confidence level is lower than the current national capital requirement. The reason is that the SCR takes into account the loss-absorbing capacity of adjustment and security mechanisms. The SCR for Pensionsfonds and Pensionskassen is more or less comparable to existing capital requirements.

## 8.11 Exclude inflation module (set 18)

- 8.74. In the benchmark scenario IORPs are provided with the possibility to use the inflation module in the SCR interest rate risk sub-module. The inflation module splits the standard shocks to the risk-free interest rate curve into a real interest rate shock and an inflation shock. This allows IORPs to take into account the effect of inflation shocks on inflation-linked pension obligations and bonds. Set 18 analyses the impact of excluding the inflation module.
- 8.75. In the United Kingdom pension obligations are mostly indexed to prices. The exclusion of the inflation module results in an increase of the gross SCR. The reason is that the inflation module mitigates the negative impact of a downward interest rate shock through the discount rate. Part of the downward interest stress will be caused by lower inflation, which reduces the value of future liability cash flows.

## **9 Analysis of pension protection schemes on HBS**

### **9.1 Background**

- 9.1. According to HBS.6.68 of the technical specifications IORPs should, in principle, include the value of pension protection schemes as an asset on the holistic balance sheet. Financial commitments arising from pension promises can be secured in different ways and member states have chosen different ways and mechanisms to secure those commitments. Pension protection schemes play an important role in some member states, being part of a holistic view of the benefits and security for members and beneficiaries as a whole.
- 9.2. The technical specifications provide some rules and assumptions for the valuation of pension protection schemes as an asset on the holistic balance sheet, in particular regarding the creditworthiness of the pension protection scheme. According to HBS.6.74 of the technical specifications the default risk of pension protection schemes was assumed to be zero. This assumption applies to both options in which pension protection schemes are considered in the holistic balance sheet.
- 9.3. HBS.6.74 also states that any analysis regarding the creditworthiness of pension protection schemes would need to be done by member states or EIOPA and does not require IORPs to carry out any calculations. This chapter contains a first, mainly qualitative analysis of creditworthiness of the pension protection schemes by EIOPA and furthermore intends to provide some additional insight into some aspects of pension protection schemes.
- 9.4. The rationale behind this analysis being performed by EIOPA instead of individual IORPs is that the creditworthiness of a pension protection scheme cannot simply be measured against the value it has in the holistic balance sheet of a single IORP. Instead the creditworthiness of the pension protection scheme must be evaluated in a more comprehensive way, considering possible obligations of the pension protection scheme related to all IORPs with members and beneficiaries protected by the pension protection scheme. In addition, the legal provisions governing any pension protection scheme may be complex and it would be unreasonable to expect individual IORPs to assess their creditworthiness.
- 9.5. As a basis for its analysis EIOPA prepared a questionnaire about the three pension protection schemes in Germany, Sweden and the United Kingdom.

### **9.2 Reasons for setting up a pension protection scheme**

- 9.6. Some arguments for setting up a pension protection scheme are given in the OECD paper on pension protection schemes<sup>45</sup>. In the context of the QIS the most relevant reason is that a pension protection scheme provides additional security for members and beneficiaries by diversifying default risk of the sponsors whose pension promises are protected by the pension protection scheme. In general, this diversification works better the more sponsors are involved and the more independent the default risks of those sponsors are. Pension protection schemes

---

<sup>45</sup> Stewart, F. (2007), „Benefit Security Pension Fund Guarantee Schemes“, OECD Working Papers on Insurance and Private Pensions, No. 5, OECD Publishing. Doi:10.1787/260604113335

are usually set up for protection of defined benefit occupational pension schemes, which is also what the QIS focuses on.

- 9.7. The additional security provided by pension protection schemes can strengthen the trust of employees in the pension promise given by their employer, which can make such promises more attractive as compared to a current increase in income and so improve retirement income. Higher trust in occupational pensions can also lead to a wider take-up of occupational pensions.
- 9.8. Pension protection schemes also reduce the reliance of employees on their respective employers. In case of default of the employer, employees may lose their jobs, but if a pension protection scheme is in place they will keep, at the very least, a proportion of their pensions.

### **9.3 General description of risks connected to pension protection schemes**

- 9.9. A pension protection scheme reduces the risk of members and beneficiaries losing their pensions but, depending on the set up on the pension protection scheme, the pension protection scheme itself could also be exposed to the same kind of risks as IORPs are (e.g. market risk, pension liability risk, etc). From an outside perspective, the crucial question is whether those risks can lead to a default of the pension protection scheme. The likelihood of these risks leading to the default of the pension protection scheme is linked to the creditworthiness and financial strength of different pension protection schemes, which is discussed in detail below.
- 9.10. Additionally, there could be a risk related to the legal set up and/or governance of a pension protection scheme. This would occur if a pension protection scheme was not sufficiently independent in performing its task to safeguard pensions. The rules governing the pension protection scheme may not be adequate to enable it to fulfil its task and the actual decision-making within the scheme may not be completely independent. This could be the case if there was the possibility of a government to influence decisions of the scheme based on parameters which are not (directly) related to the task of the scheme.
- 9.11. The set-up of the pension protection schemes in Germany, Sweden and the United Kingdom seems to prevent such influence to a high degree.
- 9.12. Another legal risk is the possibility that the respective laws are changed so that a pension protection scheme no longer provides protection or weaker protection than before. For example the obligation to pay levies/contributions to the pension protection scheme could be abolished. Any assessment of the financial strength of a pension protection scheme would have to be reviewed in such a case.
- 9.13. Another risk is that a major economic shock hits a national economy as a whole or at least (where this is not equivalent) a large part of sponsors financing the pension protection scheme. In such a case the diversification of default risk of the sponsors might not work perfectly. But there may still be some diversification effect and the situation of IORPs might still be better with than without a pension protection scheme also in case of a major economic shock.
- 9.14. This non-diversifiable risk exists and is hard to deal with, because in the case of a whole economy being hit by a shock, finding any alternative source of financing

for a pension protection scheme would be difficult. The actual effects of a major economic shock depend on the construction of the pension protection scheme and on the financial losses and corresponding amounts to be paid in a crisis situation compared to available means/the contribution basis of the pension protection scheme. A way to assess possible effects of major economic shocks would be to examine how pension protection schemes could cope with crises in the past. Some pension protection schemes may also have smoothing mechanisms in place to mitigate the effects of an economic shock.

- 9.15. Another issue which is already mentioned in HBS.6.73 of the technical specifications is the possibility of the existence of a pension protection scheme leading to moral hazard. If a sponsoring undertaking knows that in the case of insolvency the IORP's liabilities will be taken over by a pension protection scheme it might be tempted to indulge in irresponsible behaviour. This could lead to a higher level of risk to be covered by the pension protection scheme than was originally expected.
- 9.16. It is important for a pension protection scheme to avoid moral hazard as far as possible. The decision to set up, or require, a pension protection scheme, and how, is a political decision which has been taken by the competent government bodies in the three respective member states. The issue of moral hazard should be considered when making this decision.
- 9.17. In the context of the holistic balance sheet the crucial question is whether a pension protection scheme exists and whether it is sufficiently strong. If the conclusion is that a pension protection scheme is sufficiently strong, possibly in spite of the existence of moral hazard, the existence of moral hazard does not make any difference with regard to the protection of members and beneficiaries provided.
- 9.18. It may not be possible to completely rule out moral hazard. But the rules of a pension protection scheme can be designed to avoid or minimise moral hazard as far as possible. The three pension protection schemes have different approaches to reach this aim:
- In the UK, legal decisions on individual cases have clarified the position that trustees should not take the existence of the PPF into account when taking decisions.
  - The UK regulatory regime is also set up to help mitigate the risk of moral hazard. For example, the UK Pensions Regulator has a statutory objective to reduce the risk of claims on the PPF. In particular the Regulator has powers in some circumstances to set the technical provisions or to set them at a prudent level.
  - The Regulator also has powers to intervene and to require further sponsor support to the IORP where a change occurs in the nature of the sponsor which may materially reduce the security of members' benefits without providing suitable mitigation to the IORP.
- 9.19. Additionally, the PPF contains a number of provisions to reduce the risk of moral hazard in relation to the manipulation of benefit entitlements. These include:

- The cap on PPF benefits. Requirements under the UK funding regime mean the majority of schemes should be targeting funding levels above PPF levels of compensation.
  - Because PPF compensation levels are not 100% of full scheme benefits, all members (and especially higher earners who may have some influence within the sponsor) retain an interest to ensure that the IORP is managed effectively in relation to their full benefits (rather than being incentivized to enter the PPF).
  - As ill health benefits are not capped, any such payments awarded just before insolvency may be revised to avoid this potential moral hazard.
- 9.20. The PPF has the power to revise changes to benefits made in the three years before insolvency to avoid benefits being increased where the sponsor suspected they would not have to pay for them.
- 9.21. In Sweden, general terms for PRI credit insurance on pension commitments regulate the obligations of the policyholders and the measures that PRI can apply to prevent and minimize moral hazard. Special insurance conditions may be applied.
- 9.22. The insurance period is limited to three years. Terms and conditions may be revised yearly. Notice of termination can be given by PRI during the term of the contract due to reduced creditworthiness of the policyholder or of the entity (e.g. parent company) that has given a letter of guarantee or other letter of commitment for the insurance. Notice of termination can also be given by PRI in connection with a change of ownership of the policyholder or of the policyholder's parent company.
- 9.23. The policyholder must submit timely financial reports and immediately inform PRI of any significant changes in business operations, personnel or ownership. Upon request the policyholder shall provide other information and references required for evaluation of credit and management of insurance.
- 9.24. Possible consequences of moral hazard are more likely to affect other policy holders (partners in PRI) than members and beneficiaries. In addition to recourse to available capital and possible raised premiums, policyholders' mutual liability protects the entitlements of members and beneficiaries.
- 9.25. In Germany, according to social and labour law, the employer who gave the pension promise remains liable, also in case the promise is made via a Pensionsfonds. The PSVaG steps in only in case of insolvency of the employer. Under German insolvency law, the insolvency of a company results in a complete loss of control of the company owners. These legal provisions largely rule out the risk of moral hazard, because taking up higher risks by the IORP would risk the existence of the employer.
- 9.26. In addition, social and labour law contains a further provision designed to protect the PSVaG and members of the PSVaG required to pay contributions against moral hazard. An employer facing impending insolvency might issue pension assurances or increase existing pension assurances as a last favour to his employees. Such benefits are not protected by PSVaG.



- 9.27. Benefits covered by the PSVaG are capped. However, the benefits carried through by Pensionsfonds should be covered in full by the PSVaG, because they are usually below this cap. Even if there was moral hazard in the PSVaG, this would not affect the protected members and beneficiaries.
- 9.28. The description above shows that all three pension protection schemes operate within a legal and regulatory system which includes rules to prevent or minimize moral hazard. There is no evidence that these rules are not effective.

## 9.4 Description of different pension protection schemes

- 9.29. Before the creditworthiness of pension protection schemes is discussed in more detail, the three pension protection schemes in Germany, Sweden and the UK will be described in more detail.
- 9.30. The following table shows some of the key features of pension protection schemes in those member states:

	DE	SE	UK
Name of the respective PPS	Pensions-Sicherungs-Verein Versicherungsverein auf Gegenseitigkeit (PSVaG)	PRI Pensionsgaranti (PRI)	Pension Protection Fund (PPF)
Legal form and legal basis of the PPS	The PSVaG is a mutual insurance company, entrusted by federal law.	PRI is a mutual credit insurance company.	The PPF is a statutory fund incorporated under the Pensions act 2004.
Are the activities of the PPS restricted to the task of safeguarding pensions?	Yes.	Yes.	Yes.
Is the PPS subject to supervision by a government authority?	Yes. The PSVaG is supervised by BaFin.	Yes. PRI is supervised by Finansinspektionen.	Yes. The PPF is a public body sponsored by the Department for Work and Pensions (DWP), a ministry of the UK Government. It is overseen by an independent board and works closely with the DWP.
When did the PPS start?	1974	1961	2005
Assets in the PPS at end 2011 (UK: 31 March 2012, end of financial year of the PPF)	3.6 billion Euros	18.6 billion SEK (consolidated capital)	17 Billion GBP

	DE	SE	UK
Is there a legal obligation of sponsors or IORPs to pay levies/contributions to the PPS?	Yes.	Yes. The legal obligation is to have a credit insurance, bank guarantee or similar arrangement for book reserves or if a pension foundation does not cover all obligations when reserving for pension liabilities for tax purposes. Additionally, it is an obligation by a collective agreement.	Yes.
Which benefits are protected by the PPS?	Occupational pension benefits provided using book reserve schemes and Pensionsfonds (not Pensionskassen).	Occupational pension benefits provided using book reserve schemes and for some pension foundations (pensionsstiftelser).	Occupational pension benefits provided using defined benefit or hybrid pension funds.
To which extent are benefits protected by the PPS?	They are protected 100%. There is a cap, which is so high that a vast majority of members would not be affected by it. Benefits provided by Pensionsfonds should be covered in full.	They are protected 100%.	They are protected 100% for members already over the normal pension age of the scheme up to 90% for other members. There is a cap on the maximum amount of compensation available, which is so high that a vast majority of members would not be affected by it. Members may also not receive some or all of the indexation provided by the rules of their scheme.
Is there a cap to the levies/contributions to the PPS?	No.	No.	Yes, but the law provides for the PPF to apply to government to raise the cap if considered necessary.
How are the levies/contributions determined?	Contributions are set by the PSVaG as a percentage of the capital value of all pension entitlements covered by insolvency protection. They are set yearly so that all claims incurred can be covered by the PSVaG.	Contributions are set by PRI as a percentage of pension liabilities. The level of contributions/premiums depends on PRI's credit losses and return on own funds and are set yearly.	Levies are set by PPF within the legal framework. The risk based levy is based partly on the amount of the liability and partly on the level of underfunding and the investment and insolvency risk.
Are the levies/contributions risk based?	To a certain extent (see below).	Only in exceptional cases, when other risk mitigation measures are not available.	Yes.

	DE	SE	UK
Are there provisions in place to prevent or minimise moral hazard?	Yes.	Yes.	Yes.

9.31. The table above shows that there are similarities, but also differences between the three pension protection schemes. Some issues will be described here in more detail.

### **Creditworthiness**

9.32. As a basis for the assessment of creditworthiness, it is of high importance to understand the way a pension protection scheme works, how it is financed, whether there is the possibility to adjust levies/contributions, which risks it is exposed to and how these risks are mitigated or transferred. This is described in the following sections.

9.33. All three pension protection schemes are financed by mandatory contributions/levies of the employers or IORPs whose pension promises they protect. All three pension protection schemes were able to cope with the latest financial crisis without any material difficulties. Data are available over a longer period for the PSVaG and PRI, because they were established long before the PPF, which suggest they also coped well with earlier crises and have never faced any problems in fulfilling their task to protect pensions.

### **Calculation of levies/contributions**

9.34. In the UK, the levy is linked to the size of the pension scheme and the level of risk in the pension scheme (based on the level of underfunding, the strength of the scheme sponsor, and asset allocation).

9.35. The PPF aims to be self-sufficient by 2030 (i.e. fully funded, with zero exposure to market, inflation, and interest-rate risk, and some protection against future claims and longevity risk) with a funding target of 110% of liabilities on a swaps/gilt related basis. The PPF's funding strategy and total levy on IORPs is reviewed annually to check whether its funding objectives remain appropriate and achievable.

9.36. The current PPF levy is set to achieve this funding target with a high confidence level, allowing for stochastically modelled future claims and the progress of the PPF fund towards reaching its funding target.

9.37. In Sweden, policyholder companies pay yearly credit insurance premiums, set for one year at a time. Premiums are basically the same for all policyholders. Exemptions may occur, but the preferred solution is to reduce credit risk by other measures. Premiums for 2012 are 0.3% of pension obligations, or 0.1% if funded by a foundation (unchanged since 2003).

9.38. Policyholders as partners in PRI are liable up to an amount of 2% of their pension liability if all PRI assets have been consumed.

9.39. In Germany, the PSVaG is financed by all employers who have selected certain types of occupational pension schemes. Currently there are approximately 93,000

employers, including nearly all major corporate enterprises, among them the companies listed on the DAX.

- 9.40. These employers are required by federal law to pay contributions. There is no cap to the contributions which are adjusted in accordance with the claims incurred to be covered by the PSVaG. Contribution rates are determined at the end of each calendar year on the basis of claims resulting from employer insolvencies during the year.
- 9.41. "Claims" here means the full value of benefits in payment as well as of the entitlements of members which have not yet retired when their employer goes insolvent and the pension obligations are taken over by the PSVaG.
- 9.42. Sponsors of Pensionsfonds pay only 20% of the levies which sponsors are charged using book reserve schemes. This reflects that Pensionsfonds provide separated external funding which reduces the exposure of the PSVaG in case of insolvency of the sponsor.

#### **Procedure in case of insolvency of a sponsor/payment of benefits**

- 9.43. In the UK, before a pension scheme transfers into the PPF, it must undergo an assessment to determine its ability to pay PPF levels of compensation. When a scheme successfully transfers into the PPF, its assets are transferred to the PPF which takes over the investments and payments to pensioner members and beneficiaries, and, in the future, to members not yet retired. The pension scheme then ceases to exist.
- 9.44. In Sweden, in the case of employer insolvency, PRI buys out benefits meeting the full cost/shortfall for securing the benefits. The obligations of the employer are transferred to an insurance company that pays the pensions. PRI has no pension obligations (except for PRI employees) on its on balance sheet.
- 9.45. In Germany, if a sponsor becomes insolvent, the PSVaG takes over the protected pension obligations. Payments to beneficiaries are not normally made by the PSVaG itself. Instead the pension obligations are transferred to a consortium of (currently) 51 life insurance companies. This consortium then bears the risks. The obligations and assets for obligations transferred to the consortium are not on the balance sheet of the PSVaG.
- 9.46. The transfer to the consortium takes place immediately after the obligation has been taken over by the PSVaG, as far as pensions are already in payment at this point in time. Pension entitlements, where payments have not started, yet, stay on the balance sheet of the PSVaG until the payment starts and are then transferred to the consortium.
- 9.47. If a sponsor of a Pensionsfonds becomes insolvent the respective assets of the Pensionsfonds are transferred to the PSVaG, as well as the obligation to pay the benefits. This is similar to the procedure in the UK.

#### **Specific risks pension protection schemes are exposed to**

- 9.48. In the UK, the PPF is exposed to a number of market risks including sponsor insolvency risk and funding risk in respect to future claims and liabilities already on the balance sheet of the PPF. As the PPF does not provide compensation for the full benefits of members, and expects funding levels to improve in the future as sponsors pay contributions in line with their recovery plans, it is expected that

the amount of claims on the PPF will fall over time, although there is some uncertainty around future levels of insolvency, funding, and volatility in results from year to year.

- 9.49. The PPF does not have a statutory responsibility to reduce these risks, but does work closely with the UK Pensions Regulator which has a statutory objective to reduce the risk of situations leading to claims on the PPF.
- 9.50. In Sweden, the main risks PRI is exposed to are the probability of default and loss given default of the policyholders. The main measures for risk reduction are evaluation of credit risk of the policyholders, based on in house credit rating, including the assessment of financial capacity, ownership and status of the company, and consequent requirements on the firms applying for coverage as conditions for entering into a contract. These requirements include a guarantee from the parent company if the applying company is part of a group, funding of part of the pension promise in a foundation or collateral to reduce the credit risk or to compensate for a very large exposure regardless of the credit risk. These risk reducing measures on application are followed by on-going credit assessments as well as possible actions during the contract period.
- 9.51. In Germany, under the provisions of the PSVaG financing procedure, all member companies bear the pension risk of insolvency of individual member companies collectively. That means that eventually it is not the PSVaG that bears the possible risks, but the employers which are members of the PSVaG.

## 9.5 Conclusion

- 9.52. The three pension protection schemes are financed in different ways. One significant common feature is that their strength is based on the collective strength of their members (sponsoring undertakings) and that levies/contributions can be adjusted to different extents, if necessary, to make use of this collective strength. There is a legal obligation on the sponsoring undertakings or IORPs to pay levies to “their” pension protection scheme. Since the members of the pension protection schemes represent large parts of the respective national economies, their financial strength can be considered very high.
- 9.53. This means that the assumption in the technical specifications that the default risk of pension protection schemes is zero is acceptable for the purpose of this QIS.
- 9.54. The actual default risk of a pension protection scheme is not zero, because theoretically it could default, if members were not able to pay contributions any more or if other risks which could not be mitigated by additional contributions (if such risks exist) would crystallize.
- 9.55. It is difficult to quantify the risk of default of a pension protection scheme because the historical data show no default(s) of pension protection schemes. However, given the fact that the existing pension protection schemes in some member states have proven to be an effective means to securing the promised benefits for decades, this data could be seen as an indication for probability of default being at least close to zero.
- 9.56. As far as the membership of a pension protection scheme does reflect such a large part of a national economy that it can be assumed that default of the pension protection scheme would mean the “default” of a national economy, it can

be assumed that the probability of default of a pension protection scheme is very close to the probability of default of the considered national economy.

