EIOPA-14-215
30 April 2014

EIOPA Stress Test 2014

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Abbreviations

BOS	Board of Supervisors
BE	Best estimate
BS	Balance sheet
ECB	European Central Bank
ESRB	European Systemic Risk Board
IMAP	Internal Models Application Process
IU	Insurance undertakings
LTG	Long-term guarantee
LY	Low yield
MCR	Minimum Capital Requirement
NCA	National Competent Authority
PML	Probable maximum loss
SCR	Solvency Capital Requirement
ST	Stress Test
TS	Technical Specifications
USP	Undertaking Specific Parameters

1. Background

1. *"EIOPA shall, in consultation with the ESRB, develop criteria for the identification and measurement of systemic risk and an adequate stress testing regime which includes an evaluation of the potential for systemic risk that may be posed by financial institutions to increase in situations of stress. This stress testing regime shall help to identify those financial institutions that may pose a systemic risk.[1]"*

2. *"Systemic risk should be defined as a risk of disruption in the financial system with the potential to have serious negative consequences for the internal market and the real economy. All types of financial intermediaries, markets and infrastructures may be potentially systemically important to some degree[2]".*

3. *"EIOPA shall, in cooperation with the ESRB, initiate and coordinate Union-wide assessments of the resilience of financial institutions to adverse market developments".* To that end, *"EIOPA shall develop the following, for application by the competent authorities[3]:*

   a) *common methodologies for assessing the effect of economic scenarios on an institution's financial position.*

   b) *common approaches to communication on the outcomes of these assessments of the resilience of financial institutions."*

4. EIOPA decided on the one hand to run an EU stress test exercise in 2014, testing market risk as well as insurance risk. On the other hand, in order to cover the objectives addressed in the "EIOPA Opinion on a Prolonged Low Interest Rate Environment"[4] EIOPA decided to extent the stress test by including a dedicated exercise.

5. The EIOPA 2014 stress test exercise will be based on the most updated knowledge of the Solvency 2 framework, including the Long Term Guarantees (LTG) measures agreed by the Trialogue Parties on the 19 of November 2013.

6. The methodologies and parameters for the EIOPA 2014 stress test have been developed in consultation with the ESRB and the coordination of the exercise is being carried out in cooperation with the ESRB.

7. In line with its Regulation, one objective of the EIOPA stress test is to assess the resilience of insurance undertakings in the EU to adverse market developments and assess the potential for systemic risk to increase in situations of stress. Additionally, the evaluation of the

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[1] Art. 23 (1) EIOPA Regulation (EU) No. 1094/2010.
[2] Recital 14 EIOPA Regulation (EU) No. 1094/2010.
[3] Art. 21 (2) b and 32 (2) EIOPA Regulation (EU) No. 1094/2010.
[4] https://eiopa.europa.eu/fileadmin/tx_dam/files/publications/opinions/EIOPA_Opinion_on_a_prolonged_low_interest_rate_environment.pdf

exercise will be based on EU wide consistency and cross border comparability of the outcomes. Therefore the EU-wide stress test is not a substitute, to any undertaking specific stress tests carried out under Pillar 2 (i.e. ORSA) when Solvency II is in place.

2. Stress Test Framework 2014

8. The stress test 2014 exercise consists of the following parts:

- Core-module - with focus on financial resilience based on
  - A. market stress-scenarios
  - B. single-factor-insurance stresses
- Low yield-module – with a focus on a low interest rate environment
- Questionnaire – relative to the other above.

2.1 Core-module on financial resilience

9. Participants shall apply the stresses proposed in the **Error! Reference source not found.** in accordance with the following paragraphs.

2.1.1 Market stress-scenario

10. EIOPA developed two hypothetic market stress scenarios jointly with the ESRB, with a view to revealing the possible effects of the main insurance sector vulnerabilities, while assuming an underlying macro environment which is cross-sectoral consistent to the fullest extent possible.

11. The market variables included are:

- Interest rate stresses for maturities of 1, 3, 5, 7, 10, 20 and 30 years[5]
- Equity stresses, for the EU-aggregate market
- Corporate bond stresses – Financials (spreads up) for the EU-aggregate market for rating classes: AAA-AA-A-BBB-BB-lower B-unrated
- Corporate bond stresses – Financials covered (spreads up) for the EU-aggregate market for rating classes: AAA-AA-A-BBB-BB-lower B-unrated
- Corporate bond stresses – Non-Financials (spreads up) for the EU-aggregate market for rating classes: AAA-AA-A-BBB-BB-lower B-unrated

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[5] For maturities whose shocks are not directly provided by the simulation exercise, a linear interpolation is applied. Shocks are applied to the relevant market rates curve (e.g. par swap rates). For other currencies (i.e. non-Euro), a derived multiplier of the euro curve is used to define the 'shifts' which need to be applied to the basic risk free curve of that currency to get to the 'stressed' curve. The multiplier designed to equal the relative change of best estimates for all currencies in each scenario compared to the baseline.

- Sovereign bond stresses for the EU countries, Japan, Switzerland and US.
- Property stresses for commercial and residential property for the EU-aggregate markets

12. The market stresses are calibrated on a consistent basis using a simulation approach that is new compared to the 2011 EIOPA methodology. The stresses defined as part of the scenarios were derived in a coherent fashion assuming a simultaneous and instantaneous occurrence of the assumed shocks. One implication is that the resulting impacts from stress in different market segments do not need to be further aggregated by means of a 'correlation matrix'.

13. EIOPA wishes to include two comprehensive, dedicated market stress scenarios reflecting the current EIOPA/ESRB assessment of prevailing systemic risks to the financial system. For that purpose these two scenarios are meant to reflect, and be triggered by, de-stabilising financial market dynamics at the global level which give rise to a worldwide shock to financial prices including government and corporate bond yields as well as equity prices. The solvency results based on the two scenarios should provide information not only about the effects of some particular set of stress conditions, but also about how sensitive these effects are to variations in the magnitude and composition of shocks.

14. Two different "shock-originating sources" are chosen, first equity markets and second the non-financial corporate bond market. This choice results in two scenarios reflecting the main exposures of the EU insurance market as assessed by EIOPA/ESRB, while the overall results for each scenario account for spill-overs across financial markets. The two scenarios are assumed to start from an exogenous shock to the respective shock originating markets, with the whole range of market factors listed above (in parag. 11) then being projected in a consistent fashion in response to the originating set of shocks. The latter are propagated and in some cases amplified across financial markets, notably for sovereign bonds and financial institutions bonds. Even countries that have not suffered high sovereign bond spreads in the recent past see some impact. The term structure of "safe" interest rates is affected modestly.

15. Specifically, the following adverse market scenarios were chosen for the 2014 EIOPA stress test and calibrated with the ECB methodology:

   a. Adverse 1: The EU equity market as a whole is assumed to be the source of distress. The shock to equity markets exerts significant spillover effects to other market segments, including corporate bond markets and government bond markets.

   b. Adverse 2: The non-financial corporate bond market is assumed to be the source of distress. The event can be interpreted as a

correction of the currently observed low levels of corporate bond spreads. Significant spill-over effects can be observed for other market segments, including sovereign bond and bank bond markets.

16. To compensate for such severe market stresses and facilitate analysis, no insurance stresses are included in the market scenarios specified in this section. However, post-hoc combination with the insurance stresses is possible, because these will be measured on a single-factor basis (see section on insurance stresses for details) and are assumed to be statistically independent of the financial market shocks.

