2018 INSURANCE STRESS TEST REPORT

https://eiopa.europa.eu/

eiopa

European Insurance and
Occupational Pensions Authority

2018 EIOPA Insurance Stress Test report

Table of Contents

List of tables and figures

Abbreviations

AoL	Assets over Liabilities
BE	Best Estimate
BOF	Basic Own Funds
DTA	Deferred Tax Assets
DTL	Deferred Tax Liabilities
eAoL	Excess of Assets over Liabilities
EEA	European Economic Area
EOF	Eligible Own Funds
ESRB	European Systemic Risk Board
EU	European Union
LACDT	Loss Absorbing Capacity of Deferred Taxes
LACTP	Loss Absorbing Capacity of Technical Provisions
LTG	Long-Term Guarantee
MA	Matching Adjustment
NC	Natural Catastrophe (scenario)
NCA	National Competent Authority
OF	Own Funds
Q&A	Questions and Answers on the 2018 Insurance Stress Test exercise
RFR	Risk Free Rate
RM	Risk Margin
RP	Risk Premia
SCR	Solvency Capital Requirement
ST	Stress Test
TP	Technical Provisions
TS	Technical Specifications
UFR	Ultimate Forward Rate
VA	Volatility Adjustment
YCD	Yield Curve Down (scenario)
YCU	Yield Curve Up (scenario)

Executive Summary

1. The 2018 insurance stress test is the fourth European-wide exercise initiated and coordinated by EIOPA. As in previous exercises, the main objective is to assess the resilience of the European insurance sector to specific adverse scenarios with potential negative implications for the stability of the European financial markets and the real economy. Hence, it cannot be considered as a pass-or-fail or capital exercise for the participating groups. In total 42 (re)insurance groups, representing a market coverage of around 75% based on total consolidated assets, participated. As this exercise is based on group level information, no country results are provided in the report.

2. The exercise tests the impact of a prolonged low yield environment (Yield Curve Down - YCD - scenario) as well as of a sudden reversal of risk premia (Yield Curve Up - YCU - scenario), which are currently identified as key risks across financial sectors. In the YCD scenario, market shocks are complemented by a longevity shock. In the YCU scenario, market shocks are combined with an instantaneous shock to lapse rates and claims inflation. The market shocks prescribed in the YCD and YCU scenarios are severe but plausible and were developed in cooperation with the ESRB, based on past market observations. Additionally, a natural catastrophe (NC) scenario tests the resilience of insurers to a potential materialisation of a set of catastrophe losses over Europe[1].

3. Groups were requested to calculate their post-stress financial position by applying the same models used for their regular Solvency II reporting. The use of LTG and transitional measures was taken into account and the impact of these measures had to be reported separately. Restrictions were prescribed in order to accommodate for the instantaneous nature of the shocks and the static balance sheet approach. In particular, the impact of the transitional measure on technical provisions was held constant in the post-stress situation and potential management actions to mitigate the impact of the scenarios were not allowed.

4. The novelty of this year's exercise is the assessment of the post-stress capital position of the participants, with an estimate of the post-stress Solvency Capital Requirement (SCR). Given the operational and methodological challenges related to the recalculation of the group SCR, participating groups were allowed to use approximations and simplifications as long as a fair reflection of the direction and magnitude of the impact was warranted.

5. In the pre-stress (baseline) situation, participating groups have an aggregate assets over liabilities (AoL) ratio of 109.5% (the ratio ranges from 103.0% to 139.5% for participating groups). Overall, the participating groups are adequately capitalised with an aggregate baseline SCR ratio of 202.4%, indicating that they hold approximately twice as much capital than what is required by regulation.

6. In the YCU scenario, the aggregate AoL ratio drops from 109.5% to 107.6%, corresponding to a drop of 32.2% in the excess of assets over liabilities (eAoL). Without the use of LTG and transitional measures the impact would be more severe, corresponding to a drop in AoL ratio to 105.1% (53.1% in the eAoL)

---

[1] Out of the 42 European (re)insurance groups participating in the stress test exercise, only 25 were exposed to the prescribed set natural catastrophes included in the NC scenario.

with 3 groups reporting an AoL ratio below 100% (accounting for approximately 10% of total assets in the sample). The impact of the YCU scenario is driven by a significant drop in the value of assets (-12.8% for government bonds, -13.0% for corporate bonds and -38.5 % for equity holdings). Overall, the losses on the asset side outweigh the gains on the liability side. Technical Provisions (TP) decrease by 17.0%, attributed mainly to a decrease in life TP (-14.5%) due to the reduced portfolio (instantaneous lapse shock) and the increased discounting curve (upwards shock to the swap curves). However, an increase in TP was observed for those groups focusing mainly on non-life business. In this case, the impact of the claims inflation shock on the non-life portfolio leads to an increase in the TP, outweighing the beneficial effect of the increased discounting curve due to shorter-term liabilities.

7. The capital position is materially affected in the YCU scenario, but the post-stress aggregate SCR ratio remains at satisfactory levels of 145.2% corresponding to a drop of 57.2 percentage points. However, 6 groups report a post-stress SCR ratio below 100%. This is mainly driven by a significant decrease (-29.9%) in eligible own funds (EOF) following the shocks to the asset portfolio that are not fully compensated by the reduction of the TP, while the SCR decreases only slightly (-2.3%). LTG and transitional measures play a significant role in the post-stress capital position. Without the application of the transitional measures the aggregate SCR ratio drops by an additional 14.3 percentage points to 130.9%, while in case both LTG and transitional measures are removed, the SCR ratio drops to 86.6%, with 21 groups reporting a ratio below 100%. This finding confirms the importance of the aforementioned measures for limiting the impact of short-term market movements on the financial position of insurers, as expected by their design.

8. In the YCD scenario, the aggregate AoL ratio decreases from 109.5% to 106.7%, corresponding to a drop in eAoL of 27.6%. Again, the impact is more severe without the use of LTG and transitional measures. The aggregate AoL ratio would drop to 104.8% in that case, corresponding to a decrease of 47.7% in eAoL, with 3 groups reporting an AoL ratio below 100% (accounting for approximately 10% of total assets in the sample). The impact of the YCD scenario can be mainly attributed to an increase in the TP on the liability side (+2.1%), driven by the increase of the life TP (+6.1%) due to the reduction of the discounting curve and the longevity shock. Total assets show a decrease (-0.8%) due to the drop in value of assets held for unit-linked contracts and equity holdings (-14.7%) which is partly offset by the increase in value of the fixed income assets (+3.1% government bonds and +2.3% corporate bonds). This scenario confirms that the European insurance industry is vulnerable to a prolonged low yield environment, also at group level.

9. The aggregate SCR ratio in the YCD scenario drops by 64.9 percentage points, but remains at 137.4% after shock, although 7 participating groups report a ratio below 100%. The decrease in SCR ratio is driven by a material decrease in EOF (-23.5%) and a significant increase in SCR (+12.7%), both mainly due to higher technical provisions. The LTG and transitional measures partly absorb the negative impact of the prescribed shocks. Without the application of the transitional measures the SCR ratio drops to 124.1%, while excluding both LTG and transitional measures leads to an aggregate SCR ratio of 85.4%, with 20 participating groups reporting a ratio below 100%.

10. In the NC scenario, participating groups report a drop of only 0.3 percentage points in the aggregate AoL ratio. The limited impact of the NC scenario on the participating groups is mainly due to the reinsurance treaties in place, with 55% of the losses transferred to reinsurers. The most affected participants are therefore reinsurers and those direct insurers largely involved in reinsurance activities. Furthermore, it should be noted that the losses are ceded to a limited number of counterparties, highlighting a potential concentration of risk. The high resilience of the groups to the series of natural catastrophes is confirmed by the limited decrease in aggregate eAoL (-2.7%). Without the LTG and transitional measures, the eAoL would decrease by 15.1% compared to the baseline.

11. Overall, the stress test exercise confirms the significant sensitivity to market shocks for the European insurance sector. The groups seem to be vulnerable to not only low yields and longevity risk, but also to a sudden and abrupt reversal of risk premia combined with an instantaneous shock to lapse rates and claims inflation. The exercise further reveals potential transmission channels of the tested shocks to insurers' balance sheets. For instance, in the YCU scenario the assumed inflation shock leads to a net increase in the liabilities of those groups more exposed to non-life business through claims inflation. Finally, both the YCD and YCU scenario have similar negative impact on post-stress SCR ratios.