- 9.57. In the context of the holistic balance sheet, if and when the pension protection scheme is recognized there as an asset, it might be appropriate also for further QIS work to assume that the level of security provided by a pension protection scheme gives a good reason for the assumption that pension protection schemes can balance the holistic balance sheet and have a corresponding loss absorbing capacity in the calculation of the SCR.
- 9.58. However, considering the potentially huge impact such an assumption has on the solvency position of IORPs (all IORPs protected by a strong pension protection scheme would appear as solvent irrespective of their degree of being funded with financial assets, which could be a reason for introducing a minimum funding requirement even in cases where an IORP is protected by a pension protection scheme), it should be carefully monitored, and could eventually be amended depending on the outcome of a more thorough quantitative assessment of the financial strength of pension protection schemes, or if the rules governing a pension protection scheme or other circumstances changed, impacting on the creditworthiness of the pension protection scheme.

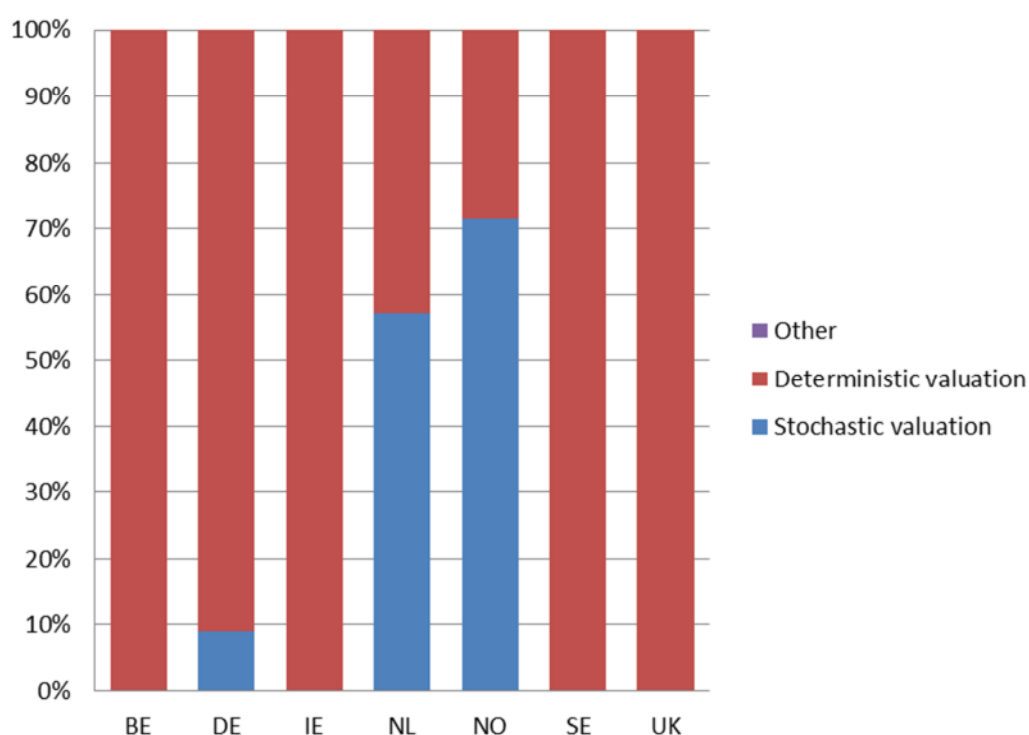
## **10 Methods and participants' assessments**

- 10.1. The QIS package contained a qualitative questionnaire with detailed questions on approaches taken and the participant's assessment of the reliability of methods, input data and results. This section summarises the responses with regard to the calculations for the best estimate, sponsor support and pension protection schemes, (re-)insurance recoverables, solvency capital requirement and the holistic balance sheet as a whole.

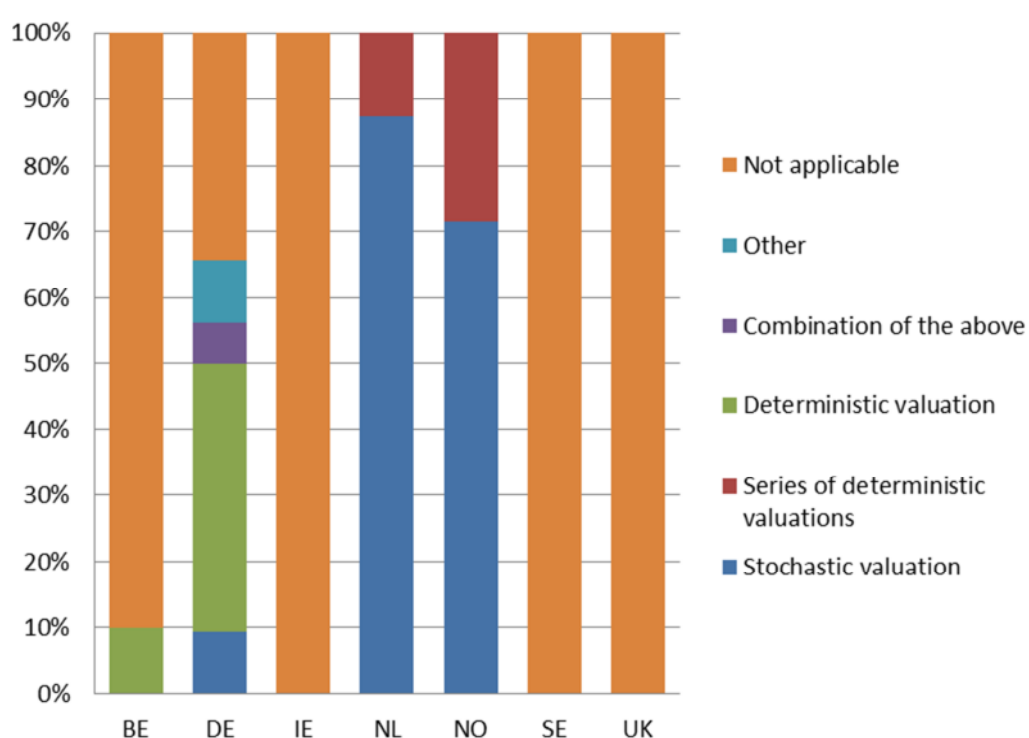
### **10.1 Best estimate of technical provisions**

- 10.2. The QIS technical specifications prescribe that the best estimate of technical provisions should correspond to the probability weighted average of the discounted value of future cash in- and outflows. This general stochastic approach is probably most appropriate where pension benefits contain embedded options, like caps and floors, which will most likely be the case with non-unconditional benefits. However, IORPs were also allowed to use simplified valuation methods, such as a deterministic valuation or a series of deterministic valuations.
- 10.3. Participants in most countries used a deterministic approach to establish the best estimate of technical provisions (see Figure 10.4 and 10.5). The Irish and UK supervisors did not use a cash-flow approach, but instead used a simplification where the best estimate is determined using a single equivalent discount rate based on the duration of the pension obligations. Stochastic approaches were commonly used in the Netherlands and Norway where all participating IORPs provide respectively mixed benefits and pure conditional benefits. In Norway more than 70% of IORPs applied a stochastic approach. In the Netherlands 57% of IORPs used a stochastic method to value unconditional benefits and 88% to value non-unconditional benefits.

#### 10.4. Valuation methods for best estimate of unconditional benefits



#### 10.5. Valuation methods for best estimate of non-unconditional benefits



10.6. Ireland and the Netherlands were the only countries where ex post benefit reductions were taken into account. One quarter of Dutch IORPs indicated that ex post benefit reductions are not applicable. One IORP indicated that accrued benefits were protected by unlimited sponsor support and that it had therefore not included the last resort mechanism of ex post benefit reductions. Another IORP

did not take ex post benefit reductions into account because it considered this mechanism an emergency exit for which no defined policy was in place.

- 10.7. The Irish supervisor used a deterministic approach to value the ex post benefit reductions with reference to the existing funding rules. Half of the Dutch IORPs used a stochastic method to value the ex post benefit reductions, 13% a series of deterministic valuations and 13% a combination of both.
- 10.8. Both the supervisor in Ireland and United Kingdom did not take into account pure conditional, pure discretionary and mixed benefits in their calculations. In Ireland a few IORPs may still provide discretionary/conditional pension increases. The survey sent by the UK supervisor to the hundred largest pension schemes in the United Kingdom showed that only a very limited number of large IORPs make allowance for discretionary benefits. Therefore, TPR did not attempt to quantify the amount of technical provisions for discretionary benefits, and assumed that IORPs would continue to hold the same allowance (if any) that they currently do under UK funding. In the United Kingdom it is unusual to see conditional or mixed benefits and TPR therefore ignored these types of benefits.

### **Assessment of outcomes and inputs**

- 10.9. Participating IORPs were asked to assess the quality of the results for the different elements of the best estimate of technical provisions on a scale from one to four (1-poor, 2-fair, 3-good, 4-excellent).
- Belgian IORPs assessed the outcomes for the unconditional benefits as fair (average rating of 2.1). The estimate for pure conditional benefits was considered to be good, but conditional benefits were included by only one IORP.
  - German IORPs had the most confidence in the valuation of unconditional benefits with an average rating of 2.8. The estimates for pure conditional benefits (i.e. the ex-ante reduction mechanism) and mixed benefits were assessed with a rating of 2.5 and 2.3 respectively.
  - IORPs in the Netherlands also assessed the outcomes for unconditional benefits as relatively good with an average rating of 2.6. The results for mixed benefits, ex post benefit reductions and pure discretionary benefits were assessed with a rating of 1.9, 1.9 and 1.3 respectively.
  - Norwegian IORPs assessed the results for unconditional benefits as close to excellent (average rating of 3.7) and for pure conditional benefits as good.
- 10.10. The conclusions regarding the reliability of outcomes were generally in line with the IORPs' assessment of the quality of input data and methods (1-poor, 2-fair, 3-good, 4-excellent) and the level of expert judgement needed in the valuation (0-ignored, 1- low, 2-medium, 3-high). IORPs had in general slightly more confidence in the input data than in the valuation methods. In addition, more expert judgment was needed in the valuation of non-unconditional benefits as compared to unconditional benefits. However, the differences were small in Belgium, Germany and Norway with the use of expert judgment fluctuating around the medium level for both types of benefits. Only Dutch IORPs indicated that medium to high expert judgment was needed in assessing pure discretionary benefits, mixed benefits and ex post benefit reductions.



- IORPs in Belgium rated both the quality of input methods and the quality of input data as fair. Input data as well as input methods for valuing pure conditional benefits were judged to be good. The valuation of conditional benefits required a medium level of expert judgment and the valuation of unconditional benefits a level of expert judgment a little below medium (average level of 1.7).
- German IORPs gave the quality of input data an assessment of 3.0, 2.7 and 2.5 for unconditional, pure conditional and mixed benefits. The corresponding assessment for the quality of the valuation methods amounted to 2.7, 2.4 and 2.3. The significance of expert judgment ranged from a little below medium for unconditional benefits (average level of 1.9) to a little over medium for conditional and mixed benefits (2.2 for conditional and 2.1 for mixed benefits).
- IORPs in the Netherlands judged the input data between fair and good with the average assessment ranging from 2.0 for discretionary benefits to 2.6 for unconditional benefits. The quality of methods used for valuing unconditional benefits was with an average of 2.4 also assessed between fair and good. The assessment of the methodology to establish the value of non-unconditional benefits ranged from poor to fair with an average rating of 1.3 for pure discretionary benefits and 1.9 for mixed benefits and ex post benefit reductions.

Dutch IORPs indicated that a below medium level of judgment was needed to establish the best estimate of unconditional benefits (average equals 1.6). The valuation of non-unconditional benefits required high expert judgment with an average level of 2.7 for discretionary benefits, 2.6 for mixed benefits and 2.5 for ex post benefit reductions. IORPs in Netherlands clarified that the stochastic valuation methods to establish non-unconditional benefits rely heavily on expert judgement. Firstly, assumptions are needed to determine the future provision of mixed benefits and the application of ex post benefit reductions (see 10.11). Secondly, assumptions have to be made for producing economic scenario sets. Sometimes no market information is available for calibrating the economic scenario generator, such as market data on long-term volatilities and wage growth. In addition, many IORPs had difficulties with incorporating the UFR-based basic risk-free interest rate curves in their market-based models. One IORP mentioned that default probabilities of the reinsurer/sponsor were assumed to be independent of developments in the economic scenarios.

- In Norway the quality of input data was given a rating for unconditional and pure conditional benefits of 4.0 and 3.2 respectively. The quality of the valuation method was assessed with ratings of 3.7 and 3.0 respectively. The level of expert judgement was rated a little below medium for both types of benefits (average of 1.7).

### **IORP management actions**

10.11. QIS participants were asked what IORP management actions were assumed in calculating the best estimate of technical provisions.

- All Belgian IORPs and the Irish supervisor responded that no management actions were taken into account although they may have had some material impact.

- Almost three quarters of German IORPs responded that no management actions had been assumed (41%) or that management actions have no material impact (31%). In Germany 44% of IORPs included management actions with regard to mixed benefits, 12% with regard to changing the future asset allocation or other areas. There is considerable overlap between the different categories as the sum of responses exceeds 100%.
- In the Netherlands two thirds of participating IORPs answered that management actions with some material impact have not been included. Only one IORP indicated that future management actions are not material. Future board decisions concerning pure discretionary and mixed benefits have been taken into account by two IORP, concerning ex post benefit reductions by 44% of IORPs.

In the Netherlands most IORPs provide guidance with regard to pension increases using so-called policy ladders that link future indexation to the IORP's financial position. However, the board of the IORP has the discretionary power to deviate from this policy guidance, which means that for this QIS these increases classify as 'mixed benefits'. Many IORPs in the Netherlands have based the valuation of mixed benefits on the guidance included in the policy ladder, while ignoring the impact of discretionary board decisions.

IORPs in the Netherlands are legally allowed to reduce accrued benefits as a measure of the last resort. However, this reduction mechanism may only be used when all other security mechanisms have been fully exhausted to restore funding shortfalls within the required recovery period. IORPs have valued ex post benefit reductions by assuming mechanical rules where pensions are cut when the funding ratio falls below some lower boundary and/or when regular security mechanisms are insufficient to attain the minimum funding requirement within the legal short term recovery period of three years. IORPs have thus ignored alternative sources of funding or possible regulatory/supervisory responses to award waiting periods or to extend recovery periods.

- In Norway 40% of IORPs indicated that future management actions have not been taken into account although they may have had a material impact. The remaining 60% responded that they have included management actions with regard to changing the asset allocation as well as management actions in other areas.

### **Options and guarantees embedded in pension contracts**

10.12. The technical specifications prescribed that IORPs had to identify all material contractual options and financial guarantees embedded in their schemes and pension rules. The value of contractual options and financial guarantees had to be taken into account in the valuation of the best estimate of technical provisions.

- A contractual option was defined as a right to change the benefits to be taken at the choice of its holder on terms that are established in advance. This implies that a deliberate decision of its holder is necessary in order to trigger an option.
- A financial guarantee is present when there is the possibility to pass losses to the IORP or to receive additional benefits as a result of the evolution of

financial variables. This means that the option is triggered automatically and not dependent on a deliberate decision of the holder.

10.13. Participants in the QIS identified the following contractual options in their pension schemes and pension rules:

- In Germany the right of the member to choose a lump sum instead of a lifetime pension and the right of the member to pay variable contributions linked to a corresponding variable accrual of benefits.
- In Ireland the right of the member to retire early without any actuarial reduction in benefits.
- In the Netherlands the right of the member to exchange survivor pensions for higher pension benefits without discriminating on the basis of gender, the right of the member to retire earlier or later than the standard pension age with an actuarial recalculation of benefits and the right of the member to choose higher pension benefits at the start of retirement followed by lower benefits at a later stage.
- In the United Kingdom the right of the member to convert part of the pension to a cash lump sum at retirement.

QIS participants did not explicitly value these contractual options. In Ireland these options are included in the technical provisions assuming that members maximise the value of their benefits. A Dutch IORP included the option of exchanging survivor benefits in a prudent manner by assuming that all men exchange survivor benefits and women do not. To the extent that the conversion of pensions is currently allowed for in UK scheme valuations, TPR implicitly retained the same allowance in its calculations.

10.14. Participants in the QIS identified the following financial guarantees in their pension schemes and pension rules:

- In Germany the (implicit) guarantee of a minimum investment return within a lifetime pension.
- In the Netherlands the implicit guarantee that partial indexation is given between some lower and upper bound for the funding ratio and that full indexation is provided above the upper bound as well as the implicit "guarantee" that accrued benefits may be reduced as a measure of the last resort.
- In Norway all pension obligations are subject to an annual guaranteed return varying between 2.5% and 3.7% for the participating IORPs.
- In Sweden a minimum investment return guarantee applies for hybrid DC pensions.

In Germany only very few IORPs included an option value for guarantees because of the complexity of applying a stochastic approach. In Sweden only deterministic modelling is used. Valuation of options and guarantees would require stochastic modelling, which is currently considered to be too complex. IORPs in the Netherlands and Norway often valued financial guarantees embedded in pension contracts using a stochastic valuation (see 10.3).

## **Benefits and contributions to be included and inflation**

10.15. The QIS technical specifications prescribed that IORPs did not have to take into account future accruals and contributions when the IORP has the possibility to terminate these new accruals. QIS participants were required to include the unconditional, pure conditional and – depending on the scenario – mixed and pure discretionary benefits relating to these accrued benefits. The national supervisory authorities would clarify whether this was also allowed when the sponsor or social partners are able to end the pension scheme instead of the IORP. IORPs were required to include future accruals and contributions in cash flows if it is not possible to end the scheme.

- In Belgium IORPs have not included future accruals and future salary increases. Pensions are generally not linked to inflation as most members choose for a lump sum payment at retirement.
- German IORPs have generally applied the technical specifications, which is similar to the concept under the current national regime. This can lead to different outcomes with respect to the recognition of future accruals and contributions and future salary growth, depending on the contract. Inflation linked benefits are not material for participating IORPs.
- In Ireland future accrual and future salary growth have both been excluded, because they can be suspended. This is identical to their treatment under the current funding standard, which is a wind-up standard. Statutory revaluation of pre-retirement benefits – which equals the minimum of 4% and inflation – has been included, where under the current wind-up standard such revaluation is excluded.
- In the Netherlands IORPs only took into account accrued pension rights in the valuation of technical provisions, as IORPs have the possibility to end the pension scheme. Indexation of accrued benefits to prices or wages – classified as mixed benefits for this QIS – has been included by most IORPs. One IORP mentioned that future salary growth in a final pay plan had not been included, since these new accruals are financed through regular (future) contributions.
- The technical provisions in Norway are based on paid in premiums for accrued benefits. No future premiums for new accruals or future salary increases are included, as under the current regime. In the private sector, the pension plan sponsor can convert a DB plan into a DC plan anytime it wishes. Pension funds in Norway do not link current benefits to future inflation or wage growth.
- In Sweden future contributions are generally included in technical provisions for DB pensions but not for DC pensions, as is the case under the existing national regime. IORPs do not adjust benefits in line with inflation, according to their regular reporting.
- In the United Kingdom future accrual of benefits is not included in the best estimate of technical provisions, in line with the present national approach. The best estimate does contain allowance for inflation and wage growth, as currently allowed for under the UK scheme valuations. Liabilities with respect to active members include projected wage increases to retirement and inflation related pension increases in retirement. Obligations with respect to deferred

members include inflation related increases to retirement and after retirement. Liabilities with respect to pensioners include future related pension increases.

TPR allowed for the differences in inflation between the effective date of these valuations and the market-implied inflation as at 31 December 2011. The supervisor assumed that market-implied inflation is in line with current assumptions that would be adopted by UK schemes as at 31 December 2011. This is slightly higher (by around 20bp) than market-implied using the UK inflation curve provided in the QIS. TPR considers this difference acceptable, especially when considering the floor on UK pension increases and that some UK schemes may not currently be making allowance for pension scheme expenses when calculating technical provisions. Without the credit risk adjustment of 35 bps the inflation curve provided in the QIS would not have been lower than current measures of market-implied price inflation.

## **Simplifications**

10.16. QIS participants were asked to specify the most relevant simplifications used in the valuation of the best estimate of technical provisions.

- Many German IORPs mentioned that deterministic cash flows are used for the calculation of the best estimate. Other relevant simplifications are the valuation of longevity trends and options and guarantees by adding a fixed percentage to the best estimate of technical provisions.
- In the Netherlands many IORPs valued mixed benefits and ex post benefit reductions as pure conditional benefits, i.e. by ignoring the discretionary decision-making process. Stochastic valuations of non-unconditional benefits were often not performed over the full lifetime of the pension obligations, as prescribed by the technical specifications. IORPs limited the valuation horizon to 20 or 35 years due to model restrictions. IORPs also used simplified formulas to determine the proportion of mixed benefits that are attributable to accrued benefits. Such simplifications were needed as valuations were conducted based on a going-concern assumption, whereas the best estimate on the holistic balance sheet only had to include accrued benefits.
- In Sweden only a deterministic valuation approach was applied and no value for options and guarantees was taken into account. Health benefit obligations are small and have been assumed to be constant in all scenarios.

IORPs in Germany, the Netherlands and Norway all suggested that simplifications for a stochastic valuation of contractual options and guarantees embedded in pension schemes should be provided for in the future. One IORP in the Netherlands suggested that EIOPA should provide for the economic scenario sets.