2.1.2 Single-factor-insurance stresses

17. In the 2014 stress test exercise, and unlike in previous EIOPA stress test exercises, life and non-life stresses will be covered separately in the form of a set of single risk factor tests. The stress levels were calibrated on the basis of historical experience and hypothetical stresses designed to impact exposed business lines.

18. A set of 5 pre-described specific catastrophic scenarios (i.e. hurricane, earthquake, flood, windstorm and air plane crash) have been developed. The amount of pre-described scenarios is considered justifiable as it is expected that if at all only a few participating insurance undertakings will be exposed to all of them.

19. As the stress test will focus on the impact of stresses rather than on a pass/fail relative to some threshold two different stress levels have been specified for each stress factor – this will allow the clear identification of impacts and so allow for meaningful post-hoc sensitivity analysis.

20. For the single factor insurance stresses total aggregation is not required as all stresses are considered to be independent from each other. This will not require arbitrary pre-stress correlation assumptions, still allows for ex-post analysis on combined effects assuming a simultaneous occurrence of two or more single-factor insurance stresses.

21. For all insurance stresses participating undertakings should report results both gross and net of reinsurance recoveries. In addition, for each insurance stress, insurance undertakings should provide the reinsurance recoveries from the participant's top 5 reinsurers[6] and who those reinsurers are. The sensitivity, of both individual participating undertakings and of the European market, to the failure of a particular reinsurer in a particular scenario could then be assessed by EIOPA.

22. A description of the single-factor insurance stresses developed for the EIOPA 2014 stress test exercise is provided in section 7.2.

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[6] On group basis.

23. Table 1 below provides an overview of the proposed stress test parameters for the core stress test:

Table 1 - overview of the proposed stress test parameters for the core module

Stresses	2014 Core module Parameters	
	Adverse 1	Adverse 2
Interest Rates Stresses[7] (bps) **(shocks expressed respect euro swap rates)**		
Maturity 1y	-26	-35
Maturity 2y	-56	-42
Maturity 3y	-67	-30
Maturity 5y	-78	-9
Maturity 7y	-85	0
Maturity 10y	-91	8
Maturity 20y	-97	16
Maturity 30y	-103	15
Equity Stresses		
MSCI Europe	-41%	-21%
Corporate Bond Stresses – Financials F^{up} (bps) **(shocks expressed as spreads to 2-year German bund)**		
AAA	24	86
AA	35	150
A	101	206
BBB	316	262
BB	365	292
B and lower	420	315
Unrated	455	328
Corporate Bond Stresses – Financials covered F^{up} (bps) **(shocks expressed as spreads to 2-year German bund)**		
AAA	8	32
AA	38	63
A	48	68
BBB	69	86
BB	84	97
B and lower	93	105
Unrated	99	109
Corporate Bond Stresses – Non-Financials F^{up} (bps) **(shocks expressed as spreads to 2-year German bund)**		

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[7] Participants shall use the stressed currency specific term structures provided in the complementary spread sheet "eiopa-14-217-stress_test_2014_annex_dc1". For further reference on the methodology used, see also document "eiopa-14-218-stress_test_2014_list_technical_details_calculations_volatility_adjustment"

AAA	5	93
AA	8	126
A	14	134
BBB	48	169
BB	69	190
B and lower	96	219
Unrated	108	231
Sovereign Bond Stresses (bps) **(shocks expressed as spreads to 2-year German bund)**		
AT	41	46
BE	96	55
BG	87	104
CY	200	142
CZ	76	147
DE	0	0
DK	10	66
ES	148	65
FI	18	35
FR	44	38
GR	594	251
HR	85	105
HU	286	278
IE	217	149
IT	195	90
LT	47	136
LU	109	90
LV	82	108
MT	33	27
NL	17	37
PL	132	139
PT	282	86
RO	48	11
SE	13	56
SI	200	142
SK	45	114
UK	36	61
EU mean	121	99
EU std	127	64
IC	74	90
NO	33	112
CH	44	60
US	46	61
JP	80	125
Property Stresses		

Commercial	-49,00%	-18,00%
Residential	-17,10%	-15,70%
Non-Life Stresses	**Adverse 1**	**Adverse 2**
NatCat / ManCat	1-in-100 year event	1-in-200 year event
Provisions deficiency	1,00%	3,00%
Life Stresses	**Adverse 1**	**Adverse 2**
Longevity	10,00%	18,00%
Mortality	0.6 additional death	2 additional death
Mass Lapse Stress	**Adverse 1**	**Adverse 2**
Mass lapse	20,00%	35,00%

2.2 Low yield-module – stress test focused on low interest rate environment

2.2.1 Background and cornerstones to the exercise

24. On 28 February 2013, EIOPA published an "Opinion on Supervisory Response to a Prolonged Low Interest Rate Environment" (EIOPA-BoS-12/110).

25. In this opinion, a coordinated supervisory response to the prolonged low interest rate environment was recommended, in particular along the following three dimensions:

- scoping the challenges;
- promoting private sector solutions; and
- supervisory action.

26. As part of the first dimension, EIOPA committed to develop with the NCAs an agreed framework, to coordinate an exercise to quantify the scale, scope, and timing of the risks arising from a prolonged low interest rate environment and to collate the results for reflection back to NCAs.

2.2.2 Approach

27. The 2014 EIOPA low yield exercise will provide an assessment of the financial consequences of a persistent low interest rate environment for the European insurance market, following a two-phase-approach which will combine a bottom-up[8]- and a top-down-analysis[9], for this.

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[8] Bottom-up tests are generally run by the supervised institutions themselves using their internally developed models. An important difference to top-down tests is that the models are undertaking-specific. In the EIOPA 2014 exercise the scenarios/stresses are prescribed.

28. The first phase will involve calculations performed by insurance undertakings (i.e. therefore bottom-up) on the impact of several low interest rate scenarios on their overall balance sheet and related asset and liability values.

29. Additionally, related cash flow projections will give further information on the scope, scale and timing of the low yield challenge, i.e. based on these cash flow projections, one can determine when an insurance undertaking (IU) is faced with a net excess of insurance outflows over remaining assets. The cash flows that should be provided are those that once discounted with the relevant risk-free curve; provide the best estimate value of the technical provisions when summed. As a consequence, the exercise aims at performing the overall assessment by analyzing cash flow effects, value effects and effects on balance sheet and solvency ratios. The cash flow projections need to cover a time horizon of 60 years.

30. The respective scenarios will differ only with respect to prescribed interest rate term structures. The interest rate term structure will reflect historic and hypothetic developments possible in the context of a prolonged period of low interest rates. Participants shall use for each low yield scenario the stressed currency specific term structures provided in the complementary spread sheet "eiopa-14-217-stress_test_2014_annex_dc1".

31. This first phase of the low yield exercise will be undertaken within the timeframe of the 2014 EIOPA stress test exercise as the low yield module will be included as a separate module to this stress test exercise.

32. In a second phase, relevant outputs of the first phase will be used as a starting point for EIOPA's own top-down analysis. A top-down approach complements the bottom-up approach, and yields a quantification and analysis of the risks under a variety of assumptions about interest rate behavior, etc., both over time and across insurance undertakings. The top-down results, while requiring more abstract, simplifying and homogenizing assumptions, should be useful in assessing sensitivities, checking the reported results received from IUs, and simulating unanticipated events. Development of top-down techniques will be helpful in verifying and extending the EIOPA stress testing framework generally.