12. Further analysis of the results will be undertaken by EIOPA and by the National Competent Authorities (NCAs) to obtain a deeper understanding of the risks and vulnerabilities of the sector. Subsequently, EIOPA will issue recommendations on relevant aspects where appropriate. The responses received on the cyber risk questionnaire that are not part of this report, will be evaluated and discussed in future EIOPA publications.

13. This exercise marks an important step in the reassessment of capital requirements under adverse scenarios and provides a valuable basis for continuous dialogue between group supervisors and the participating groups on the identified vulnerabilities. EIOPA is planning to further work on refining its stress test methodology in order to fully capture the complexity of the reassessment of capital requirements under adverse scenarios. EIOPA expects that participants use the acquired experience to foster their abilities to produce high quality data and to enhance their corresponding risk management capabilities. NCAs are expected to oversee and promote these improvements.

1. EIOPA 2018 insurance stress test framework

14. The 2018 insurance stress test (ST) is the fourth European-wide exercise initiated and coordinated by EIOPA. The regular conduct of ST exercises in cooperation with the European Systemic Risk Board (ESRB) is part of EIOPA's mandate, as embedded in the EIOPA Regulation[2].

15. The main objective of the ST is to assess the resilience of the European insurance sector to specific adverse scenarios with potential negative implications for the stability of the European financial markets and the real economy.

16. A sample was selected among the biggest (re)insurance groups supervised in the European Economic Area (EEA) to represent the European insurance sector. Due to the cross-border activities of the participating groups, this ST focuses on group-level information. Therefore, no country results are provided in the report.

17. The scenarios included in the ST encompass a combination of market and insurance specific risks, which are perceived by EIOPA as key risks to the European insurance sector and provide insight into potential vulnerabilities of the sector. Specifically, the following three scenarios are included in the ST exercise[3]:

    i. A yield curve up (YCU) scenario encompassing market shocks combined with lapse and provisions deficiency stresses;

    ii. A yield curve down (YCD) scenario encompassing market shocks combined with longevity stress;

    iii. A natural catastrophe (NC) scenario encompassing a series of 4 windstorms, 2 floods and 2 earthquakes distributed throughout Europe.

18. The first two scenarios reflect, on the one hand, the risk of a sudden and abrupt reversal of risk premia (RP) leading to a tightening of financial conditions and, on the other hand, the risk of a continuation of the current low interest rate environment. Furthermore, the NC scenario reflects the risk of an increasing frequency in natural disasters, partly triggered by extreme weather events due to climate change, a key emerging risk for insurers.

19. The ST exercise also included a questionnaire on cyber risk to gather information on cyber risk management and exposures to cyber risk, which is considered a relevant emerging risk for insurers and financial stability. The results from these questionnaires will be analysed separately by EIOPA in order to identify potential risks and vulnerabilities stemming from cyber risk at both a micro- and macro-prudential level. Hence, they will not be covered in this report.

20. Participating groups were asked to report a set of indicators for the baseline and the stress scenarios. This required a recalculation of the balance sheet, own funds (OF) and – for the first time – a recalculation of the Solvency Capital

---

[2] Regulation (EU) No 1094/2010 of the European Parliament and of the Council of 24 November 2010.
[3] Refer to Section 4 of the Insurance Stress 2018 Technical Specifications for further details on the scenarios and methodology used in the stress test.

Requirement (SCR) post-stress.[4] However, it should be emphasized that the ST is not a pass-or-fail exercise for the participating groups. Its focus is on assessing vulnerabilities at a European level and the potential systemic impact of shocks to the European financial markets and the real economy.

21. One of the objectives of the 2018 insurance ST is to enhance the transparency of the insurance industry towards the market and policyholders. Therefore, the results of the ST are disclosed not only on an aggregate level, but also on an individual level, whenever the explicit consent from participating groups was received. Individual disclosure is limited to the impact on the assets and liabilities with and without the Long Term Guarantee (LTG) and transitional measures. Ultimately, by increasing the level of information provided to the markets and the policyholders, this exercise enhances the market discipline to address the vulnerabilities revealed by the ST.

22. This report is concise and focuses on the factual description of the impact of the different scenarios and their main determinants. It strikes a balance between the need to publish a report within a reasonable time frame and the operational challenges of the 2018 exercise. The latter necessitated an extended calculation period for participants of 13 weeks, which significantly reduced the time available for more detailed analyses. The gathered information (e.g. cyber risk questionnaire, exposures towards specific perils and reinsurance coverages in the NC scenario) will be used to develop further analysis at EIOPA.

1.1. Risk outlook and priorities

23. The scenarios of the ST reflect both the EIOPA and the ESRB assessment on the key vulnerabilities of the European insurance industry and the prevailing sources of systemic risk for the European financial system[5]. The risks covered are also in line with the risk assessments of other European institutions, such as the EBA, ESMA and the Joint Committee[6].

24. The risk of a sudden reversal of RP is currently identified as a key risk for the financial system, including the insurance sector. Insurers hold considerable fixed income assets to cover policyholder obligations and if RP were to rise suddenly, many (re)insurance groups could be negatively affected as the market value of their fixed income assets decreases, notwithstanding the offsetting impact on the value of their (long-term) liabilities. Moreover, insurers could be faced with a significant increase in lapses, as the economic welfare of policyholders may be reduced and/or alternative investment opportunities become more attractive to policyholders. Finally, simultaneous higher than expected inflationary pressures across all countries in an increasing-yield scenario could induce a shortfall in liability claims reserves.

25. Conversely, the risk of a continuation of the low yield environment also remains a major concern for the European insurance sector. Low risk-free interest rates increase the value of insurers' long-term liabilities while compressing the margins between guaranteed returns on life policies and matching long-term low risk investments. This could put a significant strain on

---

[4] See paragraph 38 and section 2.2 of the Insurance Stress 2018 Technical Specifications for further details on the simplifications allowed for these calculations given the material technical challenges.
[5] For a more detailed risk assessment, refer to the EIOPA Financial Stability Report and EIOPA Risk Dashboard.
[6] See for example, Joint Committee report on risks and vulnerabilities in the EU financial system, April and September 2018. See also EBA and ESMA risk dashboards and stress test scenarios.

the financial position of (re)insurance groups, especially when insurers are faced with a simultaneous longevity shock, further increasing the value of their long-term liabilities.

26. Finally, climate change could lead to more frequent and severe weather-related catastrophes. As the European insurance industry is exposed to several different natural perils, it is relevant to assess the risk of the simultaneous occurrence of several significant catastrophe events in a separate natural catastrophe scenario.

1.2. Methodological approach

1.2.1. Scenarios[7]

27. The ST includes two scenarios combining market and insurance specific risks and one NC scenario. The adverse market developments reflected in the scenarios were prepared in cooperation with the ESRB, whereas the insurance specific components were developed by EIOPA. The natural catastrophe scenario was developed by EIOPA in cooperation with third party data providers[8].

28. The YCU scenario assumes an abrupt and sizeable reversal of RP in global financial markets leading to a tightening of financial conditions. The 10-year EUR swap rate term structure would shift upwards by 85 bps and by more than 100 bps for currencies of other major advanced economies (e.g. UK and US). The overall increase in RP would raise concerns about the debt sustainability of some EU sovereigns, widening the spreads of EU government bond yields against EU government bonds with a high credit rating. Government bond spreads increase by 36 bps on average, reaching a maximum of 134 bps. It is assumed that the economic uncertainty stemming from this abrupt change in the level of yields is not limited to the fixed income market, but also affects other financial markets.

29. In the YCU scenario, market shocks are combined with an instantaneous shock to lapse rates and claims inflation. Lapse rates are assumed to increase by 20% for all non-mandatory life insurance products, reflecting the policyholders' reaction to the market developments. Furthermore, higher than expected inflationary pressures are assumed to induce a shortfall in liability claims reserves in the general insurance segment. This shortfall is due to 2.24% higher annual claims inflation than assumed for the existing calculation of the best estimate (BE) of non-life liabilities.