## **Level B best estimate of technical provisions**

10.17. The level B expected return had to be calculated using a simplified strategic asset mix. The fixed income portfolio consisted of five buckets (AAA government bonds, AA or lower government bonds, corporate bonds, bank bond) with an expected return linked to market yields on 30 December 2011. The remaining part of the fixed income portfolio was assumed to have the same average yield as the fixed income assets mentioned above. All other assets were classified as non-fixed

income with an expected return equal to the yield on AAA government bonds and a risk premium of three percent.

- 10.18. The qualitative questionnaire asked IORPs to indicate whether this calculation of the level B discount rate yields an appropriate estimate for the expected return on assets. Only a minority of participating IORPs in Belgium (46%), Germany (35%) and the Netherlands (22%) thought the method was appropriate. In Norway 57% of the participating IORPs thought the method was appropriate.
- 10.19. Many IORPs recommended using a more detailed asset breakdown. The current crude method could overestimate or underestimate the expected return on assets depending on the actual asset allocation. IORPs suggested that the corporate bond bucket should distinguish between investment grade and high yield bonds. The non-fixed income category should distinguish between asset classes like commodities, hedge funds, private equity and real estate. It was remarked that global equities were considered to be less risky than other equities in the SCR equity sub-module, but that the expected return on both equity categories was assumed to be the same. One IORP also commented that the calculation method did not take into account the slight leverage in asset portfolios due to liability hedges using interest rate swaps. In addition, diversification effects between asset classes are not included, impacting on volatility and hence geometric and arithmetic returns.
- 10.20. Despite some criticism in detail, German IORPs appreciated the concept of the Level B discount rate. It is considered more appropriate than using the risk-free interest rate, in particular for Pensionsfonds, which already use a similar approach under the current regime.
- 10.21. The Irish supervisor did not have particular difficulties with the approach. The approach of the Swedish Article 4 insurance company to establish the expected return on risky assets – that takes into account the current valuation of assets and real estate – results in higher expected returns for non-fixed income assets. The UK supervisor considered that if Level B is to be used then more work needs to be carried out on the actual derivation of the equity risk premium and the lack of allowance for future changes in the asset allocation.

## **10.2 Sponsor support and pension protection schemes**

- 10.22. For the QIS, IORPs were asked to include the value of sponsor support as an asset on the holistic balance sheet. There are four forms of sponsor support which were set out in the technical specifications:

- 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.

The methodology for valuing forms A, B and D is based on the estimated future cash flows of the sponsor that could be made available to the IORP (Form A), or to pay benefits directly to members or beneficiaries (Form B). Contingent assets (Form C) are recognised separately on the holistic balance sheet and valued in accordance with the principles applying to the valuation of financial assets of the

IORPs. Type D is in essence what would be made available in the event that the link between the sponsor and the IORP is broken.

10.23. In principle the QIS specifications required IORPs to value sponsor support on a market consistent basis with reference to the probability weighted average of the discounted value of future cash flows.

10.24. The technical specifications also provided two simplifications for valuing sponsor support in recognition of the complexity of the theoretically appropriate methodology and that it may be proportionate for many IORPs to use such a process, and also to standardise the methodology used by IORPs for the purpose of the QIS. Both simplifications were targeted at IORPs disposing of unlimited sponsor support. The value of sponsor is in both simplifications dependent on the shortfall between technical provisions and financial assets.

1. Simplification 1 involved inputting data to a spreadsheet which carried out a simple calculation broadly replicating what stochastic modelling to value sponsor support might be expected to produce. Due to its stochastic nature this simplification also allowed for the asymmetric cash flow pattern where the sponsor is required to recover shortfalls, but is not entitled to any future surpluses.

2. Simplification 2 also involved inputting data to a spreadsheet which calculated 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. The time in which the sponsor must pay the IORP the full amount of required support was – like in simplification 1 – for the purpose of this calculation set equal to the duration of the expected outgoing cash flows of the IORP relating to the pension obligations.

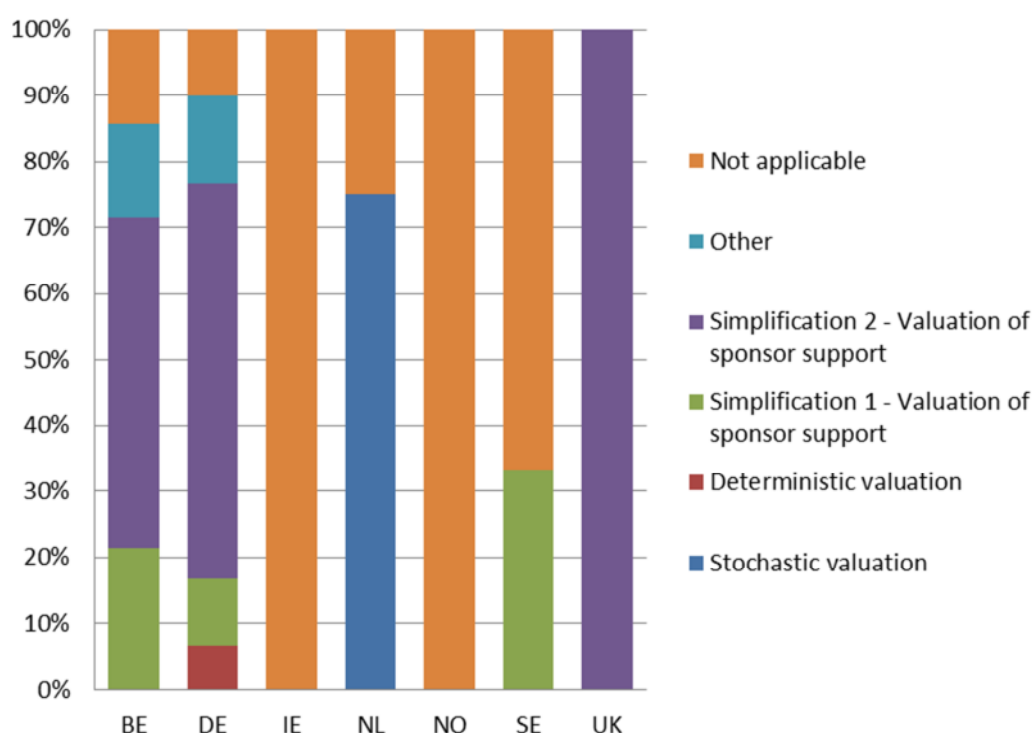
10.25. QIS participants had to take into account the maximum support the sponsor is capable of providing. The technical specifications contained a standard method that established the maximum using financial reporting data – like shareholders' funds and cash flows – as inputs. IORPs were also allowed to use their own method when the standard method was deemed unsuitable due to the nature of the sponsor or sponsors. IORPs that were unable to provide an estimate could set the maximum sponsor support equal to the (non-binding) level of technical provisions.

10.26. QIS participants also had to include the default risk of the sponsor and amounts recoverable from the sponsor in case of default. The probability of default had to be established by means of the sponsor's credit rating. The annual default probability was set to 4.175% for unrated sponsors, but IORPs could deviate from this percentage if it was considered inappropriate for their circumstances. The recovery rate in the event of default was not to exceed fifty percent of claims on the sponsor.

10.27. Most participants in the QIS used one of the two simplifications to value sponsor support on the holistic balance sheet (see Figure 10.28). The notable exception is the Netherlands where IORPs used a stochastic valuation method. In Ireland and Norway sponsor support was considered to be limited conditional. The technical specifications prescribed that the value of limited conditional sponsor support should be set to zero.

- In Belgium 21% of IORPs conducted the sponsor support valuation with simplification 1, 50% of IORPs with simplification 2 and 14% of IORPs used another approach. The simplifications were relevant for most IORPs as over 85% of them are backed up by unlimited sponsor support.
- In Germany 10% of IORPs used simplification 1 and 60% of IORPs used simplification 2. About three quarters of German IORPs indicated to dispose of unlimited sponsor support. Another 20% of IORPs made use of their own deterministic method or other approach.
- In the Netherlands all IORPs for which the valuation of sponsor support was applicable relied on stochastic valuation approaches. IORPs usually dispose of limited (conditional) sponsor support through increases in contributions. A stochastic approach is likely to be appropriate for such capped payment schedules.
- In Sweden the valuation of sponsor support was not applicable for most of participating IORPs. Only defined benefit sections of pension funds are backed by sponsor support. In some cases Finansinspektionen has made the tentative conclusion that sponsor support may not be legally enforceable and has not included a value for the purpose of the QIS. The Swedish supervisor used the first simplification to value sponsor support for the remaining IORPs. The stochastic nature of this simplification explains why Sweden reports positive sponsor support, while there is no shortfall under the holistic balance sheet.
- In the United Kingdom the Pensions Regulator used the second simplification to value sponsor support, which is unlimited in nature for all IORPs. It should be noted, however, that the calculations for sponsor support in the UK derived from the use of this simplification are subject to considerable uncertainty.

#### 10.28. Valuation method for sponsor support





## **Assessment of outcomes and inputs**

10.29. Participants assessed the reliability of outcomes for sponsor support from poor to fair. On a scale from 1 to 4 (1-poor, 2-fair, 3-good, 4-excellent), IORPs in Belgium provided an average rating for the outcomes of 1.5, IORPs in Germany a rating of 1.7 and IORPs in the Netherlands a rating of 1.9. The UK supervisor had with a rating of 1 the least confidence in the outcomes.

10.30. The ratings for sponsor support outcomes broadly mirrored the assessment of the reliability of inputs:

- In Belgium the average rating of inputs was 1.7 on a scale from one to four. Belgian IORPs found the estimates for the recovery rate of claims on the sponsor (1.2) and the maximum sponsor support (1.5) the least reliable. The estimate of sponsor cash flows (2.3) was considered the most reliable input parameter.
- IORPs in Germany regarded the reliability of the input parameters on average as fair. IORPs had most confidence in the estimate of payments made by the sponsor (2.7) and least confidence in indexation assumptions (1.5). Both simplifications did not explicitly take into account increases in sponsor payments due to price or wage inflation.

German IORPs commented that the valuation of sponsor support was very difficult or even practically impossible in case of a large number of sponsors (in several cases more than a thousand), many of which without ratings or any disclosure of financial information.

- The reliability of inputs for the stochastic valuation of sponsor support was regarded as fair in the Netherlands as well. Dutch IORPs were most negative about the maximum value of sponsor support (1.3) and most positive about indexation assumptions (2.4).

Also in the Netherlands many IORPs mentioned that it is difficult or impossible to determine maximum sponsor support and default probabilities for IORPs with many sponsors. One IORP commented that assumptions on sponsor behaviour were based on existing agreements and contracts and that potential changes in the coming decades cannot be predicted.

- The Swedish supervisor considered the reliability of inputs to be high. The few participating IORPs, for which sponsor support was considered legally enforceable and was therefore included in the QIS, all have very large sponsors. Public financial information as well as ratings were available for these sponsors.
- The UK supervisor rated the quality of input parameters in general as poor. The method to value sponsor support is highly dependent on the precise assumptions used in the QIS. Therefore the outcomes may materially misstate the value of sponsor support in practice in the UK. TPR considered it possible that the figures could change by 250 billion euro if key assumptions were changed in the calculation of sponsor support.

10.31. Participants were also requested to report the level of expert judgment needed to establish the value of input variables:

- In Belgium IORPs reported that an average level of expert judgment of 2.2 was needed on a scale from 0 to 4 (0-ignored, 1-low, 2-medium, 3-high). Assumptions on sponsor behaviour required the lowest expert judgment (1.7), the determination of the recovery rate in the event of sponsor default required the highest judgment (3.0).
- German IORPs also indicated that on average a medium level of expert judgment was required. There was little variation between the different input variables. The level of expert judgment ranged from 2.0 to 2.3.
- IORPs in the Netherlands needed the highest level of expert judgment with an average of 2.4. The highest level of judgment was required for economic and financial markets assumptions and the maximum amount of sponsor support (both 2.7) and the lowest level for indexation assumptions (2.1).

One IORP explained that no long-term market information is available to calibrate economic scenario sets, which means that reliance on expert judgement is high.

- The Swedish supervisor did not find the valuation of sponsor support complex from a technical perspective, since sponsors of participating IORPs are large and provide public financial information. A bigger issue was whether sponsor support was legally enforceable or not.
- The UK supervisor indicated that the input parameters for the valuation of sponsor support required overall a medium level of expert judgment.

### **Maximum sponsor support**

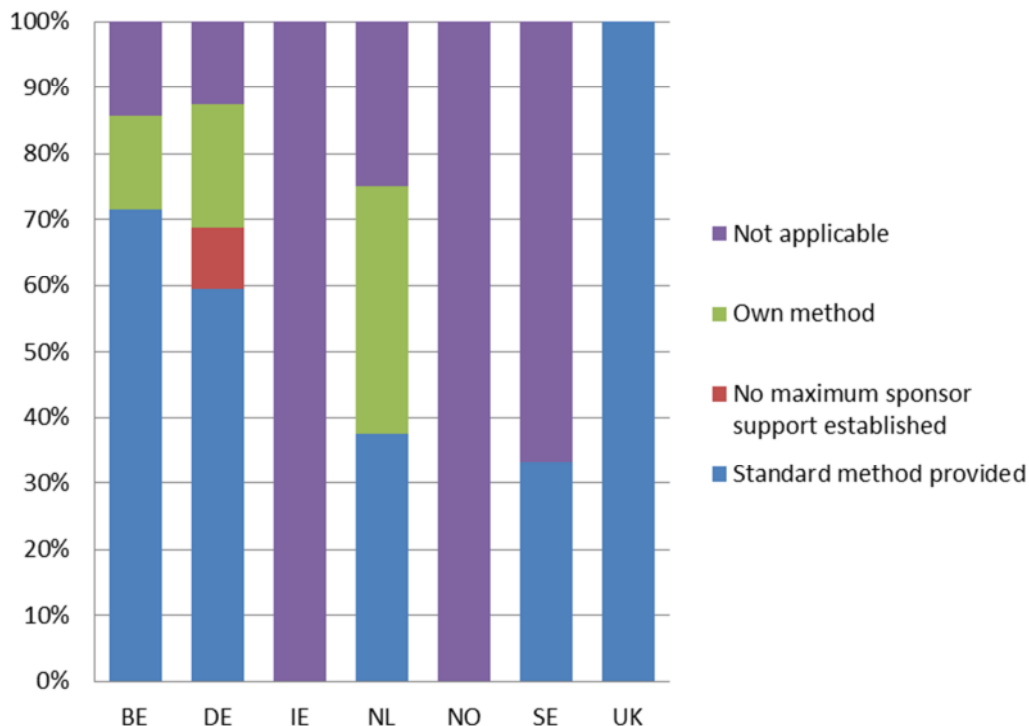
10.32. Half or more of participating IORPs applied the standard method to establish the maximum value of sponsor support, if this was applicable (see Figure 10.33). However, it is not always clear whether this means that the standard approach using financial reporting statistics is used or whether the maximum sponsor support is set equal to the value of technical provisions, as also provided for in the technical specifications.

- In Belgium more than 70% of IORPs applied the standard method provided, while almost 15% applied an own method using their current technical provisions instead of the Level A technical provisions.
- In Germany almost 60% of IORPs indicated that they used the standard method to value maximum sponsor support. Other IORPs made use of their own method (20%) or did not establish the maximum (10%). Regarding the own method, several German IORPs did the valuation of the maximum sponsor support by taking into account the publicly available financial data of a small number of the largest sponsors.
- In the Netherlands almost 40% of IORPs used the standard method provided, while the same proportion of IORPs applied their own method. Some IORPs calculated the maximum sponsor support as the discounted value of limited sponsor support – often expressed as a maximum increase in contribution rates – in future scenarios. Other IORPs assumed that the value of sponsor support was not constrained by any maximum, because of the perceived strength of an individual employer or because the IORPs is backed by many employers. Some

other IORPs set the maximum sponsor support to zero as the pension agreement does not allow for any sponsor support.

- In Sweden the maximum sponsor support has been assumed to be the suggested default, i.e. equal to the technical provisions, in all cases judged to be reasonable in relation to excess capital available for the respective sponsors.
- In the United Kingdom the standard method provided in the technical specifications was used. The Pensions Regulator used a cash flow definition based on EBITDA in doing the calculations.

#### 10.33. Calculation method for maximum sponsor support



#### Default probability of the sponsor and recovery rate

10.34. Many IORPs participating in the QIS dispose of sponsor with a credit rating. In Belgium 43% of IORPs have a rated sponsor, in Germany 56% and in Sweden 67%. However, it should be realised that the sample of IORPs is not representative in this respect. Large IORPs sponsored by big companies that are more likely to have a rating are overrepresented in the sample. In the United Kingdom the supervisor did the calculations for the entire universe of defined benefit pension schemes. The majority of sponsors of these IORPs does not have a rating.

10.35. The standard annual default probability for unrated sponsors was set at 4.175% in the technical specifications, but participants were allowed to deviate from this percentage if considered appropriate. In Germany only 27% of IORPs with an unrated sponsor used a lower default probability. In Belgium this percentage amounted to as much as 63%. A number of participating Dutch IORPs are multi-employer pension funds that have both rated and unrated sponsors. These funds often assumed that the joint default probability of multiple sponsors is zero.

- 10.36. The supervisors in the Sweden and the United Kingdom used a lower default probability for all unrated sponsors. Finansinspektionen applied a “shadow rating” consistent with similar sponsors in terms of financial strength and creditworthiness. The Pensions Regulator assumed that unrated sponsors had the same probability of default as a BBB-rated company, which is considered appropriate for the UK experience.
- 10.37. Participants were asked to specify the recovery rate in the event of sponsor default and how it was established if it deviates from 50%. The Pensions Regulator assumed a recovery rate of 5% as this is in line with observed rates in the United Kingdom.

### **Pension protection schemes**

- 10.38. The technical specifications provided some general principles for the valuation of pension protection schemes. A pension protection scheme had to be valued on a market-consistent basis taking into account the level of benefits guaranteed by the pension protection scheme, the default probability of the sponsor, and the IORP’s level of funding at the time of default, i.e. financial assets plus any recoverables from the sponsor. The value of pension protection schemes covering 100% of benefits could be set equal to the gap between technical provisions and assets (including sponsor support) on the holistic balance sheet. The technical specifications also provided a deterministic simplification.
- 10.39. The large majority of German IORPs that are covered by the PSVaG indicated that they used a deterministic method to establish the value of the pension protection scheme. The supervisor in the United Kingdom used the simplification provided.
- 10.40. The default risk of the pension protection scheme was assumed to be zero for the purpose of this QIS exercise. Section 9 of this report analyses whether this assumption was appropriate with reference to the pension protection schemes in Germany, Sweden and the United Kingdom.

## **10.3 Recoverables from insurance contracts**

- 10.41. The technical specifications prescribed a two-step method to value the amounts recoverable from insurance contracts. In the first step IORPs had to calculate recoverables without an adjustment for default of the insurer based on cash inflows and outflows. In the second step an adjustment had to be made for the possible default of the counterparty under the assumption of a default probability and recovery rate.
- 10.42. IORPs in Germany considered the reliability of the used input parameters as “good”. The input parameters required a “medium” level of expert judgement. IORPs in the Netherlands assessed reliability of their inputs as “fair”. The determination of the cash flows required a high level of expert judgment, the determination of the default probability and the recovery rate a low level. One IORP reported that it used the recovery rate of 40% provided in the example in the technical specifications.
- 10.43. The technical specifications provided two simplifications to establish the adjustment for counterparty default:
- A duration-based approach with as inputs the duration of recoverables, the default probability and the recovery rate;

- A standardised table with the duration and the insurer's credit rating as inputs.
- 10.44. One IORP in Germany used the standardised table, while other IORPs responded that the adjustment was not applicable. One IORP in the Netherlands used its own method, while another IORP responded that it was not applicable.

## 10.4 Solvency Capital Requirement

- 10.45. The capital requirements in most of the SCR (sub-)modules had to be established using a scenario based calculation. IORPs had to revalue the entries on the holistic balance sheet under a stressed scenario relating to the risk being considered. The holistic balance sheet had to be re-evaluated twice. Once by excluding the loss-absorbing capacity of technical provisions and security mechanisms and once by including them. The gross SCR equals the decrease (if any) in the excess of assets over liabilities without taking into account the loss-absorbency of adjustment and security mechanisms, the net SCR equals the decline (if any) in the net asset value after loss-absorbency. Subsequently, the input spreadsheet aggregated the various capital charges using the relevant correlation matrices. The technical specifications allowed IORPs to apply their own methods and simplifications, including not evaluating risks that were deemed not to be material.

### Operational risk, health risk and intangible asset risk

- 10.46. IORPs did not have to perform any calculations to determine the capital requirements for operational risk, health risk and intangible asset risk. The spreadsheet calculated the gross SCR for these risks automatically using a number of input variables provided by the participants: contributions, technical provisions and expenses for operational risk, technical provisions and premiums in three different health benefit segments for health risk and the value of intangible assets for intangible asset risk. Subsequently, participants had to assess the extent to which losses due to these risks could be absorbed by adjustment and security mechanisms to attain the net SCR.