33. This 2nd phase work will be conducted at the level of EIOPA, without the direct involvement of the undertakings (i.e. top-down). However, the information request sent to IUs as part of the bottom-up exercise can and will be designed to provide inputs for the 2nd phase. No

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[9] In a top-down stress test, the supervising authorities set the macroeconomic scenario and conditions under which the test should be run, and calculate the results without the involvement of the supervised entities.

subsequent data collection should be necessary in this second phase. As part of the preparations for the exercise, NCAs are also encouraged to share techniques and experience derived from their current (if any) top-down stress tests. The main work on this 2nd phase will start only after the finalisation and validation of the first phase.

34. In addition to the scenarios 1 and 2, participants shall provide all the information requested in the reporting templates.

35. A description on the low yield scenarios developed for the EIOPA 2014 stress test exercise is provided in section 7.3.

2.3 Questionnaires

36. The quantitative analysis of the EIOPA 2014 stress test exercise is complemented by a set of questions regarding insurers' likely dynamic responses to some of the adverse scenarios. To this end, for one of the adverse market stress scenario (i.e. adverse scenario 2), the defined catastrophe scenarios, and the low yield scenarios, respective questions have been developed. The questions for the market stress scenario adverse 2 have been developed in consultation with the ESRB.

37. See spread sheet "EIOPA-14-216-ST14-Templates" for a complete set of the included qualitative questions under both the core and the low yield modules.

3. Scope, Timing and Process of the 2014 Stress Test

3.1 Scope - Criteria for the minimum market coverage rate

38. There are two main modules included in the stress test with a different scope, which address different groups of participants and potentially imply different reporting lines as stated in the paragraphs below (i.e. the core module primarily focused on groups reporting at group level and the low yield module strictly focused on solo results reported to the relevant NCA in order to reflect the idiosyncrasies of national markets and the objectives of the respective module.

39. There will be two independent groups of participants for the core- and low yield module. Participants of the core module only need to fill in the respective reporting requirements. Participants of the low yield module only need to fill in the respective reporting. The selection of the two groups lies with the NSAs but need to follow the EIOPA minimum market coverage criteria.

3.1.1 Core module - scope and market coverage

40. The core module will be conducted at the highest level of insurance consolidation. This means that where participating groups and undertakings are part of a financial conglomerate only the insurance balance sheet should be stressed.

41. In terms of scope, the aim of the core module in the 2014 exercise is to reach a market coverage rate of at least 50%, based on statutory gross written premiums by year-end 2013[10] per country in EU/EEA member states, both for the life and non-life segments. Participation of undertakings can be on solo and group level.

42. The market coverage for the core module will be calculated based on gross written premiums by solo undertakings in each market, however subsidiaries consolidated by their parent company and thus already included in the stress test via the group a priori do not need to carry out and submit a separate stress test nationally. In other words, solo undertakings being part of groups which are participating in the stress test exercise, are considered when calculating the market coverage but do not have to submit individual stress test results. This is notwithstanding decisions of national supervisors to mirror this exercise for nationally licensed entities, initiative which is encouraged for markets with a very large market share of nationally licensed entities of foreign groups. In any case, such parallel national exercises should be communicated to groups transparently.

3.1.2 Low yield module – scope and market coverage

43. In the case of the low yield module the sample will, at a minimum, cover a 50% market share, expressed in terms of gross technical provisions by year-end 2013 in each member state, and include the most important life and other relevant (from a low yield perspective) insurance undertakings (i.e., offering guarantee products). Participation in the low yield exercise will be on a solo level (i.e. responsibility of the host supervisor).

44. The participants in the core module are encouraged to also participate to the low yield exercise, but this time on a solo level, lying the selection of participants ultimately with the NSAs (i.e. can deviate from core-stress test). Further participants which may need to be added to get to the 50% market share in terms of the relevant gross technical provisions referred to above should also be added on a solo basis. A further national extension of this 50% market share target selection is, of course, possible. This could be done on a voluntary basis (i.e. by decision of the NCA) while ensuring clear communication with industry.

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[10] When year-end 2013 data is not available to NCAs for the purpose of selecting the stress test participants, then the latest reported data to the NCA shall be used indicating the reference date at which it refers to.

45. The decision on which types of business are relevant from a low yield perspective, lies ultimately with the NCAs, who are best placed to judge the characteristics of the business conducted in their respective home markets. Typically, one could expect the following types of products to be included (non-exhaustive guideline only):

    a. Life insurance products which offer fixed interest rate guarantees and/or which offer some type of (fixed) 'profit participation' to the insured.
    b. All types of annuity-products (life, non-life, health, workmen's compensation).
    c. Insurance products which tariff is calculated already taking into account a certain financial income on the outstanding reserves.

3.2 Timing

46. EIOPA is planning to launch the 2014 stress test on 30 April 2014 and results will need to be provided to the respective NCA by 11 July 2014. The submission from participants will be validated at national level until end of July followed by a European-wide validation until mid-September; the communication of results is envisaged in November 2014.

3.3 Process Milestones

47. A set of specific stress test reporting templates is provided on the launching date of the exercise (i.e. 30/4/2014). These have been developed with the attempt to be as consistent as possible with the still to-be-launched SII QRTs (quantitative reporting templates).

48. Participating undertakings get more than 10 weeks to fill in the templates and report back to their respective home supervisor (i.e. lead NCA) by 11 July 2014.

49. To ensure across-the-board consistency and quality a multilayer analysis process will follow both at national and European level; for that purpose participants need to stand-ready to reply to eventual NCAs' requests for clarifications up to the beginning of September.

4. Disclosure

50. The public report of the 2014 EIOPA stress test will not disclose individual results of the participants.

5. Valuation Basis & Technical Specifications

51. The EIOPA 2014 stress test exercise has been aligned with the schedule on the preparatory guidelines, and both the stress test package and the technical specifications developed by EIOPA for supervisory reporting purposes during the preparatory phase are to be published both on the 30 of April.

52. The valuation of the pre-stress test balance sheet will be based on Solvency 2 and so the pre and post stress figures (e.g. balance sheet, cash flows and MCR/SCR) will be based on the latest draft of above mentioned technical specifications. This decision holds for the whole stress test exercise including the low yield exercise.

53. The reference date for the exercise will be 31/12/2013 (i.e., valuations of all figures (i.e. pre- and post-stress) are requested in reference to this date).

54. For the purposes of the stress test any application of LTG measures is optional for participating undertakings. If LTG measures are being used results have to be provided with and without LTG measures.

55. Any LTG-measures shall be included in the stress test framework, in alignment with the preparatory guidelines on Solvency 2, however the following assumptions are used for the purpose of the stress test:

    a. The adjustments derived from the transitional measures both on the risk-free interest rates and on technical provisions[11] shall be calculated in the pre-stress scenario and then be kept fixed in the post-stress scenario. In a context other than the stress test context, the transitional adjustments post-stress scenario would likely be recalculated, subject to supervisory approval though. This deviation is necessary for the purpose of this stress test exercise in order to measure the economic impact of the stresses.

    b. For the low yield exercise, spreads shall be assumed constant[12] after applying the instantaneous shock on the basic risk free rate. The same assumption holds for the core module regarding the specific shock on basic risk free rate, while for the corporate and sovereign bonds the spreads are shocked separately in each scenario of the core module (in accordance with Table 1).

56. For the multi-period cash-flow analysis of the low yield-module participants should take into account future cash-flows items with a going concern assumption but without writing new business (i.e. premiums, costs, claims). Therefore cash-flows should be considered as far as they are in the scope of the boundaries defined by the technical specifications of Solvency 2.