30. The YCD scenario assumes a protracted period of extremely low interest rates, with very low rates prevailing for longer maturities. The decline in interest rates reflects a slowdown in economic activity due to spillovers from outside the EU. The scenario is based on an instantaneous change of the relevant risk-free interest rate term structures, including an adjustment of the ultimate forward rate (UFR), which is set at 2.04% for the euro to reflect a period of prolonged low interest rates (compared to 4.2% at the end of 2017)[9]. 10-year

---

[7] For detailed information on the calibration of market shocks, please refer to "ESRB adverse scenario for 2018 insurance stress test". For more information on the calibration of insurance specific shocks and the natural catastrophe scenario, please refer to Section 4 of the 2018 Insurance Stress Test Technical Specifications and to the 2018 Insurance Stress Test Technical Information.

[8] Disclaimers on the information provided by third parties and used for the calibration of the scenarios are provided in *Annex 3 – Information on third party data*.

[9] For more details, see Annex 2 of the Technical Specifications

swap rates decline by around 80 bps in advanced economies and by around 40 bps in the emerging market economies. In the euro area, 10-year swap rates also decline by 80 bps, while 1-year swap rates fall by 11 bps. Lower economic growth is assumed to also affect other asset prices.

31. The YCD scenario is combined with a shock to average life expectancy, which is assumed to increase significantly across the entire population. The underlying assumption is that the development of new technologies in the healthcare industry paves the way for a general revision of the mortality tables affecting BE calculations for life insurance.

32. Finally, the NC scenario assumes a set of catastrophic losses over Europe from various perils: four European windstorms, two central and eastern European floods and two Italian earthquakes. The events were designed to hit different geographical areas in Europe and are supposed to materialise over a short period of time. Management actions were not allowed in the exercise. This means that firms were not able to reduce their exposures to scenario impacts, such as purchasing additional reinsurance, as they may have done in their usual business activities.

1.2.2.   Effective implementation of the scenarios

33. The insurance ST is a bottom-up exercise, which involves calculations performed by the participating groups on the impact of the three scenarios on their group balance sheet, OF and SCR.

34. The reference date of the exercise is 31 December 2017. The baseline is the financial situation of a group at the reference date and is consistent with the 2017 annual Solvency II group reporting[10]. Participating groups were asked to recalculate their financial position under the Solvency II regime by applying the same models used for the regular Solvency II reporting[11].

35. The use of (partial) internal models and group specific parameters was allowed, provided that these had been approved by the group supervisor at the reference date. Participants were required to depart from their models in case the application of the insurance specific shocks prescribed in the YCU and YCD scenario led to an increase of the own funds. In this circumstance the positive marginal impact on the own funds should be neutralised and capped to zero at group level.

36. The ST uses a static balance sheet approach: the scenarios consist of instantaneous shocks that are applied to the regulatory balance sheet on the reference date. No assumptions on new insurance business or changes in asset structure or business strategy were allowed when calculating the impact of the scenarios. Future premiums from the current insurance business should be taken into account to the extent that they fall within the Solvency II contract boundaries.

---

[10] In order to ensure the comparability of pre- and post-stress positions and to provide results based on an up to date situation, some groups recalculated their baseline position against changes in their group perimeter enforced after the reference date. Therefore, limited to these cases, the baseline situation is not fully aligned with their 2017 Annual Solvency II group reporting.

[11] Please note that the YCD scenario includes a different assumption for the UFR used in the derivation of the RFR curves under Solvency II, to be used for discounting liabilities. Furthermore the impact of the transitional measure on technical provisions was kept unchanged with respect to the baseline in all scenarios.

37. The use of the LTG and transitional measures was taken into account in the pre and post-stress calculations provided that these had been approved by NCAs at the reference date[12]. The impact of the application of these measures had to be reported separately to allow for a meaningful assessment of the impact of the stress scenarios. The impact of the transitional measure on technical provisions was kept unchanged with respect to the baseline.

38. For the consolidation of the group balance sheet in the post-stress situation, participants were allowed to either undertake a full reassessment of the solo undertakings positions' followed by a consolidation at group level or to use a group consolidated-based approach, where a group model is used to assess the financial position after stress. Combinations of these two approaches were also allowed. Given the operational and methodological challenges related to the recalculation of the group SCR, participating groups could use approximations and simplifications as long as these allowed a fair reflection of the direction and magnitude of the impact, i.e. not distorting inappropriately the interpretability and comparability of the results. The use of such approximations and simplifications has been discussed with the relevant group supervisors and EIOPA and an extensive data validation process has been applied to ensure sufficient data quality (please see also section 1.2.4).
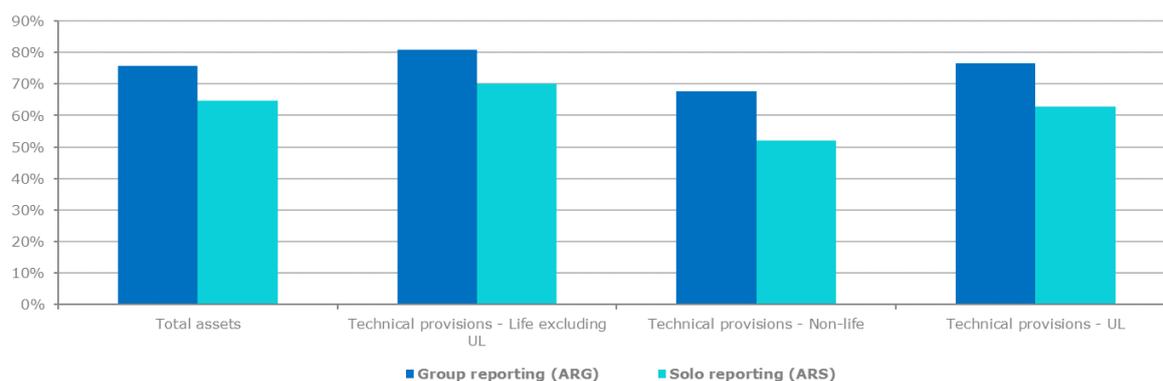
1.2.3.   Representativeness and characteristics of participating insurance groups

39. The groups participating in this ST exercise were selected by EIOPA in coordination with the NCAs based on their size, EU-wide market coverage, business lines (life and non-life business) and the involvement of a sufficient number of local jurisdictions. The local market coverage was also taken into account in a second stage.

40. The sample encompasses the 42 (re)insurance groups listed in Annex 1 - Sample[13]. These groups represent an EEA market coverage of around 75% based on total consolidated assets reported under the Solvency II annual group reporting (ARG) and an EEA-wide market coverage of around 65% based on total assets reported under the Solvency II annual reporting for solo undertakings (ARS). Figure 1-1 shows the sample coverage both in terms of total annual group reporting and total annual solo reporting for total assets as well as TP (life, non-life and unit-linked). Figure 1-2 shows the market coverage in terms of total assets in each EEA country based on solo reporting.

---

[12] The LTG measures are a permanent feature of the Solvency II framework and aim to mitigate the impact on long-term liabilities of short-term market volatility under certain conditions, whereas the transitional measures are temporary measures to facilitate the transition to the Solvency II framework. For more information on the LTG and transitional measures, please refer to the EIOPA LTG report on long-term guarantees measures and measures on equity risk available at https://eiopa.europa.eu/Publications/Reports/2017-12-20%20LTG%20Report%202017.pdf.
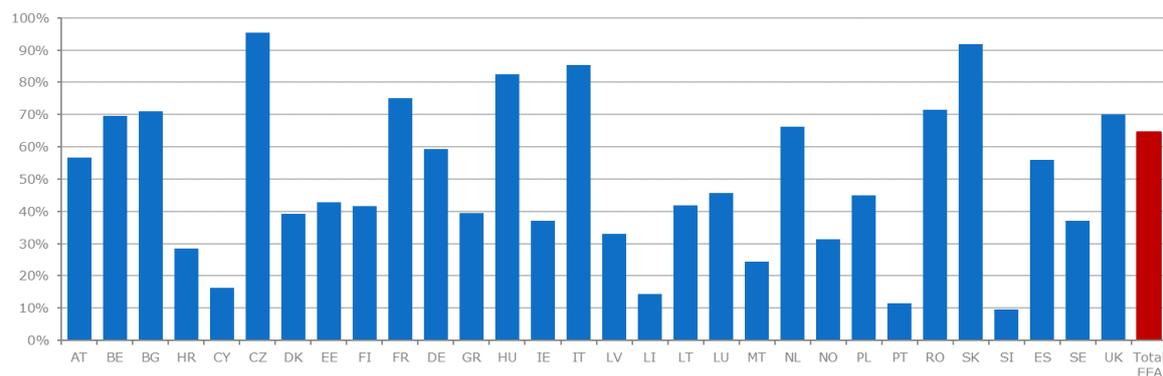[13] Please note that out of the 42 European insurance groups participating in this ST exercise, only 25 were exposed to the prescribed set of Europe-located natural catastrophes.