### SCR market risk

- 10.47. The market risk module in the SCR standard formula consists of the following sub-modules: interest rate risk, equity risk, property risk, currency risk, spread risk and concentration risk. The spread risk module contains sub-modules for bonds and loans, tradable securities based on repackaged loans and credit derivatives.
- 10.48. The technical specifications contained scenario-based simplifications for the interest rate and currency risk sub-modules. Another simplification was provided to calculate the SCR for spread risk on bonds directly.
- 10.49. The approaches taken by IORPs and supervisors in the participating member states are shown in Figure 10.50;
- Interest rate risk – All participating IORPs in the Netherlands and the Swedish supervisor used the standard scenario-based approach. Around three quarters of participating IORPs in Belgium, Germany and Norway used the standard, scenario based approach, the remaining IORPs used either the simplification or their own method. The Irish and UK supervisor used the duration-based simplification, which applies the interest rate shock for the relevant duration to assets and liabilities.

The interest rate risk sub-module contains an inflation-module to distinguish between shocks in the real interest rate and inflation. This allows IORPs to take into account the direct impact of inflation on inflation-linked liabilities and assets. The inflation risk module is particularly relevant for Ireland, the Netherlands and the United Kingdom. In Ireland technical provisions depend on inflation through the statutory revaluation of pre-retirement benefits. In the Netherlands indexation of accrued rights and pension benefits is often linked to inflation. Many schemes in the UK provide inflation-linked pension increase and indexation to deferred benefits. Benefits for active members are typically linked to salary increases with assumptions generally set with reference to price inflation plus scheme/sponsor specific factors. Dutch IORPs assessed the ability of the inflation risk module to adequately capture inflation risk as fair. The Irish and UK supervisor assessed the module as respectively good and fair.

- Equity risk – Most QIS participants applied the standard, scenario based approach. Some IORPs in Germany and the Netherlands did not complete the equity risk sub-module, because the risk is not applicable or not material.

Participations were not treated separately in the SCR standard formula. IORPs indicated in the qualitative questionnaire that participations are limited in size, ranging on average from 1% to 4% of financial assets.

- Property risk – The majority of QIS participants in most countries applied the scenario-based approach. The notable exception is Belgium where more than half of IORPs indicated that property risk is not applicable or material, which reflects the low level of real estate investments by IORPs in that country.
- Currency risk – QIS participants in most countries predominantly used the scenario based approach. Around a quarter of IORPs in Belgium, the Netherlands and Norway made use of the simplification that allowed IORPs only to apply the downward shock if the foreign currency exposure on the liability side was immaterial. Especially in Germany and Norway and to a lesser extent in Belgium, IORPs responded that currency risk is not applicable or not material.
- Spread risk bonds and loans – Nearly all participants applied the sub-module for spread risk on bonds and loans. Of Belgian IORPs 8% omitted this capital requirement due to a lack of time. A significant proportion of IORPs in Belgium (38%), Germany (12%) and Norway (29%) used the simplification provided in the technical specifications.

The UK supervisor assumed that corporate bond portfolios of all IORPs have the same allocations to different credit spreads. TPR did not allow for the actual allocation of credit exposures for individual IORPs.

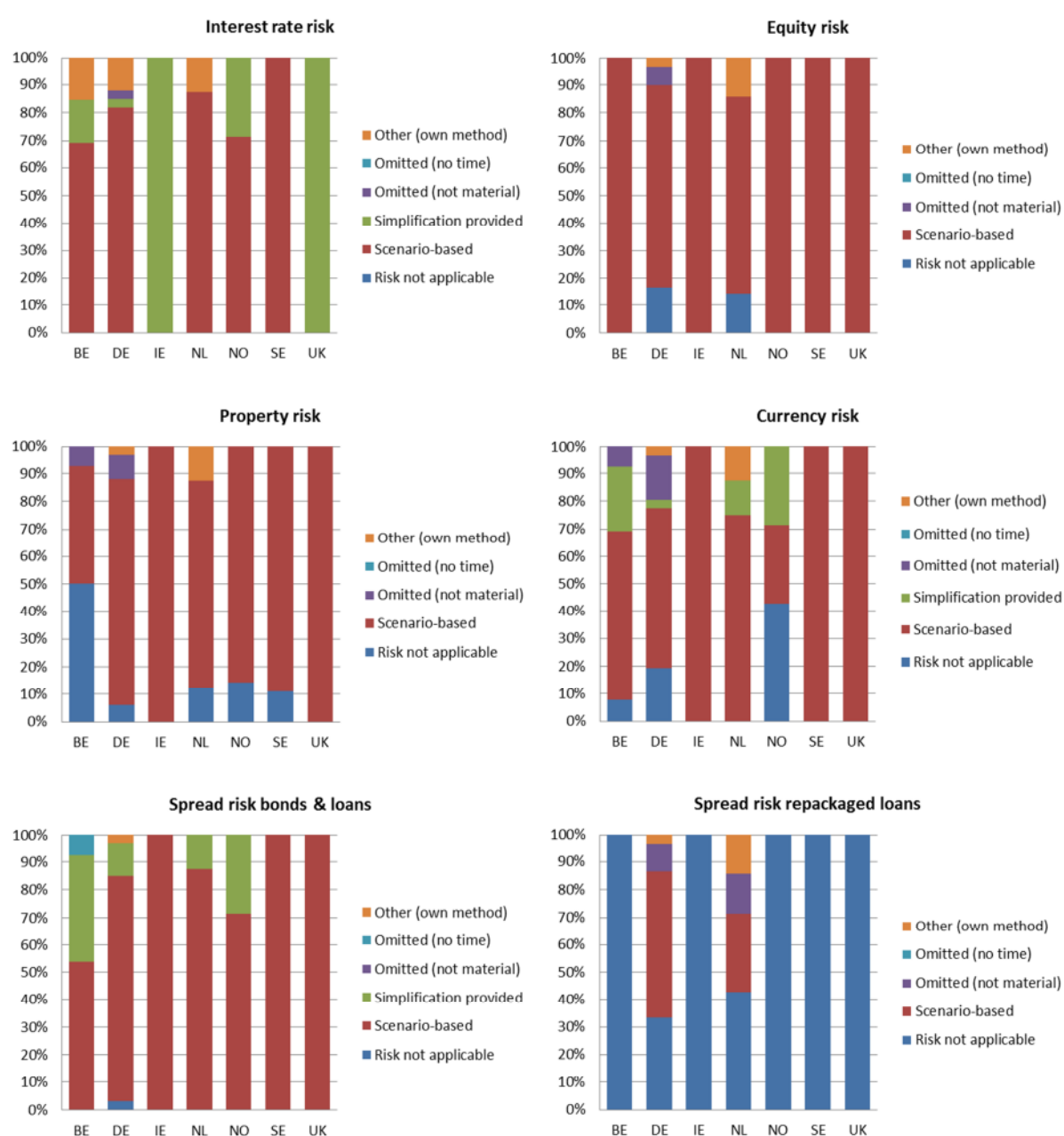
- Spread risk repackaged loans – Most participating IORPs considered spread risk on tradable securities based on repackaged loans to be not applicable or not material. Only 56% of German IORPs and 43% of Dutch IORPs applied this sub-module in relation to fairly small allocations to this asset class of respectively 0.2% and 3.2% of assets.
- Spread risk credit derivatives – This risk was also regarded as not applicable or not material by many respondents. Only one third of participating IORPs in

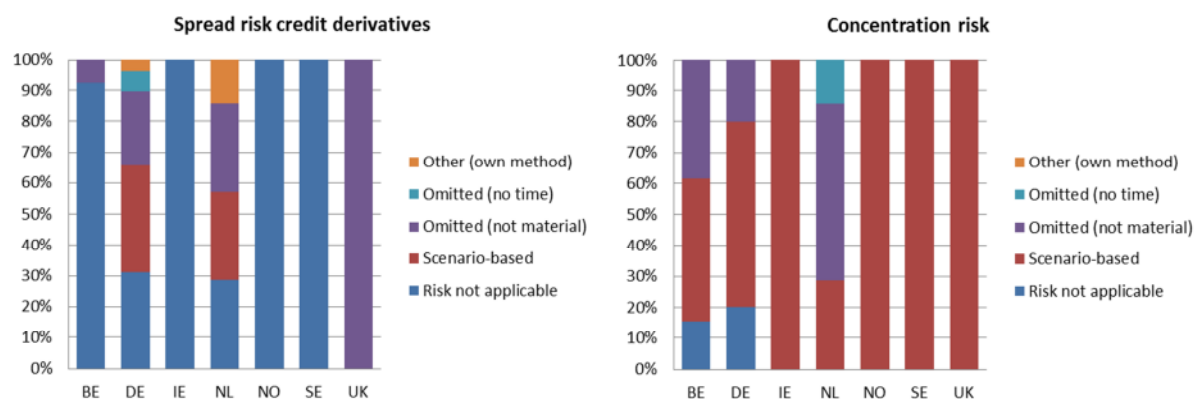
Germany and almost half of participating IORPs in the Netherlands applied this sub-module.

- Concentration risk – All participants in Ireland, Norway, Sweden and the UK applied this sub-module. A substantial proportion of IORPs in Belgium (54%), Germany (40%) and the Netherlands (57%) indicated that this risk was not applicable or not material.

IORPs were asked in the qualitative questionnaire whether they held any loans, bonds or equity in the sponsoring undertaking (other than governments bonds if the sponsor is a public entity). A small minority of IORPs in Belgium (14%), Germany (22%), Netherlands (13%), Norway (33%) and Sweden (11%) reported investments in the sponsoring undertaking, ranging on average from 0% to 4% of financial assets.

#### 10.50. Calculation methods SCR market risk module



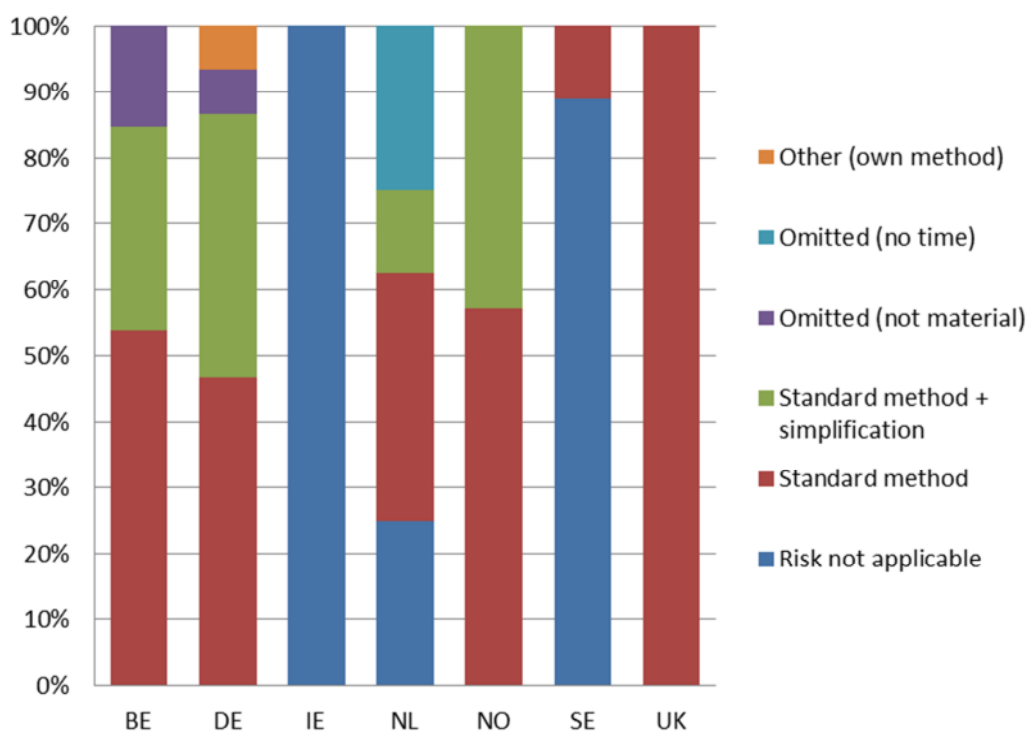


## SCR Counterparty default risk

10.51. The technical specifications provided a standard method to establish the capital requirement for counterparty default risk, including default risk of the IORP's sponsor. A simplification was added for calculating the risk adjusted value of collateral that may reduce the loss-given-default.

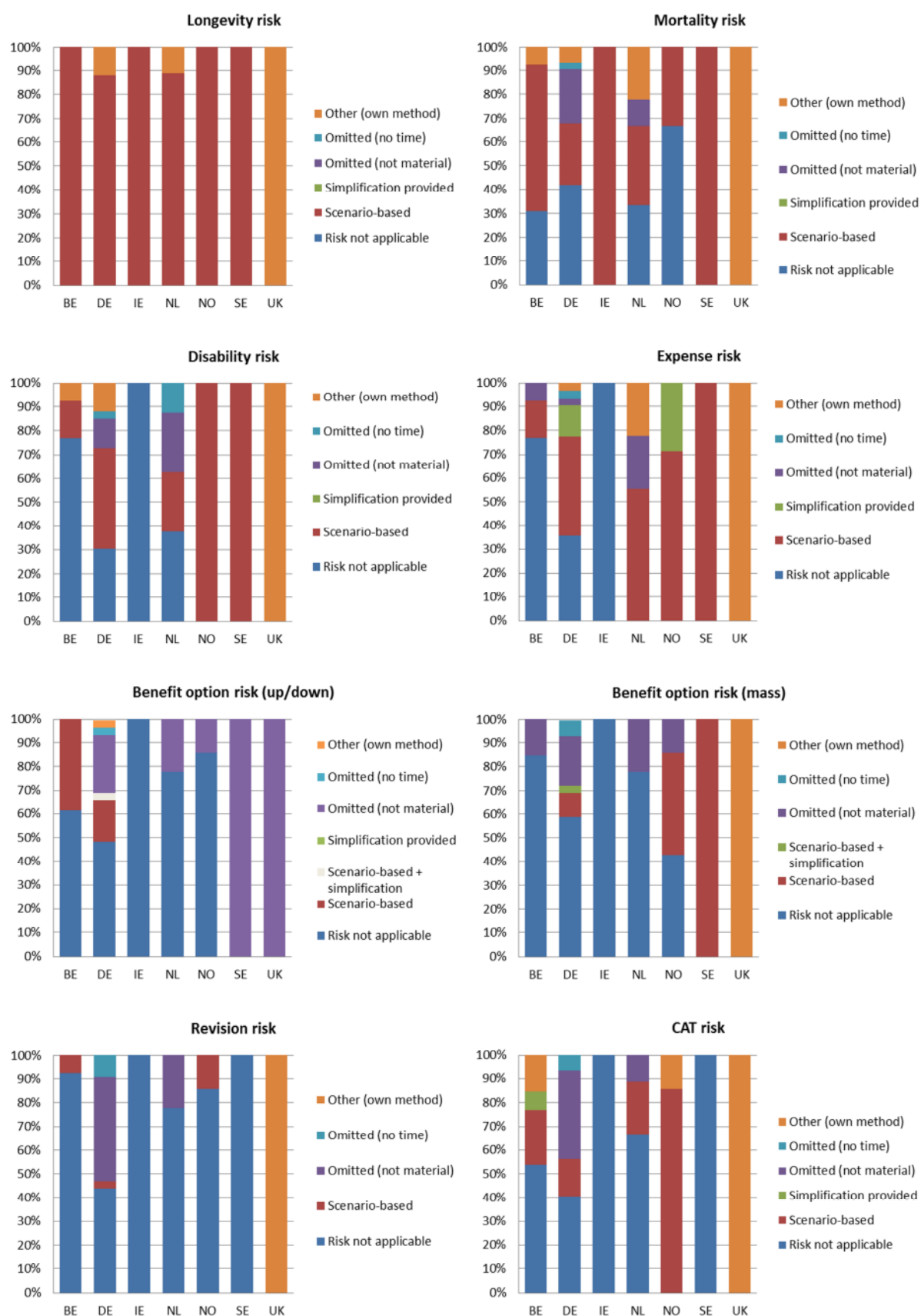
10.52. In Belgium, Germany and Norway nearly all participating IORPs included a capital requirement for counterparty default risk (see Figure 10.53). In these three countries about half of IORPs applied the standard method without simplification, the other half the standard method with the simplification for the risk-adjusted value of collateral. The UK supervisor used the standard method without simplification in its calculations. In Ireland the supervisor considered the risk to be not applicable. Finansinspektionen in Sweden regarded the counterparty default risk to be immaterial for pension funds. In the Netherlands a quarter of IORPs responded that the risk is not applicable, another quarter responded that the module was ignored because of time constraints.

10.53. Calculation methods for SCR counterparty default risk module





## 10.54. Calculation methods for SCR pension liability risk module



## SCR Pension liability risk

10.55. The pension liability risk module consists of the following sub-modules: longevity risk, mortality risk, disability risk, benefit option risk, expense risk, revision risk and catastrophe (CAT) risk. A simplification was provided for most of these sub-modules with the exception of the revision risk sub-module. The capital requirement for benefit option risk is determined as the higher of the charge for a decrease in lapse rates, increase in lapse rates and a mass lapse event. The technical specifications for all three shocks were accompanied with the simplification that the calculation could be done using homogeneous risk groups instead of on a member-by-member basis. In addition, the scenario based calculation for the downward and upward shocks could be simplified using a factor-based formula.

10.56. The approaches taken by IORPs and supervisors in the various countries are shown in Figure 10.54:

- Longevity risk – All participating IORPs and supervisors calculated a capital requirement for longevity risk, which is clearly the most important liability risk for IORPs. Nearly all participants made use of the standard scenario-based approach. The UK supervisor used its own simplified approach, assuming that the capital charge equals 8% of technical provisions. A small proportion of German IORPs also applied an own method.
- Mortality risk – The supervisors in Ireland and Sweden applied the scenario-based method to all IORPs considered. The supervisor in the United Kingdom used its own simplification by making the assumption that the capital charge for mortality risk equals 1% of technical provisions. In Belgium 70% of participating IORPs included a capital charge for mortality risk by using either the standard method or their own method. Two thirds of participating IORPs in Germany and Norway and half of participating IORPs in the Netherlands ignored mortality risk because it was not considered applicable or material. None of the respondents indicated that they used the simplification provided.
- Disability risk – All participating IORPs in Norway applied the scenario based approach as did the supervisor in Sweden to all IORPs under consideration. The supervisor in the United Kingdom used an own method according to which the capital requirement for disability risk equals 1% of technical provisions. The Irish supervisor, three quarters of participating IORPs in Belgium and the Netherlands and almost half of participating IORPs in Germany omitted the disability risk sub-module because it was regarded as not applicable or not material. The simplified approach was not used by the participants.
- Benefit option risk – All participating IORPs in the Netherlands and Norway and the supervisors in Ireland, Sweden and the United Kingdom ignored the scenarios with an increase or decrease of lapse rates because they were considered not to be applicable or material. The Swedish supervisor as well as 43% of Norwegian participating IORPs did evaluate the mass lapse event. The UK supervisor used the simplifying assumption that the capital requirement for a mass lapse event equals 2% of technical provisions. Almost 40% of Belgian IORPs analysed the upward and downward scenarios and none the mass lapse scenario. Only 20% of German IORPs applied the upward and downward scenarios and 10% the mass lapse scenario.

Dutch participating IORPs commented in the qualitative questionnaire that the benefit option risk is not very relevant as the sponsor and plan members do not have material contractual options. One Norwegian IORP considered the risk associated to transfer and/or termination limited. The UK supervisor and the Swedish Article 4 insurance company considered the benefit option risk module to be appropriate. In the United Kingdom pension scheme rules contain options like the conversion of entitlements to lump sum payments. In Norway the employer may decide to transfer the pension plan to an insurance undertaking or another IORP at any time, which means that Norwegian IORPs are exposed to benefit option risk.

- Expense risk – A capital charge for expense risk was calculated by every participating IORP in Norway and by the Swedish and UK supervisors with regard to all of their IORPs. TPR used its own simplification in which the capital requirement for expense risk equals 1% of technical provisions. In the Netherlands 78% of participating IORPs calculated a capital charge, in Germany 58% and in Belgium 15%. The Pensions Board in Ireland considered expense risk not to be applicable. The simplification was used by almost 30% of Norwegian IORPs and 13% of German IORPs.
- Revision risk – This risk was regarded not applicable or not material by most participating IORPs and supervisors. The notable exception was the Pensions Regulator in the United Kingdom, which applied this sub-module to the entire sample of IORPs. The UK supervisor assumed a capital requirement for revision risk of 3% of technical provisions.
- Catastrophe risk – CAT risk was also deemed not applicable or not material by many participating IORPs and supervisors. The UK supervisor and 86% of Norwegian IORPs did apply this sub-module. TPR made use of its own simplified method in which the capital charge for catastrophe risk equals 0.15% of technical provisions. In addition, of participating IORPs almost half of Belgian IORPs, 22% of Dutch IORPs and 16% of German IORPs calculated a capital charge for CAT risk.