57. Participants shall provide the cash flow projections which once discounted with the relevant risk-free curve, and summed, provide the best estimate value of the technical provisions for the low yield module and this projection needs to cover a 60 year time horizon.

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[11] Calculated in accordance with the Art. 308c and 308d of OMD-II respectively.
[12] Meaning unchanged relative to valuation before stress scenarios are applied.

58. For the stress test purpose, the use of internal models by participating undertakings is considered optional. Nevertheless participants that use internal models necessarily have to provide results based on standard formula.

59. Undertakings shall not use Undertaking Specific Parameters (USPs) for the stress test 2014 calculations.

6. Templates & Reporting Output

60. Participants in both the core and the low yield modules shall fill in only the relevant reporting templates in spread sheet "EIOPA-14-216-ST14-Templates". The templates distinguish between reporting requirements limited to the respective core module participants and those limited to the low yield module participants (i.e. only if an undertaking takes part in both modules a full reporting is required).

61. The

62. Table 2 below illustrates an overview of the content of the spread sheet.

Table 2 - Content of Reporting Templates

Content			Sheet	Required for ...
This sheet			P.Index	
Explanations on the structure and content of this spreadsheet			P.Readme	
1. Participant information			Participant	Both
2. Information on the end 2013 before stress situation				
Solvency II balance sheet and capital requirements			BS	Both
Additional information on end 2013 situation			BS+	Both
3. Core stress test scenarios using the end 2013 financial position as the starting point				
	A) Core module market stress scenarios			
	Comprehensive scenario 1		BS.CA1	Core
	Comprehensive scenario 2		BS.CA2	Core
	Questionnaire on EIOPA-ESRB market stress scenarios		CA.Q	Core
	B) Core module single factor insurance stresses			
	Single factor insurance stresses		SFIS	Core
	Questionnaire on single factor insurance stresses		SFIS.Q	Core
4. Low yield module using the end 2013 financial position as the starting point				
	Additional information on the before stress situation			
	Asset cash flows before stress		BS+.Assets(CF)	Low yield
	Liability cash flows before stress		BS+.Liabilities(CF)	Low yield
	A) Long lasting low rates for all maturities			
	Impact on balance sheet and capital requirements		BS.LYA	Low yield
	Asset cash flows post stress		BS+.LYA.Assets(CF)	Low yield
	Liability cash flows post stress		BS+.LYA.Liabilities(CF)	Low yield
	B) Atypical reverse shocked interest rate curve			
	Impact on balance sheet and capital requirements		BS.LYB	Low yield
	Asset cash flows post stress		BS+.LYB.Assets(CF)	Low yield
	Liability cash flows post stress		BS+.LYB.Liabilities(CF)	Low yield
	Questionnaire on Low yield		LY.Q	Low yield
5. Overview of results			Overview	

63. As stated above, the use of LTG measures as well as IMs are optional but the choices have direct implications in the computations needed by participants as additional valuation is required if applied (i.e. results with and without LTG-measure and for IM users always necessarily figures based on the standard formula in addition).

64. The reporting templates have been designed assuming that the majority of participants will make use of the standard formula and LTG measures. Thus the default template includes information on LTG measures and, on an optional basis, impact on the use of IM. Participating undertakings who decide not to use LTG measures or IM do not need to provide specific information refer to LTG measures o IM.

65. For the reporting requirements under each proposed stress, is fundamental the concept of "instantaneous" shocks applicable in the context of EIOPA stress testing. As the shocks implied by each scenario (i.e. single-factor insurance stress and market stress scenarios) in general are considered to happen instantaneously, and

from a financial stability perspective only the immediate results are considered of interest, the extent of valuations under each proposed scenario and respective reporting figures can be considerably reduced and limited to relevant changes. For instance, for stress test purposes, a recalculation of SCR or MCR under each proposed scenario is not required. It is offered to the participants on a voluntary basis only.

66. Specifically this means that simply any stress effects (i.e. the delta/difference)

    a. on eligible own funds and asset & liabilities for the market stress scenarios; and
    b. on eligible own funds and technical provisions for the single-factor-insurance stresses

will be reported and then be compared to the SCR and MCR figures before each proposed stress scenario is applied. This requirement also holds for IM users.

67. Valuations of the liability figures after each proposed stress scenario is applied will require changes of the underlying LTG measures (i.e. volatility adjustment) as this would allow a better comparison of the valuation figures before and after each proposed stress scenario. In the interest of the stress testing exercise EIOPA provides the risk free term structures including the value of the volatility adjustment after the proposed scenarios.

68. Participants using the LTG measures still need to report the overall effect without LTG measures before any stress is applied (impact on SCR, technical provisions and OF, i.e. not on the full balance sheet) as well as under each proposed stress scenario (not on the full balance sheet but only on technical provisions and OFs as SCR recalculation is only optional).

69. If participants want to use the matching adjustment (i.e. application is optional) they are required to estimate the effect on capital requirements and own funds in the pre-stress situation.

7. Stress Scenarios

7.1 Market stress scenarios

70. Section 2.1.1 above sets out the proposal for market stress scenarios.

71. Participants shall apply the stress in table 1 and shall answer the questions and fill in with the information requested in the accompanying reporting templates.

7.2 Single-factor Insurance Stresses

72. This section sets out the proposal for life and non-life insurance stresses, namely natural catastrophe stress and claims reserve deficiency stress.

73. The insurance stresses shall be carried out in isolation from the market stresses.

7.2.1 Undertaking specific natural or man-made event stress

74. Participants shall calculate the largest probable maximum loss (PML) for their non-life exposures of a single catastrophic event (e.g. flood, windstorm, earthquake, explosion etc.) and on a:

(i)   1-in-200 year basis; and
(ii)   1-in-100 year basis

75. Participants shall describe the event, so that an overall concentration of exposures can be identified as part of the stress test exercise.

7.2.2 Market wide defined events

76. In addition to the group or undertaking specific scenarios, participants shall calculate their sensitivity to 5 defined catastrophe events: (1) Northern European Windstorms; (2) US Hurricane; (3) Turkish (Istanbul) Earthquake; (4) Central and Eastern European Flood and; (5) Airport Crash Event. These are described in Annex 1. In general participants are expected to assess all scenarios. However, participants only need to report results to those scenarios to which they have an exposure. Hence, the number of prescribed scenarios was considered appropriate.

77. The group or undertaking specific scenario, whilst providing useful information on the key risks for individual participants, does not allow for identifying the potential concentration of risks in the European insurance industry and does not enable easy communication of the drivers of the results to external observers. The addition of a set of a number of defined scenarios overcomes these problems.

78. For each of the 5 scenarios described in Annex 1, an estimated aggregated market insured loss has been provided to assist respondents in understanding the magnitude of events for each scenario. These scenarios were developed through discussion with the major catastrophe model vendors and catastrophe experts. They were calibrated so that, in aggregate, the severity of the 5 events would be, for an insurer writing global, catastrophe exposed, insurance business, a severe stress roughly equivalent to a 1-in-200 year stress. Further guidance for assessing the impact of the defined

events is provided in Annex 3. In order to understand the drivers of the losses and how participating undertakings have assessed the vulnerability a supplementary questionnaire is provided in the reporting templates for participants to complete.

7.2.3 Provisions Deficiency Stress

79. Groups or undertakings should calculate a shortfall for all liability claims reserves (e.g. world-wide for groups). This would be based on the assumptions of 1 and 3 percentage point higher claims inflation than presumed for existing best estimate calculations. For example, where non-life insurers assume that claims costs will increase by 2% p.a. due to the impact of inflation, they would have to add a further 1 percentage points (i.e. a total of 1+2%) for the post stress calculations.