Figure 1-1: Market coverage of participating (re)insurance groups (in %)

Figure 1-2: EEA coverage in terms of total assets (in %)

41. In terms of TP, the participating groups account for 66% (EUR 5.74 tn.) of the total TP in the EEA based on solo reporting. This corresponds to 70% (EUR 3.52 tn.) of total life TP (excluding unit-linked), 52% (EUR 391 bn.) of total non-life TP and 63% (EUR 1.82 tn.) of total unit-linked TP in the EEA. The sample is representative of the EEA insurance sector in terms of business mix and the share of unit-linked business in the sample is in line with the overall share of unit-linked business in the EEA (accounting for approximately 30% of total TP and 24% of total assets).

1.2.4. Data quality

42. Extensive verifications have been performed on the submitted ST results to provide data quality assurance. This included both a national verification by the relevant group supervisors and a central verification by EIOPA. When necessary, insurers were required to resubmit their results and/or provide further information on their calculations and the applied methodology.

43. The local and central validation processes benefitted from extensive iterations between participants and group supervisors on the use of simplifications for the calculation of the balance sheet and capital position post-stress. This information was formalised by the NCAs and centrally discussed at EIOPA in order to ensure the comparability of the results.

44. The different models applied for the calculation of the capital position together with the simplifications and the application of the shocks led to many questions and remarks that required clarifications from the participants. Most of the issues encountered during the data quality process related to the application of the market and insurance specific shocks as well as the quality of the provided cash flows. An overview of the major issues is provided in Annex 2 – Submitted information: Areas of improvement.

45. The data quality assurance process allowed to detect and to address the issues by means of resubmissions and clarifications. Against this, the data are deemed of sufficient quality to infer the findings and conclusions included in this report. Furthermore, the process provided valuable inputs on how the design of the stress test exercise can be further improved. At the same time, it made participants aware of specific areas where the data quality should be improved.

2. Stress test results

47. The stress test results are presented separately for the market stress scenarios and the NC scenario, given the different sample for the NC scenario. The results are presented at an aggregate level unless otherwise stated, meaning that the total weighted impact across all participating groups is considered.
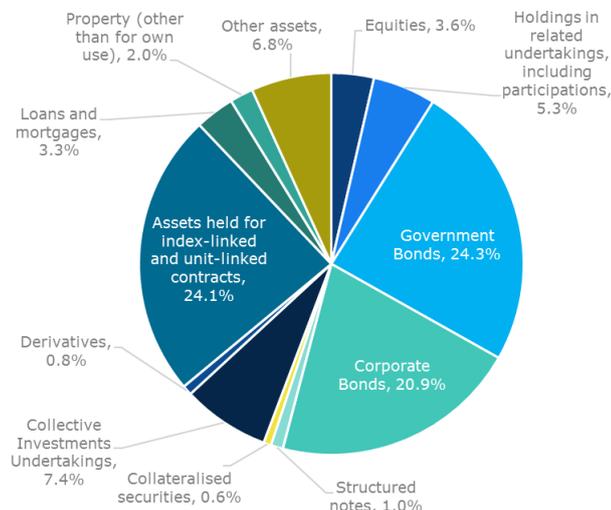
2.1. Baseline characteristics

2.1.1. Assets

48. Figure 2-1 shows the aggregate asset composition of the stress test participants, accounting for approximately EUR 7.27 tn. Bonds are the largest asset category (46.9%) with 24.3% of total assets in government bonds and 20.9% in corporate bonds. The weighted average modified duration of the government bonds portfolio equals 7.4, whereas the weighted average modified duration of corporate bonds amounts to 6.

49. The assets held for index-linked and unit-linked contracts contribute to 24.1% of the total assets. Since policyholders bear the risk of value changes, any change in these assets will have an equal offsetting change in the liabilities.

Figure 2-1: Aggregate asset composition of the stress test participants in the baseline
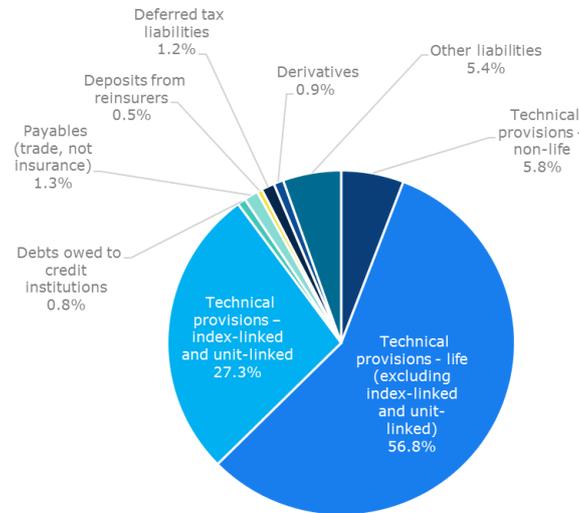

2.1.2. Liabilities

50. Figure 2-2 shows the aggregate liability composition of the ST participants, accounting for approximately EUR 6.66 tn. Life TP (excluding unit-linked) are the largest liability category accounting for 56.8% of total liabilities. Unit-linked TP account for a further 27.3% of total liabilities.

51. The weighted average Macaulay duration of the TP for the participating groups equals 12.5 years for Life TP and 4.1 years for Non-Life TP[14]. The liability profile further shows that in terms of pure financial leverage (i.e. debt to credit institutions and others excluding re-insurance deposits) insurers do not rely

---

[14] Durations of technical provisions are weighted by the best estimate.

extensively on external market financing, and that the financial leverage is small compared to the overall TP.

Figure 2-2: Aggregate liability composition of the stress test participants in the baseline

2.1.3. Assets over Liabilities

52. Participating groups have an aggregate assets over liabilities (AoL) ratio of 109.5% in the baseline. The AoL ratio ranges from 103.0% to 139.5%; all participating groups have an AoL ratio above 100% in the baseline. When removing the impact of LTG and transitional measures, the aggregated AoL ratio of the sample slightly drops to 108.2%.

2.1.4. Own funds and SCR

53. Overall, the participating groups are adequately capitalised from a regulatory point of view in the baseline. In aggregate terms, the surplus (i.e. EOF minus SCR) for the sample is EUR 331.6 bn., which corresponds to an aggregate baseline SCR ratio of 202.4%. This means that the participating groups hold approximately twice as much capital than what is required for regulatory purposes. Most of the OF comprises Tier 1 OF items (85.7%), with only a small proportion in Tier 2 and Tier 3 OF (13.1% and 1.2% respectively), indicating that the overall quality of the own funds is high from a Solvency II perspective.

54. A majority of groups in the sample uses the Volatility Adjustment (VA) (35 out of 42), while 10 adopted the Matching Adjustment (MA) (7 of which also applied the VA). The transitional measure on TP is used by 20 participants (17 of which also adopted the VA), while 1 group only applied the transitional measure on interest rate.

2.2. Impact of market stress scenarios

2.2.1. Balance sheet indicators

55. Participating groups lose 32.2% and 27.6% of the aggregated excess of assets over liabilities in the YCU and YCD scenario, respectively. Groups are more negatively affected by the YCD scenario compared to YCU scenario when