### **Security and benefit adjustment mechanisms**

10.57. In general, QIS participants thought that the loss-absorbing capacity of sponsor support and pension protection schemes was taken into account adequately in the SCR standard formula. However, respondents to the qualitative questionnaire also raised some issues with regard to the approach to allowing for the loss-absorbing capacity of security and benefit adjustment mechanisms. It was mentioned that it is not clear how the different security and benefit adjustment mechanisms interact in reducing the SCR. It is impossible to predict how the different mechanisms will be used in stressed situation. One IORP remarked that the simplification of not taking into account default risk of a pension protection scheme underestimates the exposure of most pension protection schemes to systemic risk. The assumption that the loss-absorbing capacity of security and benefit adjustment mechanisms does not change for the lower confidence levels was considered to be inconsistent. Another IORP questioned whether sponsor support should be incorporated in such an explicit way, as sponsor support arrangements are often implicit in nature.

10.58. Participating IORPs had to calculate the loss-absorbency of technical provisions and security mechanisms on the level of individual SCR sub-modules. Participants were asked whether adjustment and security mechanisms exist that are restricted to the absorption of specific risks. All Norwegian IORPs and over 10% of Belgian and Swedish pension funds indicated that such mechanisms exist.

### **Ring-fenced funds**

10.59. The technical specifications did not make allowance for ring-fenced funds. Participating IORPs were requested in the qualitative questionnaire to specify the nature of arrangements giving rise to ring-fenced funds. IORPs in the Netherlands responded that ring-fencing of assets is not allowed under the national Pensions Act. In Ireland ring-fencing does not occur within IORPs. In the United Kingdom it is unusual for IORPs to dispose of ring-fenced funds, but where they do exist they are in respect of different sections in an IORP for particular entities and/or groups of employees. In Sweden, if there are both DB and hybrid DC schemes in an IORP then sponsor support is only applicable to the DB scheme.

10.60. In Germany and Sweden respectively 41% and 33% of participating IORPs responded that they were part of a group. In Germany the proportion of IORPs being part of a group is overrepresented in the QIS. In the United Kingdom some IORPs are part of a group.

### **Internal models**

10.61. Participating IORPs were asked in the qualitative questionnaire whether they currently use internal models for the determination of risk based capital requirements or risk budgets. About half of IORPs in Germany and the Netherlands employ internal models as well as 7% of IORPs in Belgium and over 10% in Norway. Internal models are not used in Ireland and Sweden, according to the national supervisors.

10.62. A significant proportion of participating IORPs in Belgium (43%), Germany (89%), Netherlands (89%) and Norway (40%) responded that the use of internal models should be permitted for determining capital requirements under a revised IORP Directive. The Irish supervisor responded that this was unlikely to be an attractive option for IORPs in Ireland owing to the expense of operating internal models.

10.63. IORPs argued that internal models would be able to cope better with specific risk exposures. Internal models could – for example – take into account the declining trend in mortality rates rather than relying on the historical rates underlying the SCR standard shock. In addition, these models could better accommodate correlations between shocks, for asset classes like commodities, infrastructure, emerging market debt and derivative exposures.

### **Difficulties and improvements**

10.64. Participating IORPs indicated that the technical specifications were complex and that it was very time consuming to interpret them. As this was the first QIS exercise, it also required a lot of effort to set up the necessary modelling infrastructure for the SCR standard formula. Different IORPs mentioned challenges in different areas of the SCR calculation. Difficulties were encountered with the interest rate risk sub-module, the inflation module, the spread risk sub-module, even in its simplified form, and the counterparty default risk module, including the determination of the default probabilities for unrated sponsors. Many

IORPs indicated that it was very tedious work to evaluate the loss-absorbing capacity of technical provisions and security mechanisms for every SCR risk sub-module separately. One IORP missed guidance in the technical specification on how to adjust the economic scenario sets for stochastic valuations in response to a SCR standard shock.

- 10.65. Participating IORPs felt that the SCR standard formula did not properly capture the different characteristics of alternative asset classes, like commodities, infrastructure et cetera. Moreover, diversification effects are ignored by incorporating them all under the other equities category. One IORP was of the view that the counterparty default risk module should allow for 100% collateralisation. The Swedish supervisor indicated that the risk inherent in the hedging of liabilities denoted in SEK with assets in EUR was ignored.
- 10.66. A widespread suggestion was to simplify the calculation for the loss-absorbency of security and benefit adjustment mechanisms by establishing the loss-absorbing capacity at the level of the overall SCR. Some IORPs suggested that the standard formula could be simplified by deleting pension liability risks, such as expense risk, revision risk and catastrophe risk. Some Dutch IORPs advocated a simpler standard formula in line with their national Financial Assessment Framework (FTK). Finally, IORPs mentioned that the SCR standard formula should take into account the availability of data and resources of especially smaller IORPs.

## 10.5 Assessment holistic balance sheet

10.67. IORPs were asked what their most important difficulties were in implementing the holistic balance sheet. Important difficulties that were mentioned by participants included:

- Generating (scenarios for) cash flows with respect to pension obligations.
- Absence of an underlying supervisory framework in the valuation of security and benefit adjustment mechanisms.
- Reconciling the going-concern principle and valuing the best estimate without taking into account future accruals. It was considered difficult to attribute the value of security and benefit adjustment mechanisms to accrued pensions.
- Valuation of non-unconditional benefits, such as mixed benefits.
- Valuation of options and guarantees.
- Assumptions needed to perform stochastic valuations as the technical specifications provided little guidance in that area. In particular, IORPs experienced difficulties in incorporating the UFR-based risk-free interest rate curve in economic scenario sets.
- Valuation of sponsor support and in particular the derivation of the maximum amount of sponsor support and sponsor default probabilities.
- Distinguishing between regular contributions and sponsor support, i.e. contributions in excess of the cost of new accruals.
- Calculation of the loss-absorbing capacity of technical provisions and security mechanisms in the SCR standard formula.

10.68. Participants were also asked what elements of the holistic balance sheet do not properly take into account the specificities of their IORP. Elements mentioned by respondents included:

- The principle of market-consistency since there is, according to IORPs, no direct market for pension obligations.
- The need to make security and benefit adjustment mechanisms explicit while in practice they are often implicit.
- The options to exclude sponsor support or various types of benefits from the holistic balance sheet. Since the values of security and benefit adjustment mechanisms often depend on each other, it would be inconsistent to ignore some of them.
- The simplification for the risk margin of 8% of the best estimate is too high for IORPs that predominantly dispose of pension obligations that can be hedged on financial markets.
- The standard methods provided in the technical specifications do not yield an accurate value for sponsor support.
- The equity risk sub-module does not distinguish between the different characteristics of the various alternative investment classes.

## **10.6 Overall assessment and improvement**

10.69. Participating IORPs were asked to assess the quality of the output with respect to the best estimate of technical provisions, sponsor support and the SCR. IORPs judged the quality of the best estimate most favourably with an average ranking of  $2\frac{1}{4}$  in Belgium,  $2\frac{1}{2}$  in Germany and the Netherlands and 3 in Norway on a scale from one to four (1-poor, 2-fair, 3-good, 4-excellent). The ranking for the quality of the SCR outcomes is equal to 2 in Belgium, Germany and the Netherlands and  $2\frac{3}{4}$  in Norway. The results for sponsor support were assessed least favourably with an average ranking of  $1\frac{1}{2}$  in Belgium and  $1\frac{3}{4}$  in Germany and the Netherlands.

10.70. Many IORPs indicated that many complex calculations had to be performed within a short time period (see also Section 11). IORPs were asked where reliability of results could have been improved if they would have had more time and resources. Suggested areas for improvement of quality included:

- Sensitivity analysis and robustness checks of outcomes, including an assessment of appropriateness of simplifications provided in the technical specifications.
- Cash flow approach to valuing the best estimate of technical provisions instead of a duration approach.
- Valuation of sponsor support with regard to multi-employer schemes and default probabilities of the sponsor.
- Stochastic approach to improve the valuation of sponsor support and to capture financial guarantees included in technical provisions.

- Calculations for specific sub-modules in the SCR market risk module, including the use of a more detailed breakdown of investments and applying a look-through approach.
- Counterparty default risk module
- Better approaches to incorporate adjusted market swap curves and inclusion of more asset classes in risk-neutral scenario sets.

## 11 Practicability and impressions of IORPs

11.1. In the qualitative questionnaire participating IORPs were asked to give an assessment of the practicability of calculations and their first impression of the outcomes. The brief summary below of responses to these general questions provides a flavour of the practical difficulties encountered and IORPs' first impressions. EIOPA would like to emphasise that the views expressed in this section are the views of participating IORPs and not EIOPA's views.

### 11.1 Suggestions for improvement

- 11.2. The average assessment of the clarity and accessibility of technical specifications was 1¾ in Belgium, Germany and the Netherlands and 2½ in Norway on a scale from one to four (1-poor, 2-fair, 3-good, 4-excellent). It was remarked that the technical specifications resembled a legal document and could benefit from clearer wording and more detail on technical aspects. It was also suggested that the technical specifications should use pension terminology instead of insurance terminology.
- 11.3. Many IORPs found the technical specifications unbalanced. In some areas, the specifications are very detailed and extensive; in other areas the specifications are overly simplified, open to multiple interpretations, insufficient or missing. More explanation and guidance would have been appreciated on the use of stochastic valuations – for example, with regard to time horizon and the treatment of adjusted market interest rates –, the underlying supervisory responses and benefit reduction mechanisms. It was not clear from the specifications whether future benefit accruals and salary increases should be included in the best estimate of technical provisions. Finally, the technical specifications for sponsor support are difficult to apply for multi-employer schemes, subsidiaries of multinationals and unrated sponsors. The further work on sponsor support EIOPA is conducting was very much welcomed.
- 11.4. Many IORPs suggested that the technical specifications should have been translated to guidance explaining their application to national IORPs, as was done in Germany.
- 11.5. The average assessment of the clarity and accessibility of the input spreadsheet and the accompanying user guide was 1½ in Belgium, 2 in Germany and Norway and 2¼ in the Netherlands.
- 11.6. Some commented that the spreadsheet was very complicated with a too many input cells. Suggestions for improvement include:

- Include links in the spreadsheet for cells where the same results should be filled in. It was remarked that a number of scenarios differ from each other with respect to only a couple of cells.
  - A better description of the various scenarios as many of them yield similar results.
  - Develop a comprehensive tool that combines the various helper tabs and the input spreadsheet.
  - Some IORPs would have appreciated a more elaborate user manual with a comprehensive list of inputs and a description of every input cell.
  - Finally, it was suggested to explain in the manual the various cells and sets by means of a sample IORP.
- 11.7. Regarding the short time period and the many sets, it was suggested that it might have been better to break up the current QIS in different smaller QISs. Other IORPs suggested that more guidance should have been provided distinguishing between the essential and optional parts of the QIS.

## 11.2 Practicability and resources

- 11.8. Many IORPs indicated the short time frame available for doing a large amount of complex calculations as their number one practical difficulty. IORPs and their external consultants needed a lot of time to read and understand the technical specifications, to comprehend the structure of the spreadsheets and to learn and gain experience with the new framework.
- 11.9. Another practical problem was the type of data requested for the QIS. The classification of the data was often not in line with regular reporting requirements in the member state. It was difficult to retrieve the needed input data within the time available and to apply the look-through approach to assets allocated to investment funds. Some identified as an impediment the frequent updates of the input spreadsheet until a week before the end of the exercise and the fact that some spreadsheets were missing for some time.
- 11.10. IORPs mentioned that the technical specifications were often unclear or incomplete, particularly in the area of sponsor support, loss-absorbency, counterparty default risk module and benefit reductions in case of sponsor default. IORPs doing stochastic valuations experienced practical problems in incorporating the UFR-adjusted interest rate swap curves in their economic scenario sets. Moreover, these IORPs had difficulties in reconciling the going-concern principle and the interpretation of the contract boundaries that only accrued benefits should be taken into account in the valuation of the best estimate of technical provisions.
- 11.11. Most IORPs spent between EUR 25,000 and EUR 75,000 on completing the QIS exercise. Some IORPs reported total costs below that range, for other IORPs the costs exceeded that range. It was indicated that it was difficult to make available resources for completing the QIS, especially since the fourth quarter is a busy time of the year for (external) actuaries.



## 11.3 First impressions from IORPs

- 11.12. The first impression of the outcomes of the QIS was that the required calculations were very complex and extensive. Many respondents indicated that they were certainly too costly for small pension schemes. It was also suspected that predominantly large IORPs could afford to participate in this QIS implying that the results are not representative.
- 11.13. Many IORPs also remarked that the QIS outcomes depend on many assumptions. The 97.5% and 95% confidence levels are derived using an overly simplified method. It was pointed out that the values of items on the holistic balance sheet are based on current supervisory responses. If a new European prudential regime is introduced the IORPs' policies will change and so will the holistic balance sheet values. Some IORPs mentioned that sponsor support is valued using notional cash flows instead of expected cash flows. Moreover, stochastic valuations are very sensitive to the underlying assumptions, such as the time horizon under consideration. Many IORPs concluded that the results of this QIS are therefore not reliable and that more QISs are needed before any policy conclusions can be drawn.
- 11.14. Many IORPs found it hard to comment on the consequences of the QIS results as it is not clear at this stage how the holistic balance sheet approach is going to be used. Many expressed doubt whether the holistic balance sheet would ever make it into a suitable supervisory framework due to its complexity.
- 11.15. IORPs responded that the holistic balance sheet may never balance and that it introduces circularities. An IORP may attempt to fill the gap on the balance sheet by increasing assets. However, this may not resolve the shortfall as the higher level of assets may simultaneously diminish the value of sponsor support or increase the value of conditional benefits. Other IORPs questioned whether all the calculations were justified as they would always meet the solvency capital requirement. This was especially the case for German Pensionsfonds that are backed in full by a pension protection scheme.
- 11.16. IORPs questioned the use of the market-consistent valuation approach in the QIS, since there is no direct market for occupational pension liabilities. It was remarked that, in their view, discounting with the risk-free interest rate curve is inappropriate and results in an overestimation of technical provisions. Norwegian IORPs expressed concern about the fixed risk margin of 8% of the best estimate.
- 11.17. A substantial number of IORPs expressed concern that the introduction of the holistic balance sheet approach may result in a further closure of DB schemes and move towards DC. Reasons are the considerable costs, especially for small IORPs, the explicit recognition of the value of sponsor support on the balance sheet of IORPs and the funding of risk-free liabilities and the SCR. The latter might according to IORPs also induce a shift out of equities into government bonds.

## Annex A: QIS results baseline scenarios

The data provided in this annex correspond to the end of December 2011 and are compiled for the purpose of this QIS and do not correspond to statistics from official sources.

- The data for Belgium, Germany and the Netherlands represent an aggregate of a sample of IORPs scaled up to the national level. The scaled up aggregate for Belgium is not representative for the national pensions market. The Belgian sample includes two large IORPs with no or no effective sponsor support, whereas most IORPs do have recourse to a sponsor and one of these IORPs provides conditional benefits whereas most Belgian IORPs do not.
- The data of Ireland represent an aggregate of representative IORPs grossed up to the national level.
- The data for Norway and Sweden are an aggregate of a sample of IORPs.
- The data for the United Kingdom is an aggregate of the real data of all DB IORPs already held by the supervisor in the United Kingdom.

Current regime, EUR billion								
	BE	DE-PF	DE-PK	IE	NL	NO	SE	UK
<b>Investments</b>	14,4	24,3	115,5	41,6	781,7	14,0	12,1	1128,2
<b>Sponsor support</b>								
<b>Pension protection scheme</b>								
<b>(Re-)insurance recoverables</b>	0,0	1,8	3,1	0,0	9,7	0,0	0,0	0,0
<b>Other assets</b>	0,7	0,1	3,7	0,0	6,4	0,0	0,4	63,8
<b>Total assets</b>	15,1	26,2	122,3	41,6	797,7	14,1	12,5	1192,0
<b>Best estimate technical provisions</b>	13,5	22,4	111,9	58,0	785,1	12,5	9,9	1542,0
<b>Risk margin</b>								
<b>Other liabilities</b>	0,1	0,1	4,0	0,0	0,4	0,2	0,1	0,0
<b>Total liabilities</b>	13,6	22,4	115,9	58,0	785,5	12,7	10,0	1542,0
<b>Excess of assets over liabilities</b>	1,5	3,8	6,4	-16,4	12,2	1,4	2,5	-349,9
<b>Capital requirement</b>	0,3	0,1	4,8	7,5	143,3	0,7	1,7	0,0
<b>Surplus</b>	1,2	3,7	1,6	-23,9	-131,1	0,7	0,8	-349,9
<b>Lower capital requirement</b>	-2,5	0,1	1,6	0,0	34,0	0,7	0,4	0,0

Benchmark set 3A, EUR billion								
	BE	DE-PF	DE-PK	IE	NL <sup>a</sup>	NO	SE	UK
<b>Investments</b>	14,4	25,3	122,6	41,6	782,1	13,9	12,0	1128,2
<b>Sponsor support</b>	0,0	6,6	25,8	0,0	74,3	0,0	0,2	657,5
<b>Pension protection scheme</b>	0,0	0,6	0,0	0,0	0,0	0,0	0,0	13,1
<b>(Re-)insurance recoverables</b>	0,0	0,4	3,1	0,0	13,1	0,0	0,0	0,0
<b>Other assets</b>	0,7	0,4	3,9	0,0	8,4	0,2	0,4	63,8
<b>Total assets</b>	15,1	33,2	155,4	41,6	878,0	14,1	12,6	1862,5
<b>Best estimate technical provisions</b>	15,9	30,8	147,4	92,4	898,1	12,4	9,1	1995,2
<b>Risk margin</b>	1,3	2,3	11,1	7,4	70,7	0,8	0,7	159,6
<b>Other liabilities</b>	0,1	0,0	3,8	0,0	2,8	0,1	0,0	0,0
<b>Total liabilities</b>	17,3	33,1	162,3	99,8	971,6	13,3	9,9	2154,8
<b>Excess of assets over liabilities</b>	-2,1	0,1	-6,8	-58,2	-93,6	0,8	2,8	-292,3
<b>Gross SCR - 99.5%</b>	4,0	8,1	51,0	34,6	167,0	2,5	2,2	481,1
<b>Adjustment loss-absorbency</b>	-2,7	-8,1	-46,3	0,0	-60,0	-1,3	-0,8	-246,8
<b>SCR</b>	1,4	0,0	4,7	34,6	107,0	1,2	1,4	234,3
<b>Surplus</b>	-3,5	0,1	-11,6	-92,8	-200,6	-0,4	1,3	-526,5
<b>MCR - 99.5%</b>	0,5	0,0	1,7	12,1	37,4	0,4	0,5	82,0
<b>Gross SCR - 97.5%</b>	3,1	6,2	38,8	26,3	126,9	1,9	1,7	365,6
<b>Adjustment loss-absorbency</b>	-2,3	-6,2	-36,4	0,0	-56,2	-1,3	-0,6	-195,5
<b>Net SCR</b>	0,8	0,0	2,4	26,3	70,7	0,6	1,1	170,1
<b>Surplus</b>	-2,9	0,1	-9,2	-84,5	-164,4	0,2	1,7	-462,4
<b>MCR - 97.5%</b>	0,3	0,0	0,8	9,2	24,8	0,2	0,4	59,5
<b>Gross SCR - 95%</b>	2,6	5,2	32,6	22,2	106,9	1,6	1,4	307,9
<b>Adjustment loss-absorbency</b>	-2,0	-5,2	-30,9	0,0	-52,8	-1,3	-0,5	-168,9
<b>SCR</b>	0,6	0,0	1,8	22,2	54,0	0,3	0,9	139,0
<b>Surplus</b>	-2,7	0,1	-8,6	-80,3	-147,7	0,5	1,8	-431,2
<b>MCR - 95%</b>	0,2	0,0	0,6	7,8	18,9	0,1	0,3	48,6
<sup>a</sup> For the Netherlands the aggregate results of set 14 are shown.								