7.2.4 Proposal for life insurance stresses

80. This section sets out the proposal for life insurance stresses, namely longevity, mortality and mass lapse.

7.2.5 Longevity Stress

81. Participating groups and undertakings shall apply a stress to their best estimate mortality assumptions that would result in an uplift to the best estimate expectations of life of 10% and 18% in the stress scenarios.

82. The stress adjustments which are applied should be calibrated so that the increases in expectation of life is met at ages 65 and 75 and should be approximately met at other ages. Where the best estimate mortality assumptions comprise a base mortality table and explicit allowances for future mortality improvements the calibration should be achieved by increasing the allowance for future mortality improvements, making changes to the base table only if necessary to achieve the calibration. Where best estimate mortality assumptions make implicit allowance for future mortality improvements adjustments to reflect the stress scenario will need to be made to this table. In either case an iterative approach will probably be required to achieve the calibration.

83. The stress is based on UK mortality data, but is believed to be representative for most European insurance markets where mortality improvements have been observed hence representative for the purpose of this stress test. Annex 4 shows the mortality data sample based on mortality data from the UK including the stressed life expectation factors.

7.2.6 Mortality Stress

84. Participants shall calculate the impact of a pandemic which leads to significantly higher mortality rates. Two mortality stresses are defined as:

1. 2 additional deaths per thousand lives

2. 0.6 additional deaths per thousand lives.

85. This stress is based on a Swiss Re study[13] on the impact of a pandemic on life insurers where the above mentioned parameters were considered within the medium range of outcomes.

7.2.7 Lapse Stress

86. Participants shall apply two mass lapse stresses to their total book of life insurance policies:
1.   A 20% rate
2.   A 35% rate

87. However, participants would limit this to policies where there is a negative impact resulting in a loss upon a lapse (i.e. where they do not make a one-off profit).

7.3 Low Yield Scenarios

7.3.1 Low Yield Scenario 1: Japanese Scenario

88. This scenario assesses the impact of a long-lasting low yield scenario with low rates for all maturities.

89. For this purpose different historical Japanese interest curves have been analyzed i.e. December 2006, June 2008, December 2011 and December 2012. Finally, the December 2011 curve was chosen to reflect the long-lasting low yield scenario.

90. The swap curve is depicted below:

Figure 1– Interest Rate Curve for Low Yield Scenario 1 (complete)

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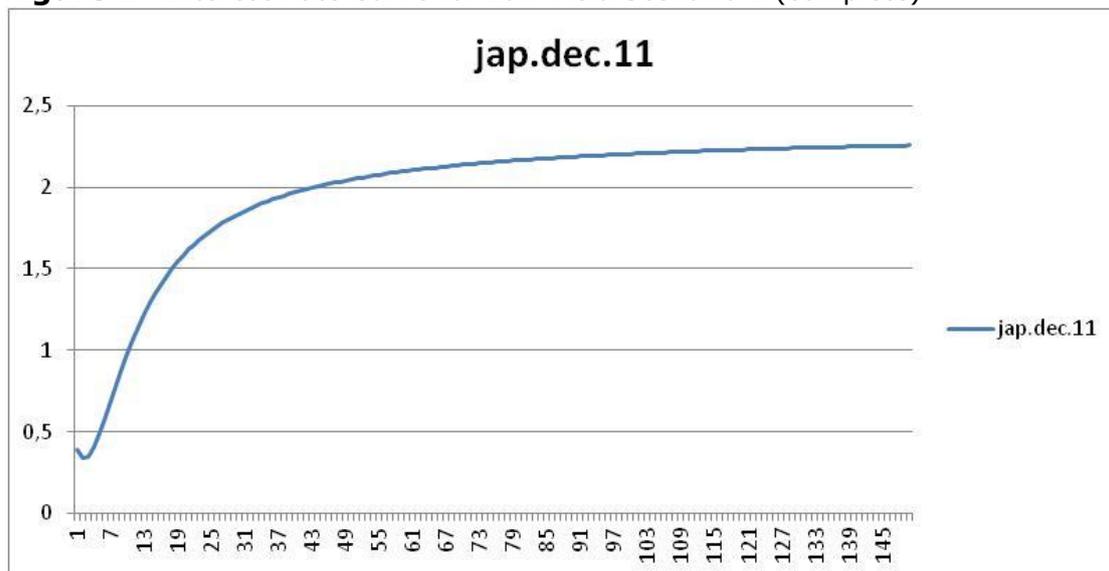
[13] See Swiss Re study "Pandemic influenza: A 21st century model for mortality shocks" (2007)

91. Zoom on first 60 years:

Figure 2 – Interest Rate Curve for Low Yield Scenario 1 (first 60 years)

92. For other currencies, a derived multiplier of the euro curve is used to define the 'shifts' which need to be applied to the basic risk free curve of that currency to get to the 'stressed' curve.

7.3.2 Low Yield Scenario 2: Inverse Scenario

93. Scenario 2 of the low yield module assess the impact of an atypical reverse-shocked interest rate curve (i.e. upwards shock for short-term maturities, downwards shock for mid- to long-term maturities). Such an atypical instantaneous shift/pivoting should illustrate unanticipated effects on asset & liability values and cash flows.
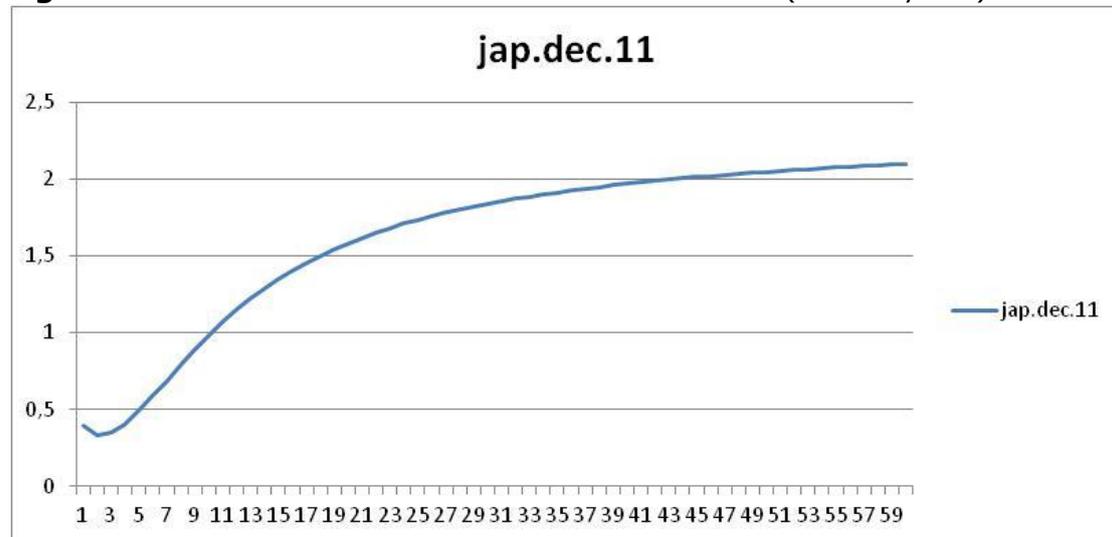
94. This scenario is in general based on a historic analysis. However, the current very low level of interest rates and the paucity of experience with a flat or inverted euro yield curve make it relatively difficult to construct a relevant and plausible hypothetical yield curve with an inverted slope. Below, however, an overview of different possibilities is given.