assessing the impact on the AoL ratio[15]. The aggregate ratio is reduced by 2.8 percentage points in the YCD scenario and by 1.9 percentage points in the YCU scenario (Table 2-1).
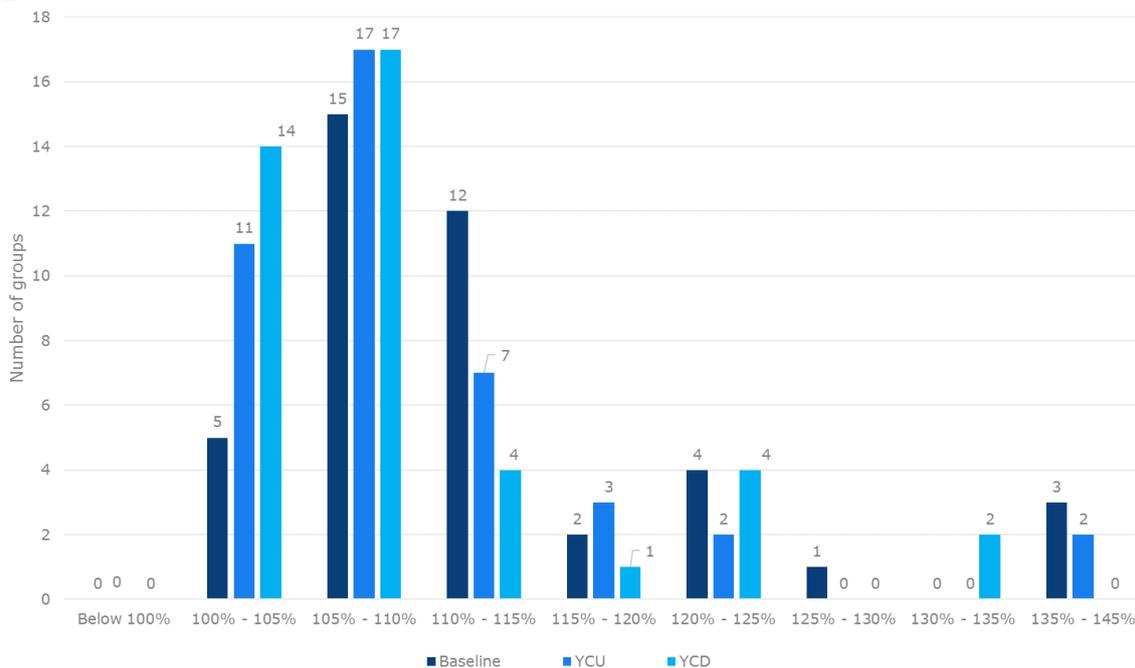
56. The impact is more severe without the use of the LTG and transitional measures. Under these circumstances, groups lose close to half of their aggregate excess of assets over liabilities in both scenarios (-47.7% for the YCD scenario and -53.1% for the YCU scenario). This results in a reduction of 3.4 percentage points of the aggregate AoL ratio in the YCD scenario and a 3.1 percentage points reduction in the YCU scenario.

Table 2-1: AoL ratio in the baseline and in the YCU and YCD scenario

	Baseline	YCD	YCU
AoL	109.5%	106.7%	107.6%
AoL without LTG and transitional measures	108.2%	104.8%	105.1%

57. The higher impact of the YCD scenario is also evidenced by the distribution of groups across different AoL ratio buckets under the different scenarios. Figure 2-3 shows that more groups fall into the [100%-105%] bucket in the YCD scenario (14) than in the YCU scenario (11). While all participants continue to have an AoL ratio above 100%, the number of groups with an AoL ratio between 100% and 105% post-stress increases significantly compared to the baseline, where only 5 groups had an AoL in this range.

Figure 2-3: AoL ratio in the baseline and in the YCU and YCD scenario
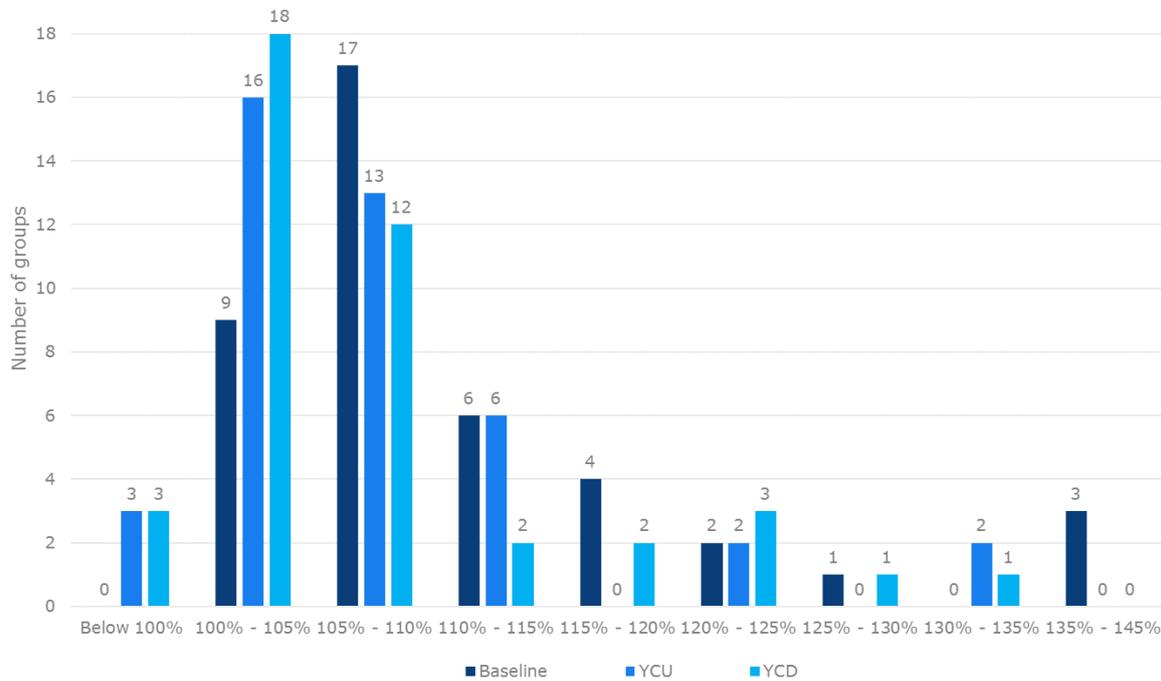

58. All participants have an AoL ratio excluding LTG and transitional measures above 100% in the baseline. However, in both the YCD and YCU scenario AoL ratios below 100% can be observed for 3 groups when excluding the LTG and transitional measures, meaning that the value of assets falls below the value of liabilities for these groups. Among these 3, two groups fall below 100% in both scenarios and 2 other groups fall below 100% only in one of the two scenarios. These 4 groups represent around 10% of the total assets in both

---

[15] Please note that the eAoL measures the difference between assets and liabilities, whereas AoL measures the ratio between the two.

scenarios (Figure 2-4). The aggregate shortfall in excess of assets over liabilities (eAoL) for the 3 groups in the YCD scenario would sum up to EUR 17.5 bn. while in the YCU scenario the shortfall would amount to EUR 4.1 bn.
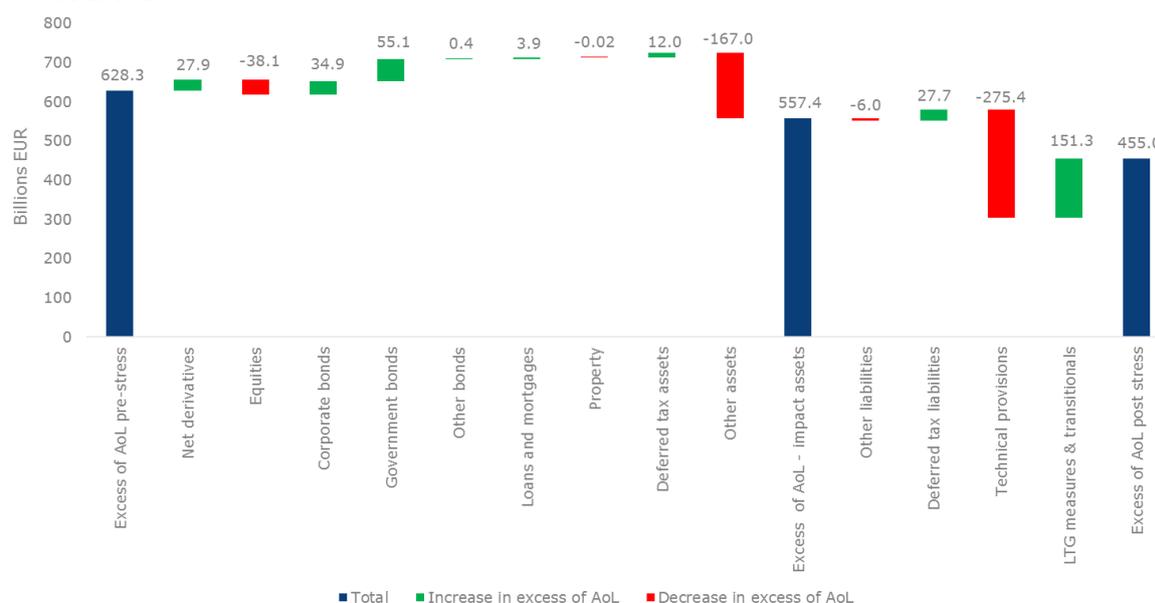
Figure 2-4: AoL ratio without LTG and transitional measures

59. The impact on eAoL in the YCD scenario is mainly driven by higher TP. Figure 2-5 shows the decomposition of the change in eAoL for the YCD scenario by splitting the impact of the scenario on the asset side and on the liability side. The most significant decrease on the asset side reflects the shock on equities with an aggregate impact of -14.7%. Other assets (which comprise mostly assets held for unit-linked contracts) decrease by 7.6% of the aggregate value. The impact on assets held for unit-linked is however offset by an equal decrease of the corresponding TP. The value of corporate and government bonds increase by 2.3% and 3.1%, respectively, due to the lower interest rates. Hence, the decrease of the swap rates overcompensates the widening of the spreads. On the liability side, the TP increase by 2.1%, in line with the lower interest rates (including a lower UFR than in the baseline) and account for the largest part of the decrease in eAoL. The LTG and transitional measures compensate more than half of the initial impact on the TP.