Benchmark set 3B, EUR billion								
	BE	DE-PF	DE-PK	IE	NL	NO	SE	UK
Investments	14,4	25,3	122,6	41,6	782,1	13,9	12,0	
Sponsor support	0,0	6,6	25,8	0,0	74,3	0,0	0,2	
Pension protection scheme	0,0	0,6	0,0	0,0	0,0	0,0	0,0	
(Re-)insurance recoverables	0,0	0,4	3,1	0,0	13,1	0,0	0,0	
Other assets	0,7	0,4	3,9	0,0	8,4	0,2	0,4	
Total assets	15,1	33,2	155,4	41,6	877,9	14,1	12,6	
Best estimate technical provisions	15,9	30,8	147,4	48,8	751,3	12,4	9,1	
Risk margin	1,3	2,3	11,1	3,9	58,9	0,8	0,7	
Other liabilities	0,1	0,0	3,8	0,0	2,8	0,1	0,0	
Total liabilities	17,3	33,1	162,3	52,7	813,0	13,3	9,9	
Excess of assets over liabilities	-2,1	0,1	-6,8	-11,1	64,9	0,8	2,8	
Gross SCR - 99.5%	4,0	8,1	51,0	16,3	160,8	2,5	2,2	
Adjustment loss-absorbency	-2,7	-8,1	-46,3	0,0	-114,5	-1,3	-0,8	
SCR	1,4	0,0	4,7	16,3	46,3	1,2	1,4	
Surplus	-3,5	0,1	-11,6	-27,4	18,6	-0,4	1,3	
MCR - 99.5%	0,5	0,0	1,7	5,7	16,2	0,4	0,5	
Gross SCR - 97.5%	3,1	6,2	38,8	12,4	122,2	1,9	1,7	
Adjustment loss-absorbency	-2,3	-6,2	-36,4	0,0	-107,9	-1,3	-0,6	
Net SCR	0,8	0,0	2,4	12,4	14,3	0,6	1,1	
Surplus	-2,9	0,1	-9,2	-23,5	50,6	0,2	1,7	
MCR - 97.5%	0,3	0,0	0,8	4,3	5,0	0,2	0,4	
Gross SCR - 95%	2,6	5,2	32,6	10,4	102,9	1,6	1,4	
Adjustment loss-absorbency	-2,0	-5,2	-30,9	0,0	-97,0	-1,3	-0,5	
SCR	0,6	0,0	1,8	10,4	5,9	0,3	0,9	
Surplus	-2,7	0,1	-8,6	-21,5	59,0	0,5	1,8	
MCR - 95%	0,2	0,0	0,6	3,6	2,1	0,1	0,3	

Upper bound set 1, EUR billion								
	BE	DE-PF	DE-PK	IE	NL	NO	SE	UK
<b>Investments</b>	14,4	25,3	122,6	41,6	782,1	13,9	12,0	1128,2
<b>Sponsor support</b>	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
<b>Pension protection scheme</b>	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
<b>(Re-)insurance recoverables</b>	0,0	0,4	3,1	0,0	15,4	0,0	0,0	0,0
<b>Other assets</b>	0,7	0,4	4,1	0,0	8,4	0,2	0,4	63,8
<b>Total assets</b>	15,1	26,0	129,8	41,6	805,9	14,1	12,5	1192,0
<b>Best estimate technical provisions</b>	15,9	31,1	140,7	92,4	924,4	12,4	9,8	1995,0
<b>Risk margin</b>	1,3	2,4	10,7	7,4	72,6	0,8	0,8	159,6
<b>Other liabilities</b>	0,1	0,0	3,8	0,0	2,8	0,1	0,0	0,0
<b>Total liabilities</b>	17,2	33,5	155,2	99,8	999,9	13,3	10,7	2154,6
<b>Excess of assets over liabilities</b>	-2,1	-7,5	-25,3	-58,2	-193,9	0,8	1,8	-962,6
<b>Gross SCR - 99.5%</b>	4,0	5,9	55,5	33,6	249,2	2,4	2,8	549,4
<b>Adjustment loss-absorbency</b>	-0,8	-0,3	-44,5	0,0	-69,1	-1,3	0,0	0,0
<b>SCR</b>	3,1	5,6	10,9	33,6	180,0	1,1	2,8	549,4
<b>AOF: sponsor support</b>	95,3	271,7	236,0	0,0	85,2	0,0	3,1	2739,1
<b>Surplus</b>	90,0	258,6	199,8	-91,7	-288,7	-0,4	2,0	1227,1
<b>MCR - 99.5%</b>	1,1	1,9	3,8	11,7	63,0	0,4	1,0	192,3
<b>Gross SCR - 97.5%</b>	3,0	4,5	42,1	25,5	189,4	1,9	2,2	417,5
<b>Adjustment loss-absorbency</b>	-0,8	-0,2	-35,1	0,0	-64,0	-1,3	0,0	0,0
<b>Net SCR</b>	2,2	4,2	7,0	25,5	125,4	0,6	2,2	417,5
<b>AOF: sponsor support</b>	95,3	271,7	236,0	0,0	85,2	0,0	3,1	2739,1
<b>Surplus</b>	91,0	260,0	203,6	-83,7	-234,1	0,2	2,7	1359,2
<b>MCR - 97.5%</b>	0,8	1,5	2,5	8,9	43,9	0,2	0,8	146,1
<b>Gross SCR - 95%</b>	2,5	3,8	35,5	21,5	159,5	1,6	1,8	351,6
<b>Adjustment loss-absorbency</b>	-0,8	-0,2	-29,8	0,0	-59,9	-1,3	0,0	0,0
<b>SCR</b>	1,8	3,5	5,7	21,5	99,5	0,3	1,8	351,6
<b>AOF: sponsor support</b>	95,3	271,7	236,0	0,0	85,2	0,0	3,1	2739,1
<b>Surplus</b>	91,4	260,6	205,0	-79,6	-208,2	0,5	3,0	1425,1
<b>MCR - 95%</b>	0,6	1,2	1,9	7,5	34,8	0,1	0,6	123,1

Lower bound set 2A, EUR billion								
	BE	DE-PF	DE-PK	IE	NL	NO	SE	UK
<b>Investments</b>	14,4	25,3	122,7	41,6		13,9	12,0	1128,2
<b>Sponsor support</b>	-0,5	4,4	12,7	0,0		0,0	0,1	569,5
<b>Pension protection scheme</b>	0,0	0,4	0,0	0,0		0,0	0,0	9,6
<b>(Re-)insurance recoverables</b>	0,0	0,4	3,1	0,0		0,0	0,0	0,0
<b>Other assets</b>	0,7	0,4	3,8	0,0		0,2	0,4	63,8
<b>Total assets</b>	14,6	30,8	142,4	41,6		14,1	12,6	1771,2
<b>Best estimate technical provisions</b>	15,9	30,6	135,8	92,4		12,4	9,1	1995,2
<b>Risk margin</b>	0,0	0,0	0,0	0,0		0,0	0,0	0,0
<b>Other liabilities</b>	0,1	0,0	3,9	0,0		0,1	0,0	0,0
<b>Total liabilities</b>	16,0	30,7	139,8	92,4		12,5	9,1	1995,2
<b>Excess of assets over liabilities</b>	-1,4	0,1	2,6	-50,8		1,6	3,4	-224,1
<b>Gross SCR - 99.5%</b>	4,0	7,3	47,5	32,3		2,5	2,2	473,3
<b>Adjustment loss-absorbency</b>	-2,6	-7,3	-38,8	0,0		-1,3	-0,8	-252,9
<b>SCR</b>	1,4	0,0	8,6	32,3		1,2	1,4	220,4
<b>Surplus</b>	-2,8	0,1	-6,0	-83,1		0,3	2,0	-444,5
<b>MCR - 99.5%</b>	0,5	0,0	3,0	11,3		0,4	0,5	77,1
<b>Gross SCR - 97.5%</b>	3,0	5,6	36,1	24,6		1,9	1,7	359,7
<b>Adjustment loss-absorbency</b>	-2,3	-5,6	-30,5	0,0		-1,3	-0,6	-199,7
<b>SCR</b>	0,8	0,0	5,6	24,6		0,6	1,1	160,0
<b>Surplus</b>	-2,2	0,1	-3,0	-75,3		0,9	2,4	-384,1
<b>MCR - 97.5%</b>	0,3	0,0	2,0	8,6		0,2	0,4	56,0
<b>Gross SCR - 95%</b>	2,6	4,7	30,4	20,7		1,6	1,4	302,9
<b>Adjustment loss-absorbency</b>	-2,0	-4,7	-25,9	0,0		-1,2	-0,5	-172,2
<b>SCR</b>	0,6	0,0	4,4	20,7		0,4	0,9	130,7
<b>Surplus</b>	-2,0	0,1	-1,8	-71,5		1,2	2,5	-354,8
<b>MCR - 95%</b>	0,2	0,0	1,6	7,2		0,1	0,3	45,8

Lower bound set 2B, EUR billion								
	BE	DE-PF	DE-PK	IE	NL	NO	SE	UK
Investments	14,4	25,3	122,7	41,6	782,1	13,9	12,0	
Sponsor support	-0,5	4,4	12,7	0,0	69,3	0,0	0,1	
Pension protection scheme	0,0	0,4	0,0	0,0	0,0	0,0	0,0	
(Re-)insurance recoverables	0,0	0,4	3,1	0,0	12,2	0,0	0,0	
Other assets	0,7	0,4	3,8	0,0	8,4	0,2	0,4	
Total assets	14,6	30,8	142,4	41,6	872,1	14,1	12,6	
Best estimate technical provisions	15,9	30,6	135,8	48,8	701,2	12,4	9,1	
Risk margin	0,0	0,0	0,0	0,0	0,0	0,0	0,0	
Other liabilities	0,1	0,0	3,9	0,0	2,8	0,1	0,0	
Total liabilities	16,0	30,7	139,8	48,8	704,0	12,5	9,1	
Excess of assets over liabilities	-1,4	0,1	2,6	-7,2	168,0	1,6	3,4	
Gross SCR - 99.5%	4,0	7,3	47,5	16,1	160,0	2,5	2,2	
Adjustment loss-absorbency	-2,6	-7,3	-38,8	0,0	-84,9	-1,3	-0,8	
SCR	1,4	0,0	8,6	16,1	75,0	1,2	1,4	
Surplus	-2,8	0,1	-6,0	-23,3	93,0	0,3	2,0	
MCR - 99.5%	0,5	0,0	3,0	5,6	26,3	0,4	0,5	
Gross SCR - 97.5%	3,0	5,6	36,1	12,2	121,6	1,9	1,7	
Adjustment loss-absorbency	-2,3	-5,6	-30,5	0,0	-81,1	-1,3	-0,6	
SCR	0,8	0,0	5,6	12,2	40,5	0,6	1,1	
Surplus	-2,2	0,1	-3,0	-19,4	127,6	0,9	2,4	
MCR - 97.5%	0,3	0,0	2,0	4,3	14,2	0,2	0,4	
Gross SCR - 95%	2,6	4,7	30,4	10,3	102,4	1,6	1,4	
Adjustment loss-absorbency	-2,0	-4,7	-25,9	0,0	-77,0	-1,2	-0,5	
SCR	0,6	0,0	4,4	10,3	25,4	0,4	0,9	
Surplus	-2,0	0,1	-1,8	-17,5	142,6	1,2	2,5	
MCR - 95%	0,2	0,0	1,6	3,6	8,9	0,1	0,3	

## Annex B: Summary of current pension systems

	BE	DE PK	DE PF	IE	NL	NO, (IORPs only)	SE Pension funds	SE Pension foundations	SE Life insurance with Art 4	UK
Number of DB IORPs at end 2011	190	149	30	993 (excluding PAYG)	454	92	10	75 (members > 100)	9 (excl. undertakings predominantly offering pure DC)	6,432
Number of members and beneficiaries at end 2011	0.6 million DB-type of plans 0.3 million DC plans	8 million	0.8 million	0.4 million (estimated)	Members: 5.8 million Deferred members: 9.0 million Beneficiaries: 2.9 million	0.2 million	0.9 million	0.5 million (estimated.)	3 million policies DB 12.6 million policies DC with guarantee	12 million
Total assets at end 2011 (current regime)	14.91 billion DB-type of plans 1.13 billion DC plans	€ 122 billion	€ 26 billion	€42 billion	€831.3 billion	€ 25.3 billion	€ 13.1 billion	€ 25 billion (estimated)	€ 200 billion (including 20 % personal pensions)	€1,200 billion (£1,000 billion)
Technical provisions (set 3 benchmark)	17.3 billion	€ 159 billion	€ 33 billion	€100 billion (excluding benefit reductions) €53 billion (including benefit reductions)	€810.2 billion (including ex post benefit reductions)	Not available	€ 10.3 billion	Not available	Not available	€2,155 billion excluding benefit reductions (£1,800 billion)
Surplus or deficit under current regime at end 2011 (total assets - sum of total liabilities and capital requirement)	Surplus: 1.5 billion	Surplus: € 1.6 billion	Surplus: € 3.7 billion	Deficit: €24 billion	Deficit: €14.4 billion relative to total liabilities, i.e. without taking into account the capital requirement	Surplus: € 1.3 billion (estimated)	Surplus: € 2.2 billion	Surplus: Not available but > 0. The foundation must either be fully funded or combined with book-reserves and covered in full by credit insurance	Surplus: € 45 billion (including 20 % personal pensions)	Deficit: €350 billion (£290 billion)



	BE	DE PK	DE PF	IE	NL	NO, (IORPs only)	SE Pension funds	SE Pension foundations	SE Life insurance with Art 4	UK
Type of benefit (pension/lump sum)	Mainly lump sum.	Mainly whole life pensions in case of retirement or disability, with contingent spouse's pensions. Sometimes payments of a lump sum, often as an alternative to whole life pension.	Mainly whole life pensions in case of retirement or disability, with contingent spouse's pensions.	Mainly whole life pensions (with option to for part of the pension to be commuted to lump sum at retirement).	Whole life pensions in case of retirement or disability, with contingent spouse's and child pensions.	Whole life pensions in case of retirement or disability, with contingent spouse's and child pensions.	Mainly annuities for life, with partial option to commute to an annuity for a fixed number of years, not less than five. Lump sums not allowed. 47% DB 53% DC with guarantee	Mainly annuities for life, with partial option to commute to an annuity for a fixed number of years, not less than five. Lump sums not allowed. DB.	Mainly annuities for life, with partial option to commute to an annuity for a fixed number of years, not less than five. Lump sums not allowed. 33% DB, 67% DC with guarantee	Mainly whole life pensions (with option to for part of the pension to be commuted to lump sum at retirement), with pension increases and contingent spouse's pensions.
Do technical provisions include guaranteed pension increases?	Only where included under scheme rules.	Yes, where IORP guarantees pension increases.	Yes, where IORP guarantees pension increases.	Only where included under scheme rules.	Only where included under scheme rules.	No, future pension increases must be financed by related premium contributions.	Yes, where pension increases are guaranteed, which is rare outside plans for government and municipal employees.	Yes, where pension increases are guaranteed, which is rare outside plans for government and municipal employees.	Yes, where pension increases are guaranteed, which is rare outside plans for government and municipal employees.	Yes, statutory requirements or where included under scheme rules.
Do IORPs provide discretionary/conditional/mixed benefits as described in the QIS technical specifications?	Conditional benefits from profit sharing, but very limited.	Conditional and mixed benefits were reported, but no discretionary benefits.	Conditional and mixed benefits were reported, but no discretionary benefits.	Not material.	Most IORPs provide mixed benefits. Conditional and discretionary benefits do exist, but are rare.	Conditional benefits from profit sharing.	No	No (do not directly provide benefits)	Conditional benefits exist in participating (but not in mutual) Art 4 undertakings.	Yes, some schemes provide discretionary benefits – but not material for overall UK numbers. Conditional/mixed benefits are rare.

	BE	DE PK	DE PF	IE	NL	NO, (IORPs only)	SE Pension funds	SE Pension foundations	SE Life insurance with Art 4	UK
Are ex post benefit reductions allowed under national law?	No	Depending on (ex-ante) benefit adjustment mechanism.	Benefits should be covered in full by the German Pension Protection Scheme (Pensions-Sicherungs-Verein).	Only with consent of supervisor.	Only as a last resort mechanism, after all other recovery measures have been fully used and the IORP is still not recovered.	No	Related to IORP, not employer and only if individual members consent.	No (do not directly provide benefits).	Related to company and not employer and only if individual members consent.	No -only if individual members consent.
Can benefits be reduced in cases of sponsor default?	Accrued benefits cannot be reduced.	Depending on (ex-ante) benefit adjustment mechanism.	Benefits should be covered in full by the German Pension Protection Scheme (Pensions-Sicherungs-Verein).	Only with consent of supervisor.	Not if the IORP is solvent. The benefits are based on premiums paid and are guaranteed by the IORP.	Accrued benefits should be fully covered/ funded by the IORPs which also are demanded to be solvent at all time.	Not if the IORP is solvent. The benefits are based on premiums paid and are guaranteed by the IORP.	The foundation should be fully funded or covered in full by credit insurance. But yes, if not covered by credit insurance and the assets of the presumed fully funded foundation and insolvent employer are not enough.	Not if the undertaking is solvent. The benefits are based on premiums paid and are guaranteed by the undertaking.	Yes, but only when the IORP is liquidated and where there are not enough assets to provide full benefits.

	BE	DE PK	DE PF	IE	NL	NO, (IORPs only)	SE Pension funds	SE Pension foundations	SE Life insurance with Art 4	UK
Are sponsors legally required to compensate for pension deficits?	Yes	Yes	Yes	No	No	Not directly, but some part of the employers/ sponsors do have obligations according to pension benefits/ schemes.	For DB schemes with specified conditions of operation for sponsor support, the sponsor support is considered legally enforceable, but not otherwise required by law.	Yes	Not relevant	Yes. Additionally in cases where employers leave a scheme with a deficit they must make shortfall payments at buy-out cost which becomes a statutory debt on the employer.
What forms of sponsor support are available?	Increases in contributions Claims on the sponsor	Increases in contributions Subsidiary liability of the sponsor Claims on the sponsor	Increases in contributions Subsidiary liability of the sponsor Claims on the sponsor	No statutory obligation Voluntary contribution agreements and contingent obligations common	No statutory obligations. Sponsor can agree to provide specific sponsor support in the financing agreement with the IORP.	Increases in contributions (but not mandatory)	Increases in contributions Claims on the sponsor	Increases in contributions	None reported	Increases in contributions Contingent assets on the sponsor Claims on the sponsor Payments from entities connected or associated with the sponsor (via Financial Support Directions and Contribution Notices)
Main legislation for current funding	Law on IORPs (27/10/06)	Act on the Supervision of Insurance Undertakings (Versicherungsaufsichtsgesetz – VAG)	Act on the Supervision of Insurance Undertakings (Versicherungsaufsichtsgesetz – VAG)	Pensions Act 1990 (as amended)	Pensioenwet.	Insurance Act	Benevolent Societies Act	Safeguarding of Pension Provisions Act	Insurance Business Act	Pensions Act 2004

	BE	DE PK	DE PF	IE	NL	NO, (IORPs only)	SE Pension funds	SE Pension foundations	SE Life insurance with Art 4	UK
What is the average recovery plan length for IORPs with deficits?	Recovery plans for short term provisions (i.e. vested reserves): 1 year Recovery plans for long term provisions (vested reserves + buffer): 5 years.	No recovery plans are in place.	No recovery plans are in place.	Typically 10 years.	Legal recovery plan length is 3 years for funding deficits and 15 years for reserve deficit.	No recovery plans are in place.	No recovery plans are in place. Deficits are not allowed. Liabilities must be covered by suitable assets.	No recovery plans are in place.	No recovery plans are in place. Deficits are not allowed. Liabilities must be covered by suitable assets.	Varies by scheme – currently around 9.5 years on average.
What is the current approach for calculating technical provisions?	2 types: - short-term provisions: vested reserves determined by SLL (ABO, 6%) - long-term provisions: short term provisions + buffer in function of expected return and risk profile.	The calculation of technical provisions reflects the nature and conditions of the pension promise of the IORP. In principle the calculation has to be prospective.	The calculation of technical provisions reflects the nature and conditions of the pension promise of the IORP. In principle the calculation has to be prospective.	Accrued benefits only (including allowance for statutory revaluation on deferral). Assumptions set out in regulation.	Accrued benefits only. Assumptions set out in regulation.	Accrued benefits based on present individual salary and base amount. The principles also have to be prospective and specified/ announced to FSA (Norway).	Future contributions are generally included in technical provisions for DB pensions but not for DC pensions.	Future contributions are generally not included in technical provisions.	Future contributions are generally not included in technical provisions.	Accrued benefits only (including allowance for future salary increases). Assumptions must be prudent.

	BE	DE PK	DE PF	IE	NL	NO, (IORPs only)	SE Pension funds	SE Pension foundations	SE Life insurance with Art 4	UK
What is the typical discount rate for current technical provisions?	Varies by scheme, on average 5% (range 2 - 6%)	Varies by scheme	Varies by scheme	Varies by period to retirement between current AAA euro rates to 7.25% p.a.	Discount rate curve based on interbank swap rates, with allowance for UFR.	Varies between the IORPs and down to a policy level from 2.5% to 3.7% (fix), with an total average at present time at 3.2% (decreasing)	A discount rate curve that is based on the average between the government and the covered bond curve, extrapolated from the last market point (3%)	3.5% for foundations without credit insurance 4% for foundation with credit insurance	A discount rate curve that is based on the average between the government and the covered bond curve, extrapolated from the last market point (3%)	Varies by scheme – typically around 1% above 20 year government bond yields

# Annex C: National QIS process and system

## Belgium

### National QIS process

14 IORPs participated in the QIS on a voluntary basis, after a call by the Belgian Association of Pension Institutions (ABIP) and the FSMA. These IORPs represent about 24% of the Belgian IORPs in terms of liabilities, but are nevertheless not entirely representative for this market (see hereunder).

The QIS was conducted by the IORPs themselves, often assisted by their consulting actuaries.

Guidance was provided by a dedicated working group of ABIP and the Actuaries' association IABE. This working group held weekly meetings. These meetings intended in first instance to analyse the technical specifications and to translate them to the Belgian situation. In second instance they aimed at discussing technicalities such as how to fill in the spreadsheets. Representatives of the FSMA participated in these meetings.

Many issues that were identified in these meetings were communicated to EIOPA which provided its reply in the Q&A. The working group established also its own Q&A.

The majority of the participating IORPs provided their results by the deadline of 17 December 2012. However, due to parallel reporting obligations according to IFRS by year-end 2012, a number of IORPs could not submit their results until the second week of January.