95. Using the 31/12/2013 swap curve as a starting point, the relevant euro curves observed at different historic dates (i.e., curves for which one would get an upward shock for short-term maturities and/or a downward shock for mid- to long-term maturities) were identified (specifically, in November 2011, December 2011, June 2012, and December 2013). Finally, the June 2012 curve was chosen to reflect the pivoting-scenario. The curve is depicted below:

Figure 3 – Interest Rate Curve for Low Yield Scenario 2 (complete)

eur.jun.12
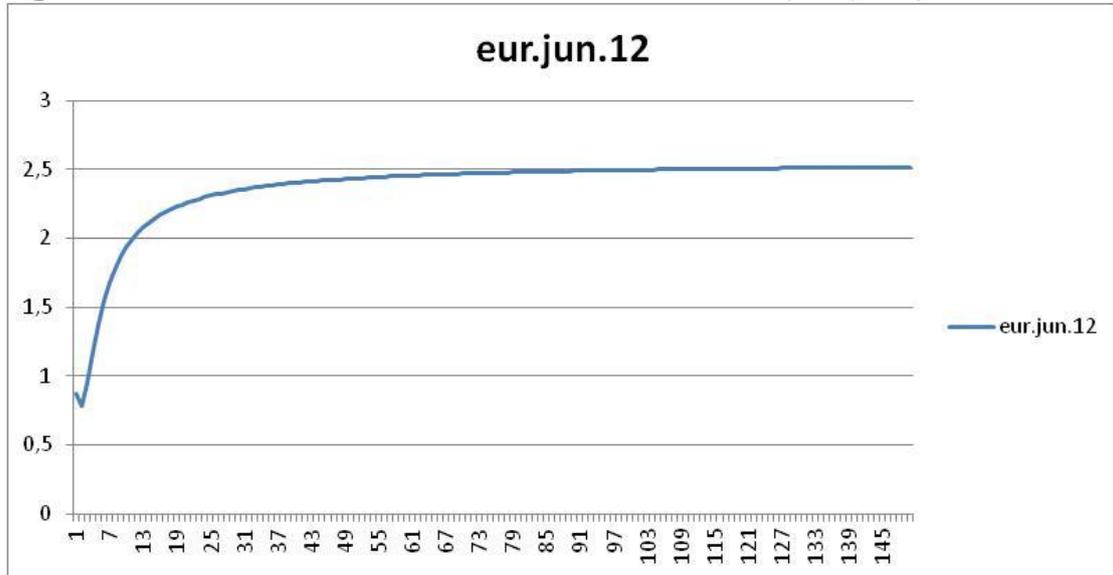
Figure 4 – Interest Rate Curve for Low Yield Scenario 2 (zoom on first 60 years)

eur.jun.12
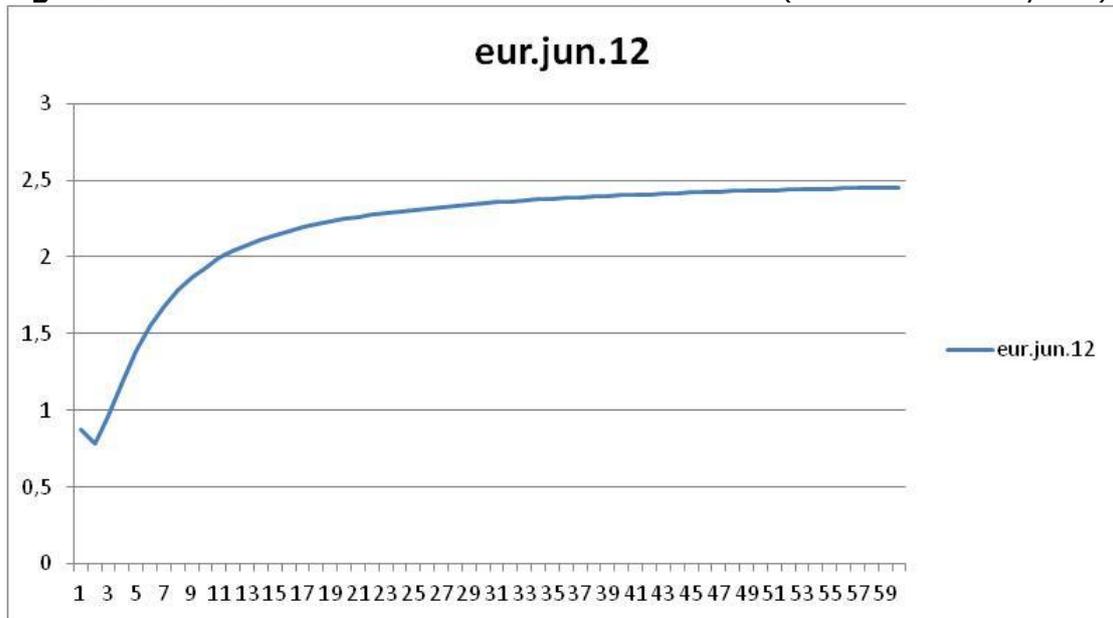
96. Using this curve, one would get an upwards shock up to the 7Y-maturity point and a downwards shock for the longer maturity points. As suggested above, for the euro curve, it is proposed to use the historic rates as a source to derive, for each maturity, the "multipliers" needed to shift the risk free curve at the reference date of 31/12/2013 to the historic rate of the chosen 'stressed' curve.

97. For other currencies, a derived multiplier of the euro curve is used to define the 'shifts' which need to be applied to the basic risk free curve of that currency to get to the 'stressed' curve.

8. Aggregation

98. The previous EIOPA stress test exercise combined insurance and market stresses aggregated through the use of a correlation matrix. This year however a dedicated insurance stress component is carried out where each stress is considered independently (i.e. single-factor insurance stresses). Also, in the 2014 stress test exercise, market risks within the scenarios have been calibrated in such a way that it is relevant to apply all market stresses as occurring instantaneously and simultaneously. However, assuming that each specific insurance stress takes place independently hypothetic post-hoc combinations of either a) various single-factor insurances stresses with each other and b) specific single-factor insurances stress with market stresses are possible without necessarily requiring correlation assumption (i.e. assuming an instantaneous occurrence).

Annex 1 Defined Catastrophe Scenarios

99.   Northern European Windstorms
       This scenario is based on a very intense January windstorm. The windstorm enters Europe from the northwest having an east-southeast direction as it passes over Ireland and southern UK before attaining an east-northeast direction over Northern Europe. The windstorm impacts severely Ireland and southern England, northern France, the Netherlands, Belgium, northern Germany and Denmark as it makes its way across Europe.

Proposed stress test scenario	Aggregated insured loss* (€bn)
Northern European Windstorm	15

100.   US Hurricane
        A Cat-4 hurricane hits southeast Florida, making landfall in Miami-Dade County with a north-eastern direction. Although losing strength when passing over Florida, the hurricane intensifies again as it passes over anomalously warm waters off the coasts of Florida and Georgia, attaining an almost parallel track to the north eastern coast of the United States. The hurricane makes second landfall on Myrtie Beach, SC as a Cat-3 causing severe damage in all coastal states. The hurricane transitions to a severe extra-tropical cyclone over North Carolina and exits land at Virginia Beach, VA. As the extra-tropical cyclone continues its north eastern path it causes severe storm surge losses to Chesapeake Bay, Maryland and the New Jersey Coast before making its third landfall on Islip, NY. The intense extra-tropical cyclone causes significant storm-surge flooding and windstorm losses in Manhattan and Long Island while large rainfall accumulations lead to major urban flooding and disruptions of the NY underground system for a period of two weeks.