60. The increase in aggregate Deferred Tax Assets (DTA) (+81.9%) together with the simultaneous decrease of aggregate Deferred Tax Liabilities (DTL) (-34.4%) partly absorbs the impact of the scenario. It is worth noting that the reported changes in DTA and DTL vary significantly between groups due to different national accounting and tax rules as well as the degree of freedoms inherent in calculating the post-stress DTA and DTL.
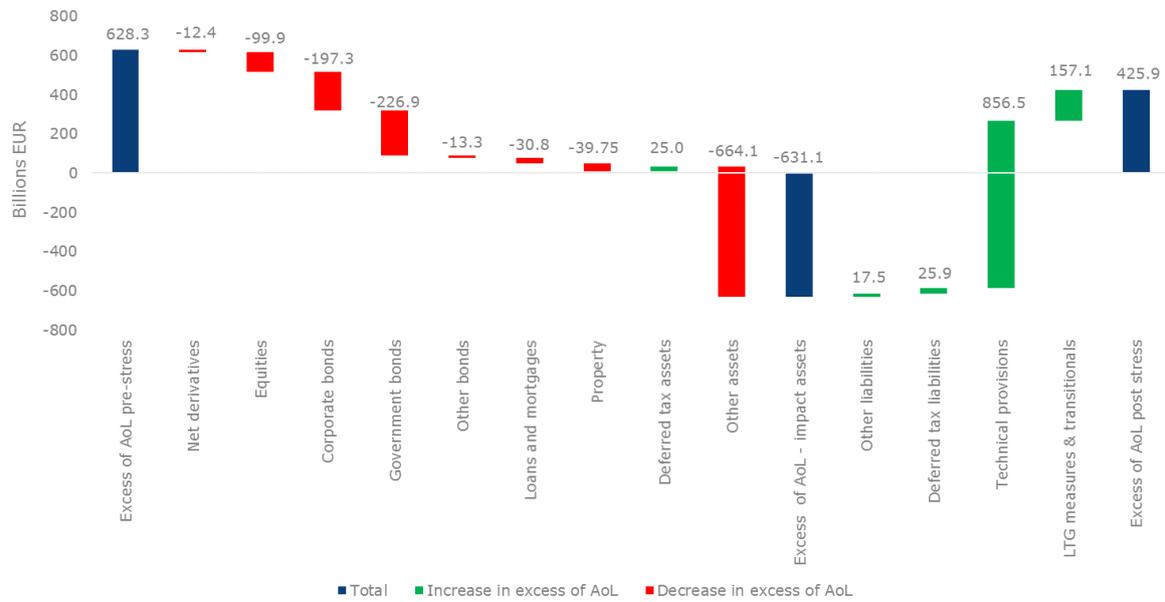
Figure 2-5: Decomposition of the change in excess of AoL for the YCD scenario.

61. The overall impact on eAoL in the YCU scenario is driven by significant losses on the asset side following the increase in RP, which prevails over the significant decrease in the value of TP. Figure 2-6 shows the decomposition of the change in eAoL for the YCU scenario, which contrasts in several aspects with the YCD scenario. Government bonds and corporate bonds decrease by 12.8% and 13.0% respectively, while equities lose 38.5%. Assets held for unit-linked and index-linked contracts (included in Other assets) are also significantly affected, with an aggregate decrease of 27.6% which is again offset by a decrease of the associated TP. Property investments and loans and mortgages lose 27.7% and 12.8% respectively in the YCU scenario. The decrease of asset values is such that the eAoL would become negative if the application of the shocks on the asset side were isolated (Excess of AoL - the impact of assets in Figure 2-6). However, as the aggregate TP decrease sharply due to the increase in interest rates (-17.0%), the eAoL remains positive. The decrease of the TP is further strengthened by the impact of the LTG and transitional measures.
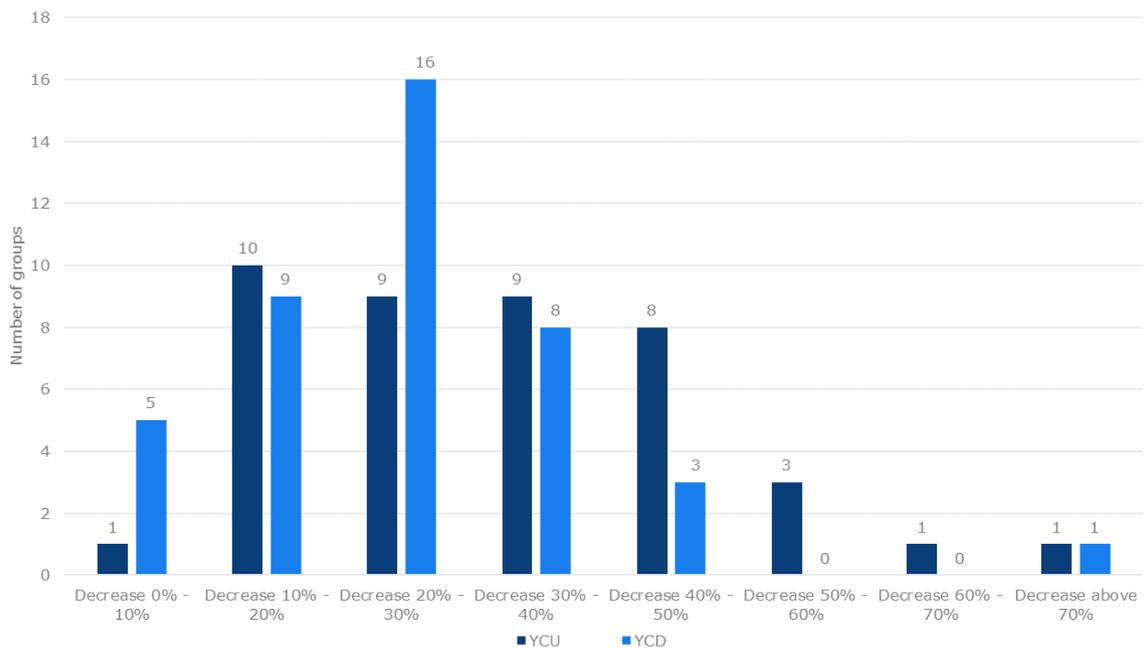
62. Also in the YCU scenario changes in DTA and DTL (+170.2% and -32.2% respectively) act as a dampener for the prescribed shocks, however the same caveats described in par. 60 apply.

Figure 2-6: Decomposition of the change in excess of AoL for the YCU scenario.

63. Figure 2-7 shows the distribution of relative changes in the eAoL among the participating groups. In the YCU scenario, more than half of the participants (22) lose more than 30% of their excess of assets over liabilities. Furthermore, 5 groups would lose more than half of their excess of assets over liabilities, but no group would lose all its eAoL. In the YCD scenario, 12 groups would lose more than 30% of their excess of assets over liabilities, with 1 group losing more than 70% of its eAoL. No group would lose all its eAoL if this scenario were to materialize.