### *Validation*

The FSMA developed an internal validation test to verify some basic input data and some key results automatically. The test showed that many IORPs did not correctly fill in the spreadsheets. In first instance, the FSMA requested those IORPs to correct the data in the sheets 'current regime' and 'common-set0'.

FSMA proceeded with the validation on the basis of the new submissions focusing on the plausibility of the results and comparing those amongst IORPs. Again this resulted in a second round of feedback communication with most IORPs requesting explanations of the results or requesting new calculations.

Finally, the FSMA made some corrections to the results itself if these changes were considered to be non-controversial.

### *Aggregation of the results*

The aggregation has been done by using the default method provided by EIOPA, i.e. multiplying the total liabilities of the IORPs in the sample so as to arrive at the level of total liabilities of the Belgian IORP market as at end 2011 (factor 4.1).

Despite the good participation rate of Belgian IORPs in this QIS, the sample is not representative of the Belgian IORP market as a whole, for 2 reasons:

1. It includes 2 large IORPs with no or no effective sponsor support, whereas most IORPs have recourse to effective sponsor support. These 2 IORPs represent 56% of the

sample in terms of total liabilities, whereas they represent 14% of the total IORP market.

2. One of these IORPs manages a specific type of pension promise for independent workers which has been qualified by the IORP as a conditional benefit, and hence as a benefit reduction mechanism. Only a very limited number of Belgian IORPs manage occupational pension provision for independent workers. This IORP represents 36% of the sample and 9% of the market in terms of liabilities.

The outcome of the QIS for these 2 IORPs has a major impact on the overall results of the QIS. The results of the QIS are hence not representative for the possible impact on Belgian IORPs.

### **Description national system**

The occupational pensions landscape is dominated by insurance companies. These pension institutions manage through group insurance contracts approximately 75% of the occupational pensions provision in Belgium. The remaining 25% of this market was at the end of 2011 managed by 219 IORPs. The QIS was only applied to IORPs and the following description only relates to the IORP-part of the occupational pensions market.

The occupational pensions market is from different points of view very heterogeneous:

- In terms of size it consists of many small to very small IORPs: the 10 largest IORPs count for almost 50% of the total assets under management; 42 IORPs have less than 100 members and beneficiaries.
- In terms of sponsor: many IORPs manage more than one pension scheme for one or more employers or for industry-wide sectors; a few IORPs manage pension provision for independent workers or manage first pillar schemes:
  - 6 industry-wide IORPs
  - 102 multi-employer IORPs
  - 85 single-employer IORPs
  - 3 IORPs for independent workers
  - 7 IORPs managing first pillar pension schemes
  - (16 IORPs being liquidated).
- In terms of type of pension scheme: Belgian IORPs may manage different types of pension schemes or a combination thereof:
  - 115 IORPs only manage DB type of schemes
  - 29 IORPs only manage DC type of plans
  - 3 IORPs only manage DC type of plans with a guaranteed return<sup>46</sup>
  - 5 IORPs only manage Cash Balance type of plans
  - 67 IORPs manage a combination of the above (hybrid).

### **Adjustment and security mechanisms**

Depending on the situation, there may or may not be security mechanisms available to the IORP:

- All IORPs which manage pension schemes offered by an employer have in principle sponsor support at their disposal, since it is a legal obligation (imposed by the social

---

<sup>46</sup> This guaranteed return is part of the pension scheme and should not be confused with the legal guarantee that sits on the employer. See further below.

and labour law<sup>47</sup>) for the sponsor to fund deficits when employees terminate employment.

- Such sponsor support is however not available for IORPs managing pension schemes for independent workers. On the contrary, those IORPs may have reduction mechanisms available, through a specific mechanism of conditional benefits.

DC types of promises in an employment context are subject to a minimum guaranteed return of 3.25% for employer's contributions and 3.75% for employee's contributions. This guarantee only exists at termination of the labour contract (when the employee leaves service or retires). The obligation to provide this guarantee is incumbent on the employer, not the institution that manages the pensions promise (insurance undertaking or IORP).

### **Description of supervisory regime**

The Belgian supervisory regime consists of the Law on IORPs<sup>48</sup> and its executing Royal Decrees and applies to all IORPs, irrespective of size or number of members.

Assets are accounted for their market value.

To determine the necessary technical provisions, pension funds must rely on prudent actuarial and economic assumptions, allowing a reasonable margin for deviations (in the negative sense) from those assumptions.

The provisions regarding the discount rate have been copied from the Directive; however most Belgian IORPs refer in their financing plans to the expected return on investments.

The prudential law distinguishes two levels in the technical provisions:

1. the short term provisions, corresponding to the vested rights as determined by social and labour law;
2. the long term provisions, corresponding to the prudent level.

It is the IORP's responsibility to prove (for instance with an ALM study) the adequacy of its assets and its future expected income to pay out its obligations in the long and short term. The supervisory authority will overlook the soundness and coherence of the methods and technical parameters used.

IORPs underwriting the liabilities themselves are subject to solvency requirements according to Solvency I, but there are no such IORPs at the moment on the Belgian market. There are also, though slightly different, solvency requirements in case of coverage of mortality and invalidity risk, and in case of IORPs operating schemes for independent workers (the so-called "solvency margin"). The calculation of these solvency margins is factor-based.

In case of funding deficits the following principles apply:

- with regard to the short term funding requirement (short term provisions + other liabilities + solvency margin if any) IORPs are expected to propose a recovery plan that will remedy the situation immediately (usually within the following year);

---

<sup>47</sup> The Law on Supplementary Pensions, 28 April 2003

<sup>48</sup> Law of 27 October 2006 on the supervision of institutions for occupational retirement provision, see <http://www.fsma.be/en/Supervision/pensions/bpv/wetteksten/wetgeving.aspx> for an English version of the law and the Royal Decree.



- funding deficits with regard to the long term funding requirement (long term provisions + other liabilities + solvency margin if any) may be resolved over a longer period (usually up to 5 years);
- for both situations a recovery plan must be submitted immediately to and approved by the FSMA.

The overall funding ratio of the Belgian IORP market at the end of 2011 was 115% with regard to the long term funding requirement and 137% for the short term funding requirement. However, 50 IORPs are below the threshold of 100% for the long term funding requirement, representing 1/3rd of the market in terms of liabilities.

## Germany

### National QIS process

In Germany the QIS was performed by real IORPs, in many cases assisted by service providers/advisors. BaFin publicly asked all IORPs to take part in the QIS. Eventually 38 German IORPs participated in the QIS (27 Pensionskassen and 11 Pensionsfonds). The market share by total assets exceeds 70% for Pensionskassen and 85% for Pensionsfonds. With regard to the number of members and beneficiaries the market share is more than 60 %.

In order to clarify further the technical specifications of the QIS, the Deutsche Aktuarvereinigung (DAV) developed a "handbook" for the IORP QIS which explained in German the technical specifications, in particular with regard to specificities (security and adjustment mechanisms) of German IORPs. BaFin was involved in this work. In addition, BaFin issued guidance for the QIS spreadsheet.

The possibility of validating the data submitted by IORPs was limited by the volume and characteristics of data submitted by IORPs, by the available resources (of BaFin as well as IORPs) and by time constraints. The validation approach was proportionate to the objectives of the QIS. In particular, even though individual IORP data should be as reliable as possible, the focus of validation was on whether the grossed up data give an appropriate view of the situation of German IORPs as a whole.

The individual submissions of IORPs were checked for plausibility. Focus was on appropriate treatment of specificities of IORPs (security and adjustment mechanisms) and on the correctness of/consistency with the current regime data submitted to BaFin by IORPs as part of regular supervisory reporting. In many cases, where issues needed clarification, IORPs were contacted and issues were discussed and in many cases IORPs sent revised data. Due to a lack of resources and time constraints some issues couldn't be resolved, but with no material impact on overall results.

Because of the differences of Pensionskassen and Pensionsfonds (in particular in current regime rules and applicable security and adjustment mechanisms), grossing up to the national level was done separately for Pensionskassen and Pensionsfonds. Because of the high market share of participating IORPs, grossing up was done mainly by multiplying with a factor based on the market share. Available information about certain data on the national level (e. g. market value of investment assets) was taken into account.

QIS data of German IORPs are generally plausible and grossed up results give an appropriate impression of situation of total of German IORPs in different sets.

## **Description national system**

In Germany there are two types of IORPs: Pensionskassen and Pensionsfonds. Both are regulated and supervised under the Insurance Supervision Act and have legal personality, either as mutual undertakings, joint stock companies or as undertakings under public law. There are about 150 Pensionskassen with assets (market value) of 122 Billion Euros and 30 Pensionsfonds with assets of 26 Billion Euros. Pensionskassen and Pensionsfonds have 7.3 Million members, the number of beneficiaries is 1.5 Million. About one third of German IORPs have a balance sheet total of less than 100 Million Euros.

In their statutory accounts, in general Pensionskassen show book values of technical provisions and assets. Accounting rules for the majority of products offered by Pensionsfonds are based on market values for assets and on technical provisions discounted with a discount rate derived from the expected return on assets of the Pensionsfonds. Since Pensionskassen are obliged to use fixed discount rates which include additional safety margins the discount rates used by them are generally lower than those used by Pensionsfonds.

Pensionskassen and Pensionsfonds are, pursuant to national law, subject to solvency requirements according to Solvency I, based on the statutory balance sheet. The use of recovery plans with regard to technical provisions is very restricted by supervisory law. Pensionskassen have to be fully funded at all times. For Pensionsfonds underfundings of more than 10 % of technical provisions must be made good immediately, for deficits of up to 10 % recovery plans up to 10 years are possible. At the end of 2011 (the reporting date of the QIS) all IORPs were compliant with funding requirements related to technical provisions and only three were not compliant with solvency capital requirements.

## **Adjustment and security mechanisms**

Pursuant to German social and labour law only defined benefit schemes are allowed. In some schemes for a part of the assets the investment risk is borne by members in the savings period. Those assets are reported as "dc assets" in the QIS.

German IORPs dispose of different forms of sponsor support. In addition, some Pensionskassen dispose of an ex-ante benefit adjustment mechanism, i.e. based on a contractual arrangement concluded beforehand they cut benefits in case of certain events. This means that the benefits subject to this mechanism are considered conditional within the QIS and have a loss-absorbing capacity. Both sponsor support and ex-ante benefit adjustment mechanisms are taken into account only implicitly in the current supervisory regime.

The German PPS, the PSVaG, is applicable only for Pensionsfonds. The PSVaG is an institution responsible, based on German law, for protecting corporate pension schemes against insolvency of the sponsor. As at 31 December 2011, approximately 4.1 million pensioners and roughly 6.3 million persons with pension entitlements were covered by insolvency protection of PSVaG. Employers who have selected certain types of corporate pension schemes (not only Pensionsfonds) are required by law to pay contributions to the PSVaG. Member companies of PSVaG currently number approximately 93,000. These employers encompass the major part of the German economy, inter alia nearly all major corporate enterprises in Germany, including companies listed on the DAX.

There is no cap to the contributions. Contributions are adjusted in accordance with the claims incurred to be covered by the PSVaG. The PSVaG is only triggered in case of insolvency of the employer in order to prevent moral hazard.

When the Pensionsfonds was introduced into German law in 2002, the protection by PSVaG was stipulated as part of social and labour law. This protection was also taken into account (implicitly) in the design of the supervisory regime for Pensionsfonds by allowing higher interest rates for the calculation of technical provisions and relying more on the ability and obligation of the sponsor to pay additional contributions. The benefits carried through by Pensionsfonds should be covered in full by the PSVaG which is why in the QIS the PSVaG was treated as a balancing item with full loss absorbing capacity in the calculation of the SCR.

Benefits based on profit sharing in case of with-profit-contracts are considered mixed benefits in the QIS and as having a loss absorbing capacity.

## **Ireland**

### **Description national system**

Irish occupational pension schemes are set up under a trusteeship model. Employers are not obliged to make pension provision (with the exception of some parts of the construction industry) but can oblige employees to be members of any pension arrangement that is set up by the employer.

Historically most pension provision was defined benefit, but there has been considerable change in the private sector to defined contribution, and the majority of defined benefit schemes are now closed to new members. There are over 900 defined benefit schemes in existence, which, given the population, means that the average size is small in comparison to European norms.

The design of Irish defined benefit schemes is quite homogenous. Schemes usually provide for an income in retirement with the option to commute part of this for a cash sum at retirement.

Discretionary benefits are rare in Irish schemes: traditionally a number of schemes would have provided post-retirement increases on a discretionary basis, but because of funding issues, this practice has died out almost completely.

In most DB schemes, member contributions are fixed and the employer pays the balance of cost. However, the employer is under no obligation to make these contributions, except in rare circumstances where the employer has agreed to be bound under scheme rules. Similarly, the sponsoring employer is under no statutory obligation to make good any funding shortfalls. Future benefit accrual is usually not guaranteed: in the great majority of schemes, the employer has the right to terminate accrual and contributions at relatively short notice.

The investments of Irish defined benefit schemes are held directly or through pooled arrangements. Typical investments are in bonds or equities: derivatives and more complex financial assets are not that common.

There is no pension protection fund or state guarantee of schemes or benefits.

### **National QIS process**

Because of the small size of Irish schemes and the fact that they are not-for-profit entities with no assets other than the technical reserves for member benefits, it was not

practical to ask Irish pension schemes to prepare the QIS returns. The QIS returns have therefore been prepared with the assistance of a committee of the Society of Actuaries in Ireland.

Given the homogeneity of Irish scheme design and the similar financial situation of most such schemes, it was decided to use representative data for the QIS, which effectively means treating Irish defined benefit pensions as one single IORP. This data has been checked by the participating actuaries and by the Pensions Board against their own information to ensure that it is a reasonable reflection of the situation of typical schemes.

Many modules of the QIS technical specifications are not relevant for Irish pension schemes because many of the security mechanisms are not used in Irish schemes.

Among the problematical issues that arose were:

- Sponsor support – because there is no legal obligation on employers to make good funding shortfalls, no value for sponsor support has been included in the QIS. However, in practice, many employers do in practice make significant ongoing contributions to DB schemes, which are not reflected in the calculations.
- Wind-up basis – the QIS is prepared on a going concern basis which for Irish schemes has been taken to mean that accrued benefits are linked to earnings at retirement, but no account is taken of further accruals or future contributions. However, this approach is not consistent with current Irish legislation and solvency standards, which are based on the entitlements of members were the scheme to be immediately wound up.
- A number of aspects of the QIS were found to be very sensitive to the inputs, and further analysis is needed.

## Netherlands

### National QIS process

In the Netherlands, the QIS was performed by real IORPs, in many cases assisted by service providers/advisors. De Nederlandsche Bank (DNB) invited 9 IORPs to participate, who were selected as an adequate representation of the Dutch pensions market.

In order to clarify further the technical specifications of the QIS, DNB organised a meeting with the participating IORPs. In this meeting, specific elements of the technical specifications were discussed, in order to identify how these elements could be taken into account in the Dutch context. To follow-up on this meeting, DNB set up a Q&A-process to deal with questions from the participants. Where questions directly related to the Dutch situation they were answered by DNB, where questions could also be valid for other countries they were submitted to the EIOPA Q&A-process.

The possibility of validating the data submitted by IORPs was limited by the volume and characteristics of data submitted by IORPs, by the available resources (of DNB as well as of IORPs) and by time constraints. The validation approach was proportionate to the objectives of the QIS. In particular, even though individual IORP data should be as reliable as possible, the focus of validation was on whether the grossed up data give a

plausible view of the situation of Dutch IORPs as a whole as far as this could be judged from the submitted data.

The validation process was performed along different ways; along a “high level” approach and along the analysis of the “bare” results.

- The “high level” approach looked more at a “multiple-IORP”-level and was predominantly about plausibility-checks between IORPs, by performing mutual comparisons. The plausibility-checks then looked for (expected) relations between elements of the Holistic Balance Sheet and/or the Solvency Capital Requirement. A meeting was organised with all participating IORPs to discuss the assumptions and the calculation models that were used.
- The analysis of the “bare” results was at the “single-IORP”-level and was more about plausibility-checks in relation to the characteristics of the IORP itself. Where necessary, individual IORPs were contacted to clarify outcomes. Two IORPs were asked to perform significant recalculations.

Where “high level” findings needed more research on specific IORPs (because of outliers) the validation shifted to a “bare”-result-level and vice versa.

The comparisons were often done by looking at the impacts expressed as a percentage of the (unconditional) benefits (in the current situation). By expressing the results and impacts relatively in this way, the sets and IORPs became easier to compare.

Grossing up the data of participating IORPs to the national level was done through a combination of weighting and scaling. In the weighting process, the results of individual IORPs were multiplied with specific factors representing the market share of industry-wide pension funds, company pension funds and re-insured pension funds. The factors also took into account the nature of the pensions promise, to ensure that final-pay schemes were adequately represented. The weighted results of individual IORPs were then added together and scaled up to the level of all Dutch IORPs. To ensure that the results thus collected allowed for adequate representation, control checks were performed that looked mainly at average duration, average coverage ratio and average risk profile compared to the sector.

QIS data of Dutch IORPs are generally plausible and grossed up results are plausible enough to represent the total of Dutch IORPs in this first QIS.

### **Description of national system**

In the Netherlands, three types of IORPs operate: industry-wide pension funds, company pension funds and pension funds for specific professions. All IORPs are required to have legal personality, which in practice means that all IORPs are in the form of ‘Foundations’. Given that the prudential requirements to the different types of IORPs are more or less identical, the results of the QIS are presented at the national level. At the end of 2011 (the reference date for the QIS) the total assets under management (market value) of IORPs exceeded 800 billion euros.

Accounting rules for Dutch IORPs are based on market values for assets and on technical provisions discounted with a discount rate derived from the risk-free interest rate curve deducted from inter-bank swap rates. Recently, the long end of the interest rate curve was amended by introducing the Ultimate Forward Rate. This amendment has been taken into account for the QIS exercise.

Dutch IORPs are, pursuant to national law, subject to risk-based solvency requirements, comparable to the Solvency II requirements, with a 97,5% confidence level. The solvency requirements identify an 'own funds requirement' and a 'minimum own funds requirement'. Where an IORP no longer complies with the own funds requirement, a 'long term recovery plan' must be submitted to DNB with a maximum recovery period of 15 years. Where an IORP no longer complies with the minimum own funds requirement, a 'short term recovery plan' must be submitted with a maximum recovery period of 3 years.

### **Security and benefit adjustment mechanisms**

The core principle governing security mechanisms and adjustment mechanisms in the current Dutch framework is that there is no specific obligation to use them. It is up to the pension fund to decide which mechanism to use, under what circumstances and to what degree (as long as the ambitions and requirements with respect to the pension-results and possible recovery plans are fulfilled). Sometimes, pension funds use internal guidance to improve consistent treatment of the use of mechanisms, an example of which is the use of gliding scales or stepped approaches that can be used for deciding on the granting of indexation.

The QIS technical specifications recognise the existence of such discretionary powers, but do not contain any concrete calculation modelling for them. For the purposes of this QIS and because of the little time, participating IORPs had to explore any sensible idea (as far as such an idea would exist) to model such discretionary policy elements themselves, Dutch IORPs therefore decided to ignore such uncertainties in the calculations by assuming that they would never use their discretionary powers. This means that the relevant items in the holistic balance sheet do not reflect the accurate value.

In the Dutch pensions sector, indexation is typically non-unconditional. Most IORPs strive to index accrued benefits according to certain benchmarks (in most cases the benchmark is either price inflation or wage inflation). However, indexation is typically not guaranteed for the future. As mentioned previously, gliding scales or stepped approaches are often used as internal guidance for the decision-making around the granting of indexation, but there is always a discretionary power for the IORP to deviate from the adopted approach. In QIS-terms, this means that the (future) Dutch indexation is mostly qualified as 'mixed benefits'. Once indexation has been granted, the benefits from indexation are unconditional and transferred to the 'unconditional benefits'.

Dutch IORPs dispose of different forms of sponsor support. The financing agreement between the IORP and the plan sponsor must set out the obligations of the plan sponsor regarding the scheme financing. This financing plan typically includes the obligation for the plan sponsor to pay the regular premiums. In addition, the financing agreements describe how the requirements are met to always obtain the premium that is legally needed to cover all IORP-costs (e.g. how to increase -or decrease- the regular premiums, within specific boundaries). A limited number of financing agreements includes concrete promises from the plan sponsor to cover certain funding deficits. However, in many cases there is no concrete obligation (though often there is an intention) for a plan sponsor to provide additional contributions (on top of the regular premiums) or to cover funding deficits. Where an IORP needs additional funding, plan sponsors can decide on a case-by-case basis (for instance at the moment that a recovery plans has to be set up) whether or not they will supply that funding.

The Dutch approach to sponsor support can, in most cases, be classified as 'limited conditional' for the purposes of this QIS. This implies that, in the context of this QIS, the value of sponsor support could have been set to '0'. However, considering that for many pension schemes there is a (realistic) expectation that the sponsoring undertaking will provide additional funding in underfunding situations Dutch IORPs have included also the expected value of sponsor support in these QIS calculations.