Proposed stress test scenario	Aggregated insured loss* (€bn)
US Hurricane	85

101.   Turkey Earthquake (Istanbul)
        A 7.5 M earthquake occurs in the Sea of Marmara. The earthquake occurs along the North Anatolian fault, 40 miles east of Istanbul and impacts severely more than half of the city with widespread ground-shaking losses. The event is accompanied by a 7-meter tsunami from the Sea of Marmara that contributes to the earthquake losses.

Proposed stress test scenario	Aggregated insured loss* (€bn)
Turkey Earthquake (Istanbul)	20

102. Central & Eastern European Flood
A strong frontal system enters Continental Europe in April and delivers large accumulations of rainfall over Central Europe for a period of three days. The frontal system has a very slow forward speed due to a blocking from a high-pressure system situated over Eastern Europe. Due to a strong El Nino year soils over Central Eastern Europe are almost saturated and thus unable to process most of the rainfall amounts delivered by the frontal system. The result is excessive flooding over the wider Danube basin that impacts a number of major European cities. Vienna, Bratislava and Budapest are more severely affected by floods with several flood defense systems failing in these cities. Belgrade and Krakow are also significantly affected by riverine and pluvial flooding due to the high rainfall amounts.

Proposed stress test scenario	Aggregated insured loss* (€bn)
Central & Eastern European Flood	8

103. Airport crash event
This scenario involves a major incident at Charles de Gaulle Airport. An airliner approaching runway 08L/26R in poor weather conditions encounters a fatal mechanical problem and crashes through another two airliners docked at the gates of Terminal 2 and into the terminal building. There is significant loss of life and destruction of part of Terminal 2.
A consequence of this event is significant business disruption, including, but not limited to, cancelation of flights landing and taking off, inability for the airport to cope with usual volumes of passengers for a period of two months, impact of demand for travel to or from the airport, cancelation of tickets, cancelation of hotels bookings, impact on local businesses relying on the airport directly or indirectly, as well as closing Terminal 2 for one month.
The accident is deemed to have occurred due to a combination of a mechanical failure compounded by human error and poor weather conditions (severe convective storms).

Proposed stress test scenario	Aggregated insured loss* (€bn)
Airport Crash	6

Annex 2 Guidelines Defined Event Stress Templates

104. The effects of all scenarios should be considered to occur instantaneously.

105. The relevant spreadsheet in "EIOPA-14-216-ST14-Templates" should be used to summarise the quantitative impact of each scenario on the own funds. Information on reinsurance recoveries and potential management actions is also captured. Where a stress test is not relevant to your business model, or the effects are minimal and an alternative scenario is not suggested, please clearly state in the worksheet that this stress is not applicable and provide a brief justification as to why.

106. Use of Catastrophe models: It is recommended that – where participating undertakings are using catastrophe models to help assess their exposure –switches such as demand surge and clustering are turned on. Where participating undertakings do not use the default setting provided by the package this should be highlighted in the answers of the respective qualitative questions.

107. Gross aggregate losses: This amount should reflect the total discounted gross insurance loss to the firm due to each stress scenario pre- management action. It should include all first and second order effects (e.g. increase in future reinsurance premiums, etc.). If you are currently in the pre-application phase of IMAP the loss amount can be based on your internal model results. However, in accordance with the preparatory guidelines on Solvency II, additionally to results of your internal models you also would be required to provide results based on the standard formula.

108. Net aggregate losses: This amount should reflect the total discounted net of reinsurance loss due to each stress scenario pre-management action. It should include all first and second order effects. Expected recoveries should be calculated both gross and net of bad debt [14]and net of reinstatement premiums and all unavoidable costs. If you are currently in the pre-application phase of IMAP the loss amount can be based on your internal model results. However, in accordance with the preparatory guidelines on Solvency II, additionally to results of your internal models you also would be required to provide results based on the standard formula.

109. Own Funds: The post stress own funds should be based on the technical specifications after the occurrence of the specified stress.

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[14] Reinsurance bad debt refers to the provision for the risk of non-realisation of the full value projected reinsurance recoveries, for example as a result of reinsurance disputes or reinsurer insolvency.

It is expected that the base level of own funds will be reduced following the occurrence of the stress.

110. If own funds post scenario are significantly different to own funds pre scenario less net aggregate losses then please explain (in item 6) why there is a difference.

111. High level commentary on the change in Solvency ratio: Please provide comments on the change in solvency ratio observed.

112. Reinsurance Recoveries: Expected reinsurance recoveries (gross of bad debt and net of reinstatement premiums and other costs) from your five named largest reinsurers in relation to the losses from the specified stress scenario. The corresponding bad debt estimate in relation to these recoveries should also be provided. You should consider whether your reinsurance program will provide effective benefit to the defined scenarios, and whether recoveries will be made in full.

113. Probability of Occurrence: You should indicate your view of the expected probability of occurrence on any individual scenario in the next 12 months and provide information on how you have validated this view.

114. Management Actions: Where you have identified management actions to mitigate exposure further or reduce the level of the losses, these should be summarised here. Please provide the quantum of the impact that this management action would have had on the own funds.

115. Reinsurance Exhaustion: Please provide comments on any reinsurance exhaustion or recoverability issues with this scenario.

Annex 3 Calibration Basis Longevity Stress

116.