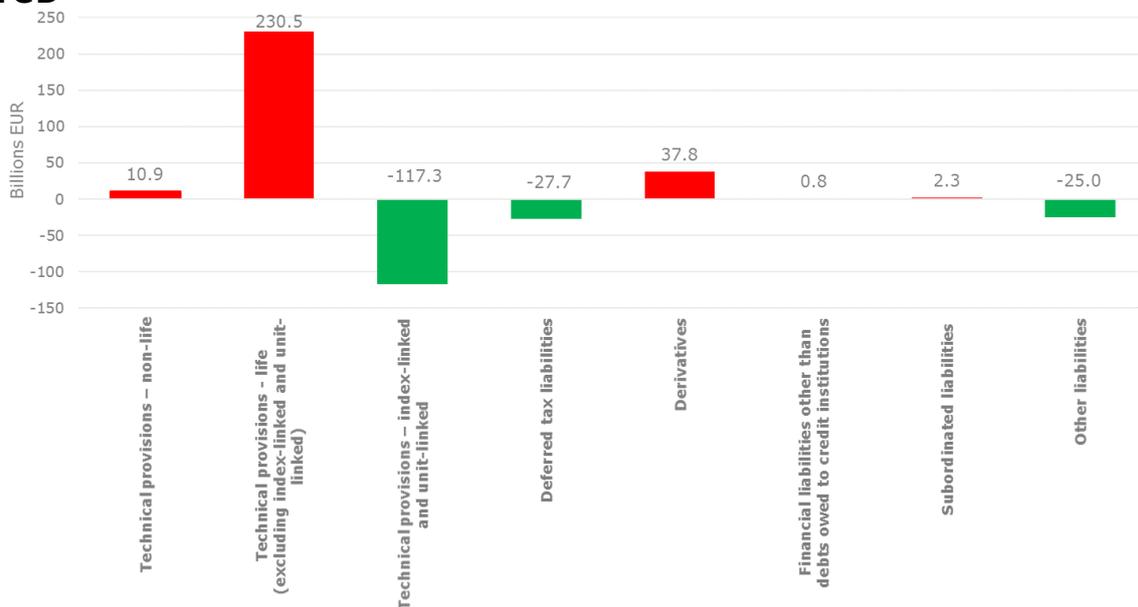**Figure 2-7: Distribution of relative changes in eAoL**

2.2.2.   Technical provisions

64. The impacts on TP have by far the biggest influence on the post-stress liabilities, followed by the DTL and to lesser extent derivatives (Figure 2-8 and Figure 2-9). The decomposition of the TP shows the predominant role of the life component in both scenarios, with the interest rate effect as a key risk driver:

    - In the YCU scenario, the aggregate life TP decrease due to the yield curve movement and the lapse shock;

    - In the YCD scenario, the aggregate life TP increase because of *i)* the decrease of RFR curves for all maturities due to the shock to the swap rates and the lower UFR and *ii)* the longevity shock.
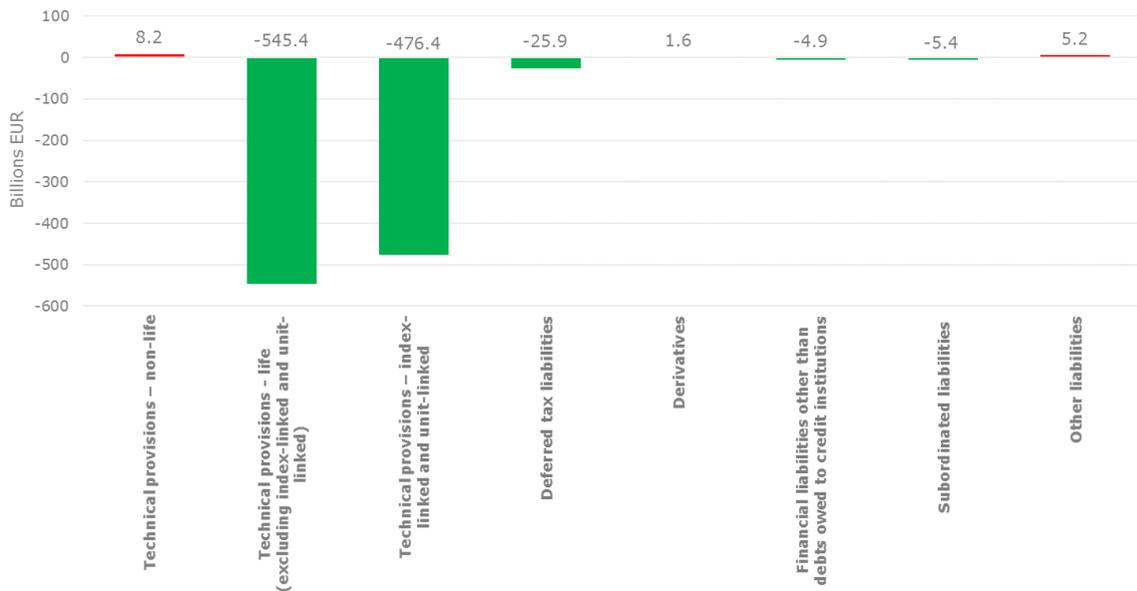
65. In the YCD scenario, a 2.1% (EUR 124.1 bn.) increase in the total TP is observed, mainly driven by the increase of the TP-life (+6.1%, EUR 230.5 bn.) due to the reduction of the RFR curves (including a lower UFR) and the longevity shock (Figure 2-8). However, the increase in life TP is partly offset by a decrease of index-linked and unit-linked TP (EUR -117.3 bn.). The exposure towards unit-linked business is generally characterized by a marginal retention of risks by the insurers and explains the reduction of the unit-linked TP. Overall, the higher TP put an additional strain on (re)insurance groups already facing lower profitability in the low-yield environment.

Figure 2-8: Decomposition of the aggregate impact on liabilities in the YCD

66. The decomposition in business lines shows a 14.5% (EUR 545.4 bn.) decrease in TP life in the YCU scenario, due to the combined effect of the application of the instantaneous lapse shock that reduces the portfolios post-stress and of the increased RFR curves (Figure 2-9). Conversely, the application of the claims inflation shock outweighs the effect of the increased RFR curves for the non-life portfolio and leads to an aggregate increase of 2.1% (EUR 8.2 bn.) in TP non-life. In fact, the provision deficiency shock emerges as one of the major determinants of the impact of the YCU scenario on the balance sheet position for those predominantly non-life groups.
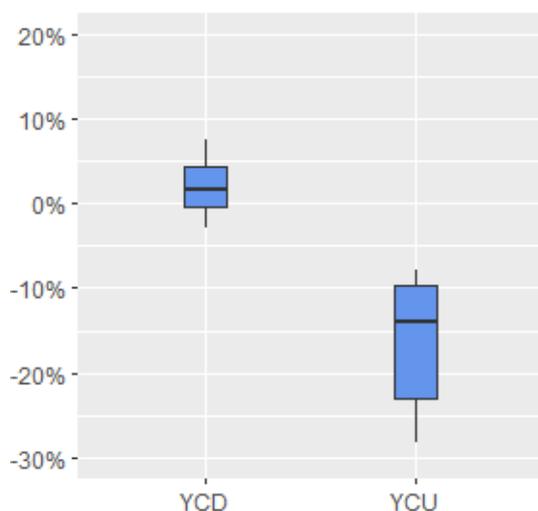
Figure 2-9: Decomposition of the aggregate impact on liabilities in the YCU scenario

67. Figure 2-10 and Figure 2-11 illustrate how the impact of the scenarios on the TP differs widely across the sample. The heterogeneity in the business mix, in the characteristics of the outstanding contracts (e.g. profit sharing, fixed guarantees) and the duration of the liabilities are the main determinants for the results.
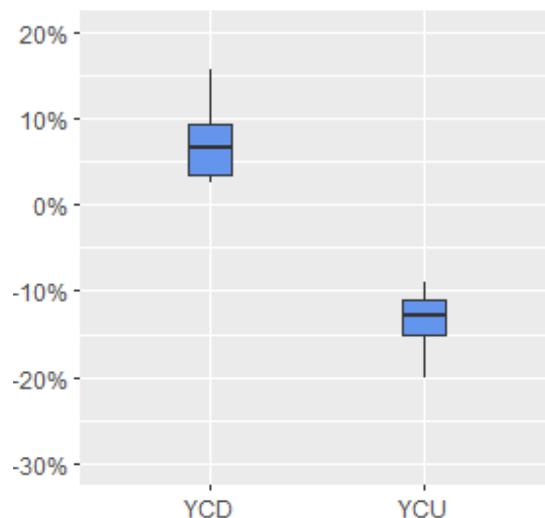
68. All the changes in TP for the YCU scenario point in the direction of a general reduction, despite the dispersion of the results (25th percentile: −23.1%, 75th percentile: −9.7%). The opposite is observed in the YCD scenario where a general increase of the TP is expected. The distribution of the changes is less skewed and the median value points to the expected increase in TP. However, groups ranked in the 25th percentile of the distribution already report a decrease of the TP.