Dutch IORPs dispose of an ex-post benefit reduction mechanism, considering that the Dutch Pensions Act allows IORPs to reduce accrued benefits as a last resort mechanism. This means that before accrued benefits can be reduced, pension funds need to have tried all other security and policy mechanisms, but concluded that it is not possible to recover within the existing requirements without reducing benefits.

Within the QIS, there is no possibility to differentiate between the moments on which various security and adjustment mechanisms are used. Therefore, IORPs have used 'mechanic limits' to indicate when they would 'need' to reduce accrued benefits. Thus the possibility is ignored that an IORP may find alternative ways of funding to prevent a benefit reduction. Other possibilities that are thus ignored are potential regulatory and/or supervisory responses such as temporarily easing the quantitative requirements for financial institutions, for instance by allowing for longer recovery periods or by introducing a waiting period before an announced necessary benefit reduction would actually be executed (both represent possibilities that have actually been used in the Dutch Financial Assessment Framework in 2009). These variables are not reflected in the QIS results.

## Norway

### National QIS process

Finanstilsynet (The Financial Supervisory Authority of Norway) asked the seven largest pension funds to take part in the QIS exercise. These seven pension funds did also participate in a separate QIS5 related to Solvency II in 2010, and therefore have some prior experience doing QIS calculations. The QIS was performed by the pension funds themselves with assistance of service providers.

In Norway 88 individual pension funds are currently operating. The pension funds participating in this QIS exercise represent 12 percent of the total group defined benefit pension scheme market (including life insurance undertakings) and 56 percent of the group defined benefit pension scheme market for pension funds only. Three of the funds provide pensions to public sector employees where the sponsors are Norwegian municipalities. The other four pension funds provide pensions for employees in the private sector where the sponsors are large companies in the private sector, where three of them are listed on the Oslo Stock Exchange.

The validation of the data submitted by the participants was limited by the characteristics of data and by time constraints. The validation approach has been proportionate to the objectives of this QIS. The data submitted by the pension funds were reviewed for plausibility. In the validation process, the main focus was on the reporting of the current regime data and the calculation of capital requirements. Finanstilsynet has not been able,

due to time constraints, to investigate the models used for calculating technical provisions in great depth.

The pension funds or the service providers were contacted by Finanstilsynet when issues needed to be clarified. In most cases, the data was corrected either by the pension funds themselves or by Finanstilsynet.

The pension funds participating in this QIS exercise are similar in nature and have the same security and adjustment mechanisms. The results presented in this report represent the aggregate of the data of participating pension funds without scaling up to the national level.

### **Description national system**

Pension funds are regulated and supervised under the Insurance Supervision Act and are separate legal entities. The regulation emphasizes that pension funds are separate entities with their own boards and independent from the sponsoring undertaking. In general, the pension funds are currently subject to the same regulation as the life insurance undertakings, partly due to the fact that there is direct competition between pension funds and life insurance undertakings in the group defined benefit pensions market.

The accounting rules for the majority of products offered by pension funds are based on market values for assets and on technical provisions discounted with a discount rate equal to the contractual guaranteed interest rate. The contractual guaranteed interest rate varies from 2.5% to 3.7% for the seven pension funds participating in this QIS exercise.

The pension funds are subject to capital requirements according to Solvency I and Basel I. Pension funds have to be fully funded at all times. At the end of 2011 all pension funds were compliant with the current funding and capital requirements.

Occupational pensions are supplementary to pensions from the National Insurance Scheme. As of January 2006, a minimum level of occupational pensions is mandatory. Employers must either have a defined contribution or a defined benefit pension scheme. Defined contribution schemes are offered by banks, life insurance undertakings, pension funds and companies that manage securities funds. Defined benefit schemes are offered by life insurance companies and pension funds. The pension guaranteed to the individual employee is normally a percentage of their expected final salary at retirement, e.g. 66% (including the expected state pension (National Insurance Scheme)).

The group defined benefit pension scheme used to be a traditional product with profit sharing, but became fee-based following changes to the law that came into effect in 2008. Fee-based means that the pension funds earnings are based on fees that are billed upfront. Risk coverage, typically in the event of disability or mortality which leads to a spouse- and orphan pensions, is an integral part of the product. Specific premiums for covering interest rate risk and biometric risk can be repriced annually by the pension fund. Employers in the private sector may terminate their defined benefit scheme. This will lead to paid-up policies with profit sharing instead of further premium payment.



## **Adjustment and security mechanisms**

### *Sponsor support*

Finanstilsynet has not accepted sponsor support as an asset or ancillary own funds in this QIS exercise as there is no legal binding agreement between the pension fund and the sponsoring undertaking requiring the sponsor to inject capital when the pension fund is not fully funded.

### *Ex-post benefit reductions*

Neither national law nor regulation allows for ex-post benefit reductions as a measure of last resort. If the pension fund is no longer able to provide the benefits it originally promised, the sponsor is requested to inject necessary capital. If the sponsor is not able or willing to inject the necessary capital, the pension fund would be subject to public administration by Finanstilsynet. No pension protection scheme exists in Norway, so if the pension fund is no longer able to provide the benefits it originally promised, this will result in reduced benefits for the members. However, for employees in the public sector, the pension promise is regulated in the collective agreement, which means they will have a direct claim on the municipality if the pension fund fails.

### *Conditional benefits*

Benefits based on profit sharing for the with-profit contracts are considered as conditional benefits in this QIS exercise. The conditional benefits have a loss absorbing capacity and results in a lower net solvency capital requirement.

Below, there is an overview of the different loss absorbing funds available according to the Norwegian insurance regulation:

The fluctuation reserve reflects unrealized gains on equities and bonds. The value may be reduced following the scenarios in each sub-module. Since the fluctuation reserve is conditionally allocated to the policyholders and beneficiaries, the reserve will be considered as a part of the conditional benefits and not as a part of the unconditional benefits. Accordingly, the fluctuation reserve should be taken into account in the scenario-based calculations in each sub-module as a risk mitigating effect. An unrealized gain on an equity investment (reflected in the fluctuation reserve) will thus reduce the partial capital requirement for equity risk related to this investment.

Supplementary provisions reflects investment return surplus (above the guarantee) that is set aside as a buffer against investment losses in later years (subject to certain restrictions). Since the supplementary provisions are conditionally allocated to the policyholders and beneficiaries, they will be considered as a part of the conditional benefits and not as a part of the unconditional benefits. Supplementary provisions corresponding to the annual interest rate guarantee may be taken into account in the sub-module calculations as a risk mitigating effect of future profit sharing. Supplementary provisions available to cover deficient return the first year may be considered in several sub-modules, for example the equity risk and property risk modules.

Risk equalisation fund reflects surplus related to biometric factors. This is considered as an own fund item in the accounts. The fund is not available to cover losses other than losses related to pension liability risk in a going concern.

### Risk mitigating effect of future profit sharing

Finanstilsynet considers that the Norwegian insurance regulation in general do not allow the pension funds to change the future bonuses due to an adverse scenario (given that the provisions for future bonuses reflect the minimum requirements). An exemption from this is the calculation of the interest rate risk related to the liabilities when the estimate of future bonus is calculated by using the risk free interest rate curve.

In addition, there might be a risk mitigating effect of future profits related to pension liability risk, based on the fact that current regulation to some extent allow using profits in the next years to gradually (i.e. within a certain time frame) increase the technical provisions to the required level.

Finanstilsynet found it difficult to evaluate the use of loss absorbing capacity against the conditional benefits. This is due to the fact that the use of the conditional benefits in a scenario based calculation will presumably give a reduction in the capital requirement that is lower than the overall conditional benefits available (correlation effects). However, multiple use of the same fund in different sub-modules may on the other hand overstate the loss-absorbing capacity.

## **Sweden**

### **National QIS process**

#### *Pension funds and Art 4 insurance companies*

10 pension funds (tjänstepensionskassor) and 9 insurance companies applying Art 4 of the IORP directive with defined benefit and hybrid (defined contributions with guarantee) occupational schemes have been invited to participate in the QIS.

9 pension funds participated, accounting for more than 90% of the total assets of occupational pension funds. The results are therefore aggregated without any scaling factor. Finansinspektionen have completed the individual spreadsheets based on regular reporting (Traffic Light stress test, annual reports etc.) and additional calculations carried out by the pension funds.

Of the invited Art 4 insurance companies, one company participated and filled in the spreadsheet. It is however not included in the quantitative results for confidentiality reasons. A limited set of qualitative comments on results are included in the final report.

The participating IORPs were not requested to apply matching adjustments as the specifications were not available at the start of the QIS.

#### *Pension foundations, with or without credit insurance*

In addition we have collected some quantitative data (only one scenario with partial results) for pension foundation IORPs including more than 100 members with credit insurance supplied by PRI Pensionsgaranti. They correspond to an estimated share (of total assets) of the pension foundation IORPs with credit insurance by PRI of more than 90%.

No quantitative impact study for pension foundation IORPs without credit insurance (40 foundations with more than 100 members) has been made. The reason being lack of data as there is no regular reporting and the foundations are only partially supervised by Finansinspektionen.

## **Description national system**

### *Pension funds and Art 4 insurance companies*

Of total assets in the participating pension funds, DB account for approximately 47 % and hybrid schemes (DC with a guarantee) for approximately 53 % respectively. The pension funds were asked to respond to a number of qualitative questions regarding liabilities and possible sponsor support (legal basis, conditionality and applicability, rather than quantity available).

Since all liabilities are unconditional in all pension funds as well as in mutual insurance companies with Art 4 insurance business, sponsor support is the only adjustment or security mechanism available in some of the participating Swedish IORPs. Several pension funds reported possible sponsor support available for defined benefit pension obligations. For most of them, sponsor support was considered legally enforceable and was included in the quantitative part of the QIS. The quantification was based on the single employer and sponsor for single employer pension funds, and on the largest sponsor for multiemployer pension funds.

No adjustment or security mechanisms were reported by the participating insurance company.

### *Pension foundations, with or without credit insurance*

All but a few of pension foundations are DB schemes, and all pension obligations are unconditional. Sponsor support applies for all pension foundations. A pension protection scheme in the form of credit insurance only applies to (some) pension foundations and book reserves (not as such included in the scope of the QIS).

Although a pension foundation has a legal personality, it is the employer who has the full responsibility for fulfilling the pension benefits if the benefits have not been transferred to an insurance company or pension fund. The foundation therefore carries no pension liabilities in the accounts. Pension foundations are often combined with book reserves in order to fund the pension obligations. If the foundation does not cover all the obligations of an employer, the remaining liability has to be reserved for as book reserves and the total obligations covered by credit insurance by legal requirement. Credit insurance may also be voluntary or required by collective agreement even if obligations are fully covered by a pension foundation.

## **Description of supervisory regime (discount rates, funding requirements)**

### *Pension funds and Art 4 insurance companies*

Pension funds and Art 4 insurance occupational business value all assets at fair value. Liabilities are valued in a market-consistent way, applying a current discount rate curve, an average between the government bond curve and the covered bond (AAA) curve. The pension funds as well as the insurance companies have a Solvency 1 funding requirement of a surplus of assets over liabilities by approximately 4% of technical provisions.

Since 2006 the pension funds and life insurance including Art 4 companies report a quarterly "Traffic Light" stress test, taking into account the sensitivity to market and insurance risks of assets and liabilities. In the QIS the current higher funding requirement refers to the Traffic Light stress test. The Traffic Light Stress Test is not a strict funding requirement, but a supervisory tool for proactive supervision.

### *Pension foundations*

Pension foundations value all assets at fair value once a year. Liabilities are discounted by a flat discount rate specified by FI, based on a 12 month average of long-term government bonds, changed once a year and published in October for use the next year (3.6% for 2011, 3.5% for 2012). The pension foundations (and book reserves) that are insured by PRI are using a different flat rate of 4 % since 1995. Pension obligations have to be fully covered or transferred to an insurance company or pension fund. No solvency margin or Traffic Light stress is applied to pension foundations.

## **United Kingdom**

### **National QIS process**

The Pensions Regulator "TPR" carried out QIS calculations for 6,432 UK occupational DB pension schemes (IORPs). This is the data-set of UK pension schemes that is also used by TPR and the UK Pension Protection Fund ("PPF") when analysing pensions risk in the UK. It relates to the number of schemes in the UK as at 31 March 2011 and therefore the UK aggregate QIS results provide a comprehensive overview of the potential impact for all UK schemes.

This data-set includes:

- 342 schemes with assets in excess of £500m ("large schemes");
- 3,856 schemes with more than 100 members but less than £500m assets ("medium schemes"); and
- 2,234 schemes with less than 100 members ("small schemes").

For each scheme, TPR used actual data held by TPR (which is updated by schemes annually) to estimate total assets and technical provisions for each scheme at 31 December 2011 as specified by the QIS technical specifications. TPR also used sponsor information from sponsor accounts that have been filed with the UK Companies House information available in the public domain. For a minority of schemes where there is no sponsor information in the public domain, TPR took into account only existing recovery plan contributions when estimating sponsor support.

TPR did not require UK schemes to carry out formal UK QIS calculations. This is because TPR believed the costs to individual schemes would be disproportionate relative to the additional accuracy that could be obtained by having individual QIS calculations. TPR did, however, refine the UK numbers using additional information and comments provided by a number of large UK pension schemes including information from a simplified questionnaire prepared by TPR<sup>49</sup>.

---

<sup>49</sup> The SCR figure for example was refined following asset split details and overall liabilities and assets refined in line with survey data.

## **Description national system**

There are around 52,000 occupational private pension schemes in the UK. Of this figure, just over 6,400 are DB schemes and therefore were included in TPR's QIS calculations.

In terms of total assets and liabilities, the private sector DB UK occupational pension scheme market is the largest in Europe with around £1 trillion of pension scheme assets.

DB schemes in the UK have around 11.7 million members in total, including 2.1 million active members. Almost all schemes in this group would be potentially eligible for the UK PPF in the event there is an underfunded pension scheme upon employer insolvency.

DB schemes in the UK typically provide benefits at retirement that are linked to pensionable earnings and length of service. As a result of various legislative changes since the early 1980s, a significant part of these benefits must receive statutory pension increases in payment and, for deferred members, in the period between leaving the scheme and retirement. A number of schemes also provide guaranteed pension increases in addition to the statutory requirements. A large part of the total UK pensions liability is therefore in respect of guaranteed and statutory pension increases. This is a particular feature of the UK pensions system which is not seen to the same extent in many other European countries.

DB schemes are set up under trust. Each scheme has a board of trustees that are responsible for administering the plan, making investment decisions, and agreeing contributions to be paid by scheme employers.

For the last seven years, TPR has produced detailed reports on the level of assets, liabilities and risks faced by UK DB schemes. According to TPR's most recent publication (Purple Book 2012), these schemes had about £1 trillion of pension assets at 31 March 2012.

## **Description supervisory regime**

UK DB schemes are subject to the Pensions Act 2004 which contains measures for UK IORPs to comply with the current IORP Directive. In relation to scheme funding:

- Pension schemes are required to carry out full actuarial valuations at least once every three years. Trustees are also required to receive an annual actuarial report to confirm whether or not any changes are needed to recovery plans.
- Under Part 3 of the Pensions Act 2004, every scheme is subject to the statutory funding objective which is to have sufficient and appropriate assets to cover its 'technical provisions.'

The 'technical provisions' are an estimate, made on actuarial principles, of the assets needed at any particular time to make provision for benefits already considered accrued under the scheme using assumptions prudently chosen by the trustees – in other words, what is required for the scheme to meet the statutory funding objective on a given date. These include pensions in payment (including those payable to survivors of former members) and benefits accrued by other members, which will become payable in the future, including allowance for future indexation of accrued amounts as appropriate.

UK guidance requires trustees to form an objective assessment of the sponsoring employer's financial position and prospects as well as his willingness to continue to fund the scheme's benefits (the employer's covenant). This will inform decisions on both the technical provisions and any recovery plan needed.

Under Part 3 of the Pensions Act 2004, where there is a funding shortfall at the effective date of the actuarial valuation, the trustees must prepare a plan to achieve full funding in relation to the technical provisions. The plan to address this shortfall is known as a recovery plan. Trustees are required to agree recovery plans with scheme employers, and recovery plans must be submitted to TPR for approval. TPR has powers to ask Trustees and employers to revise recovery plans if they are considered to be inappropriate. TPR also has powers to intervene in the events trustees and employers cannot agree on a recovery plan.

The recovery plan length is the time that it will take for a scheme to recover any shortfall at the effective date of the actuarial valuation, so that by the end of the recovery plan it will be fully funded in relation to the technical provisions. Trustees should aim for any shortfall to be eliminated as quickly as the employer can reasonably afford. What is possible and reasonable, however, will depend on the trustees' assessment of the sponsoring employer's covenant. This means that schemes are allowed to set their own recovery plan length. However, TPR will consider whether the flexibility in the funding framework including the length of the recovery plans has been used appropriately.

TPR's most recent published data shows that around one-half of DB schemes have a recovery plan length of between 5 and 10 years (with a median of 8 years), 5% of DB plans have a recovery plan length of more than 17 years; and over 5% have a recovery plan length of less than one year

In addition, TPR expects trustees to adopt an integrated approach to scheme funding and risk management. As part of their due diligence, trustees are expected bring together information and advice on the investment, covenant and actuarial strands to inform a complete financial management plan that takes into account the material risks in relation to the scheme and the mitigations that are in place.

## **Adjustment and security mechanism**

### *Pension Protection Fund (PPF)*

The PPF was established under the Pensions Act 2004 to provide compensation to members of eligible DB pension schemes, when there is a qualifying insolvency event in relation to the employer, and where there are insufficient assets in the pension scheme to cover the PPF level of compensation.

Since 2005, there have been around 800 claims on the PPF. Schemes with fewer than 100 members accounted for 49% of the claims since 2005. The manufacturing sector contributed to 44% of the total claims.

The level of compensation provided by the PPF is usually less than the level of benefits promised to members under scheme rules. 100% of benefits are provided to members over Normal Retirement Age ("NRA"). Members below NRA receive roughly 90% of accrued benefits (up to a cap). The PPF also typically provides lower pension increases than under scheme rules. Pensions in respect of service prior to April 1997 are not increased once in payment; and pensions in respect in service after April 1997 increase in line with Consumer Price Inflation up to a maximum of 2.5% pa.

DB pension schemes in the UK are required to pay an annual levy to the PPF. The levy is linked to the size of the scheme and level of risk in the scheme (based on level of underfunding, strength of the scheme sponsor and asset allocation). For 2011/12, total levy payments were expected to be around £600 million.

As at 31 March 2012, the PPF had assets of £9 billion and was providing compensation to 58,000 members, with an average compensation of £4,024 pa. The PPF also has an additional 71,000 deferred members for whom pensions have not yet commenced.

Before transferring into the PPF, all schemes go through an assessment period to determine their ability to pay PPF levels of compensation. The PPF's Annual Report and Accounts 2011/12 show that there were 293 schemes in assessment at 31 March 2011 compared to 369 at 31 March 2012. The schemes in assessment at 31 March 2012 had total assets of £6.5 billion and total liabilities (determined using the PPF measures) of £7.9 billion.

In the year to 31 March 2012:

- 68 new schemes entered and remained in assessment (e.g. following an insolvency event)
- 107 schemes transferred to the PPF
- 18 schemes had their assessment completed, but did not enter the PPF (e.g. the scheme was rescued by another employer or the application was rejected or withdrawn)

The PPF published its long-term funding strategy in August 2010. As part of this strategy, the PPF aims to be self-sufficient by 2030 (i.e. fully funded, with zero exposure to market, inflation and interest-rate risk and some protection against claims and longevity risk). The funding strategy is reviewed annually to check whether the funding objective remains appropriate and whether the PPF is on track to achieve it.

### *Benefit reductions*

Section 75 of the Pensions Act 2004 does not allow sponsoring employers or IORPs to reduce accrued member benefits unless individual member consent has been obtained. If individual member consent is not obtained then changes cannot be made (i.e. accrued rights are protected).

Benefits in respect of future service can be reduced or may be changed in nature. Trustees may do this, for example, if they cannot reach an agreement with employers on scheme funding. A statutory consultation with scheme members is also required.

Therefore, as long as there is a solvent employer supporting a pension scheme, the concept of ex-post benefit reductions does not exist in the UK.

It is only upon the insolvency of the employer that accrued benefits can be reduced when the scheme is wound up and only in cases where there are insufficient assets in the pension scheme to provide the benefits promised under the scheme rules. In this case, the trustees of the scheme would then be a creditor of the insolvent employer. In the event the scheme is wound up, the trustees would then apply the scheme assets to provide a reduced level benefits to scheme members. If the level of benefits is lower than that provided by the PPF, it may be possible for the scheme to be considered for a transfer to the PPF and for the members to receive benefits at the PPF level.

UK legislation makes it very difficult for a solvent employer to "walk away" from an underfunded pension scheme.

Under the Pensions Act 2004, any employer leaving a pension scheme (for example when it no longer employs people in the pension scheme or following a business transaction)

must pay a shortfall payment calculated on an insurance company buy-out basis. This payment becomes a statutory debt on the employer. Alternative arrangements may be agreed with the consent of the trustees and TPR.

TPR has the power to issue Financial Support Directions and Contribution Notices on employers participating in a pension scheme, or other employers (e.g. parent or group companies) associated with participating employers.