Life Office Pensioners, males, Combi

Age x	qx	px	ex		Age x	qx	AnnImp	rx	q'	p'x	e'x	e'x - ex	% increase in ex
50	0.005583	0.994417	30.39012		50	0.005583	2.5%	1.000000	0.005583	0.994417	32.67561	2.285485	8%
51	0.005646	0.994354	29.56075		51	0.005646	2.5%	0.975610	0.005508	0.994492	31.85906	2.298317	8%
52	0.005724	0.994276	28.72859		52	0.005724	2.5%	0.951814	0.005448	0.994552	31.03552	2.30693	8%
53	0.005820	0.994180	27.89398		53	0.005820	2.5%	0.928599	0.005404	0.994596	30.20554	2.311555	8%
54	0.005939	0.994061	27.05728		54	0.005939	2.5%	0.905951	0.005380	0.994620	29.36967	2.312392	9%
55	0.006085	0.993915	26.21893		55	0.006085	2.5%	0.883854	0.005378	0.994622	28.52854	2.309616	9%
56	0.006265	0.993735	25.37945		56	0.006265	2.5%	0.862297	0.005402	0.994598	27.68281	2.30336	9%
57	0.006484	0.993516	24.53945		57	0.006484	2.5%	0.841265	0.005455	0.994545	26.83317	2.293719	9%
58	0.006750	0.993250	23.6996		58	0.006750	2.5%	0.820747	0.005540	0.994460	25.98034	2.280738	10%
59	0.007072	0.992928	22.86066		59	0.007072	2.5%	0.800728	0.005663	0.994337	25.12508	2.264412	10%
60	0.007461	0.992539	22.02349		60	0.007461	2.5%	0.781198	0.005829	0.994171	24.26816	2.244677	10%
61	0.007928	0.992072	21.18904		61	0.007928	2.5%	0.762145	0.006042	0.993958	23.41044	2.221402	10%
62	0.008487	0.991513	20.35837		62	0.008487	2.5%	0.743556	0.006311	0.993689	22.55275	2.194385	11%
63	0.009152	0.990848	19.53263		63	0.009152	2.5%	0.725420	0.006639	0.993361	21.69598	2.163349	11%
64	0.009942	0.990058	18.71304		64	0.009942	2.5%	0.707727	0.007036	0.992964	20.84098	2.127938	11%
65	0.010874	0.989126	17.90096		65	0.010874	2.5%	0.690466	0.007508	0.992492	19.98866	2.087706	12%
66	0.011972	0.988028	17.09775		66	0.011972	2.5%	0.673625	0.008065	0.991935	19.13987	2.042124	12%
67	0.013258	0.986742	16.30492		67	0.013258	2.5%	0.657195	0.008713	0.991287	18.29548	1.99056	12%
68	0.014758	0.985242	15.524		68	0.014758	2.5%	0.641166	0.009462	0.990538	17.4563	1.932296	12%
69	0.016500	0.983500	14.75653		69	0.016500	2.5%	0.625528	0.010321	0.989679	16.62305	1.866517	13%
70	0.018515	0.981485	14.0041		70	0.018515	2.5%	0.610271	0.011299	0.988701	15.79641	1.792308	13%
71	0.020835	0.979165	13.26828		71	0.020835	2.5%	0.595386	0.012405	0.987595	14.97694	1.708657	13%
72	0.023494	0.976506	12.55061		72	0.023494	2.5%	0.580865	0.013647	0.986353	14.16506	1.614451	13%
73	0.026528	0.973472	11.85256		73	0.026528	2.5%	0.566697	0.015033	0.984967	13.36104	1.508475	13%
74	0.029974	0.970026	11.17556		74	0.029974	2.5%	0.552875	0.016572	0.983428	12.56497	1.389409	12%
75	0.033868	0.966132	10.52088		75	0.033868	1.1%	0.760713	0.025764	0.974236	11.7767	1.255816	12%
76	0.038250	0.961750	9.889697		76	0.038250	1.1%	0.752437	0.028781	0.971219	11.08814	1.198441	12%
77	0.043156	0.956844	9.283023		77	0.043156	1.1%	0.744250	0.032119	0.967881	10.41672	1.133696	12%
78	0.048622	0.951378	8.70171		78	0.048622	1.1%	0.736152	0.035793	0.964207	9.762395	1.060685	12%
79	0.054681	0.945319	8.146427		79	0.054681	1.1%	0.728143	0.039816	0.960184	9.124793	0.978366	12%
80	0.061364	0.938636	7.617649		80	0.061364	1.1%	0.720220	0.044196	0.955804	8.503168	0.885518	12%
81	0.068697	0.931303	7.115658		81	0.068697	1.1%	0.712384	0.048939	0.951061	7.896347	0.780689	11%
82	0.076701	0.923299	6.640541		82	0.076701	1.1%	0.704633	0.054046	0.945954	7.302668	0.662128	10%
83	0.085390	0.914610	6.192189		83	0.085390	1.1%	0.696966	0.059514	0.940486	6.719898	0.52771	9%
84	0.094774	0.905226	5.770305		84	0.094774	1.1%	0.689383	0.065336	0.934664	6.145134	0.374829	6%
85	0.104850	0.895150	5.374486		85	0.104850	1.1%	0.681883	0.071495	0.928505	5.574695	0.200259	4%
86	0.115610	0.884390	5.00395		86	0.115610	0.0%	1.000000	0.115610	0.884390	5.00395	0	0%
87	0.127035	0.872965	4.658081		87	0.127035	0.0%	1.000000	0.127035	0.872965	4.658081	0	0%
88	0.139096	0.860904	4.335931		88	0.139096	0.0%	1.000000	0.139096	0.860904	4.335931	0	0%
89	0.151755	0.848245	4.036486		89	0.151755	0.0%	1.000000	0.151755	0.848245	4.036486	0	0%
90	0.164961	0.835039	3.758632		90	0.164961	0.0%	1.000000	0.164961	0.835039	3.758632	0	0%
91	0.178655	0.821345	3.501145		91	0.178655	0.0%	1.000000	0.178655	0.821345	3.501145	0	0%
92	0.192770	0.807230	3.262697		92	0.192770	0.0%	1.000000	0.192770	0.807230	3.262697	0	0%
93	0.207228	0.792772	3.041843		93	0.207228	0.0%	1.000000	0.207228	0.792772	3.041843	0	0%
94	0.221944	0.778056	2.836971		94	0.221944	0.0%	1.000000	0.221944	0.778056	2.836971	0	0%
95	0.236827	0.763173	2.64623		95	0.236827	0.0%	1.000000	0.236827	0.763173	2.64623	0	0%
96	0.251782	0.748218	2.467405		96	0.251782	0.0%	1.000000	0.251782	0.748218	2.467405	0	0%
97	0.268234	0.731766	2.297709		97	0.268234	0.0%	1.000000	0.268234	0.731766	2.297709	0	0%
98	0.285990	0.714010	2.139951		98	0.285990	0.0%	1.000000	0.285990	0.714010	2.139951	0	0%
99	0.303475	0.696525	1.997088		99	0.303475	0.0%	1.000000	0.303475	0.696525	1.997088	0	0%
100	0.320697	0.679303	1.867216		100	0.320697	0.0%	1.000000	0.320697	0.679303	1.867216	0	0%
101	0.337664	0.662336	1.748724		101	0.337664	0.0%	1.000000	0.337664	0.662336	1.748724	0	0%
102	0.354385	0.645615	1.640236		102	0.354385	0.0%	1.000000	0.354385	0.645615	1.640236	0	0%
103	0.370869	0.629131	1.54058		103	0.370869	0.0%	1.000000	0.370869	0.629131	1.54058	0	0%
104	0.387125	0.612875	1.448742		104	0.387125	0.0%	1.000000	0.387125	0.612875	1.448742	0	0%
105	0.403165	0.596835	1.363846		105	0.403165	0.0%	1.000000	0.403165	0.596835	1.363846	0	0%
106	0.418999	0.581001	1.285131		106	0.418999	0.0%	1.000000	0.418999	0.581001	1.285131	0	0%
107	0.434641	0.565359	1.211926		107	0.434641	0.0%	1.000000	0.434641	0.565359	1.211926	0	0%
108	0.450104	0.549896	1.143639		108	0.450104	0.0%	1.000000	0.450104	0.549896	1.143639	0	0%
109	0.465405	0.534595	1.079737		109	0.465405	0.0%	1.000000	0.465405	0.534595	1.079737	0	0%
110	0.480562	0.519438	1.019729		110	0.480562	0.0%	1.000000	0.480562	0.519438	1.019729	0	0%
111	0.495600	0.504400	0.963139		111	0.495600	0.0%	1.000000	0.495600	0.504400	0.963139	0	0%
112	0.510546	0.489454	0.909475		112	0.510546	0.0%	1.000000	0.510546	0.489454	0.909475	0	0%
113	0.525437	0.474563	0.858141		113	0.525437	0.0%	1.000000	0.525437	0.474563	0.858141	0	0%
114	0.540323	0.459677	0.808277		114	0.540323	0.0%	1.000000	0.540323	0.459677	0.808277	0	0%
115	0.555271	0.444729	0.758359		115	0.555271	0.0%	1.000000	0.555271	0.444729	0.758359	0	0%
116	0.570389	0.429611	0.705216		116	0.570389	0.0%	1.000000	0.570389	0.429611	0.705216	0	0%
117	0.585858	0.414142	0.641522		117	0.585858	0.0%	1.000000	0.585858	0.414142	0.641522	0	0%