Figure 2-10: Distribution of change in TP for each scenario

Figure 2-11: Distribution of change in Life TP for each scenario

Note: figure shows median, interquartile range, 10th and 90th percentiles

Note: figure shows median, interquartile range, 10th and 90th percentiles

2.2.3.   Own Funds indicators

69. In order to analyse the scenarios' impact on the OF, the changes of total Eligible Own Funds (EOF) to meet the consolidated group SCR, total Basic Own Funds (BOF) and share of Tier 1 EOF to total EOF are considered.

Change in eligible own funds

70. The largest impact on the EOF occurs in the YCU scenario. The aggregate EOF decrease by 29.9% (EUR 196.2 bn.), from an aggregated value of EUR 655.5 bn. in the baseline to EUR 459.3 bn. post-stress (distributions of the impacts are reported in Figure 2-12).

71. The impact of the YCU scenario on the EOF is even more pronounced in case the LTG and transitional measures are excluded. The aggregate EOF decrease by 36.0% in case transitional measures are excluded and by 49.6% in case both LTG and transitional measures are excluded (distributions of the impacts are reported in Figure 2-13). This highlights the shock-absorbing effect of the transitional measures and, in particular, the LTG measures as expected by their design.

72. The imposed cap on potential positive effects stemming from the application of the insurance specific stresses has a limited impact on the overall change in EOF[16]. Without this cap, the impact of the YCU scenario on the EOF would be lowered, at an aggregated level, by EUR 10.4 bn. to EUR 185.7 bn., which corresponds to a decrease of 28.3% of the aggregate EOF.

73. The impact of the YCD scenario on the EOF is lower than the impact of the YCU scenario (Figure 2-12)[17]. In the YCD scenario the aggregate EOF decrease by 23.5% (EUR 153.8 bn.) to an aggregated value of EUR 501.7 bn.
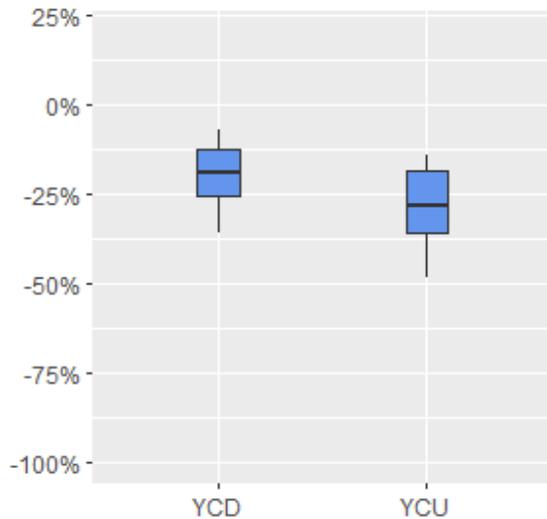
74. Similar to the YCU scenario, there is a shock-absorbing effect provided by the LTG and transitional measures. When excluding the impact of the transitional measures, the aggregate EOF decreases by 30.4%. In case all LTG and transitional measures are excluded, the EOF decrease by 42.8% (distributions of the impacts are reported in Figure 2-13).

75. In the YCD scenario, the effect of the cap on potential positive effects stemming from the application of the insurance specific stresses is immaterial. Not applying the cap would have resulted in a slightly smaller decrease in EOF (EUR 151.9 bn., a difference of only EUR 1.8 bn.)

---

[16] If the application of the lapse stress should imply a positive marginal impact on the Solvency II OF of the participating groups (conditional to the situation after the application of the market shocks), then this positive marginal impact should be neutralised and capped to zero at group level.
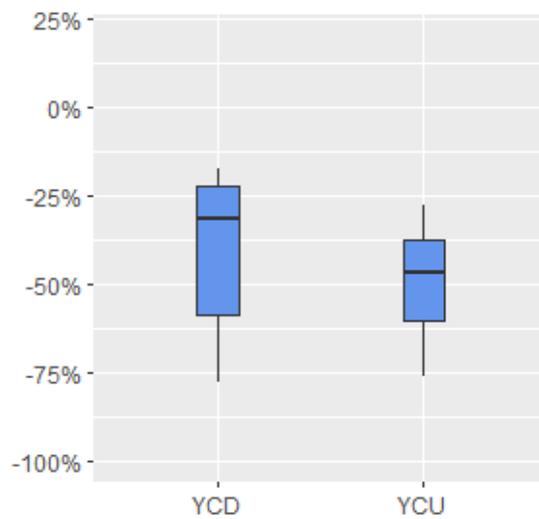
[17] It should be noted that the finding on EOF is consistent with the one on AoL mentioned in paragraph 55 and can be explained by the construction of the indicators: in eAoL (which drives the change in the EOF) liabilities are subtracted from assets, where in the AoL ratio assets are divided by liabilities.

Note: figure shows the median, interquartile range and 10th and 90th percentiles
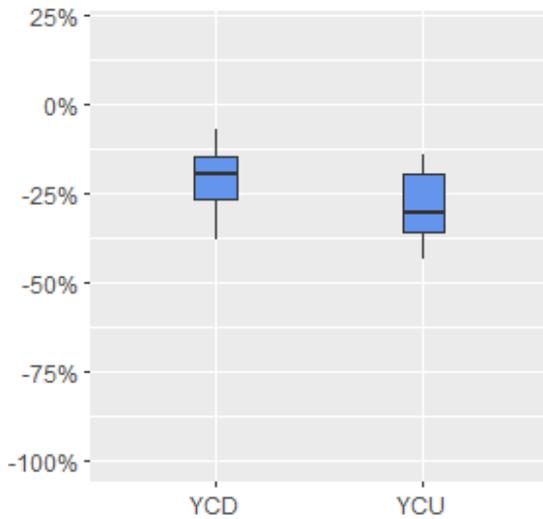

Note: figure shows the median, interquartile range and 10th and 90th percentiles

Changes in Basic Own Funds

77. In both scenarios, the impact on the EOF is mainly driven by the change in BOF, which is its largest component, accounting for 92% in the baseline. Changes in other own funds items (ancillary own funds, own funds of other financial sectors and own funds when using Deduction and Aggregation) are less material. The shock on the BOF is mostly driven by the decrease in excess of assets over liabilities, which may be slightly compensated by a reduction in foreseeable dividends or an increase in DTA as a Tier 3 BOF element[18].

78. The biggest change in the BOF occurs in the YCU scenario where groups report an aggregate decrease of 30.9% from EUR 603.9 bn. to EUR 417.5 bn. after stress. In the YCD scenario BOF drop by 23.1% (EUR 139.6 bn.) from EUR 603.9 bn. to EUR 464.3 bn. after stress (distributions of the impacts are reported in Figure 2-14).

79. The negative impact of the scenarios is amplified when the analysis excludes the LTG and transitional measures. The aggregate change in BOF without applying any transitional or LTG measures is -50.9% in the YCU scenario and -42.9% in the YCD scenario (distributions of the impacts are reported in Figure 2-15). This again demonstrates the shock-absorbing effect of the LTG and transitional measures.
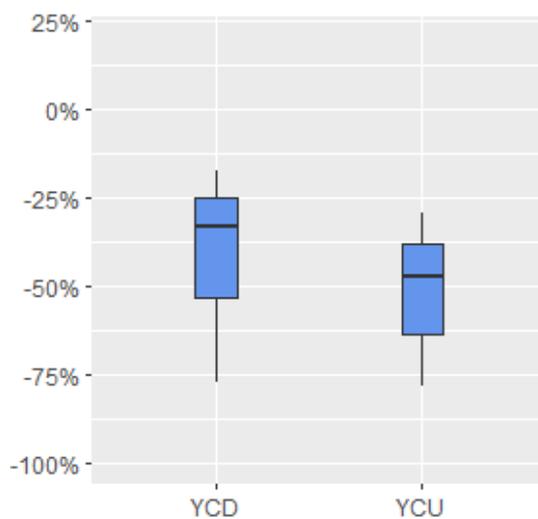
---

[18] The data requested does not allow for a granular analysis of the composition of the Tier 3 after the shocks.

Figure 2-14: - Relative change in total basic own funds

Note: figure shows the median, interquartile range and 10th and 90th percentiles

Figure 2-15: Relative change in total basic own funds without impact of LTG and transitional measures
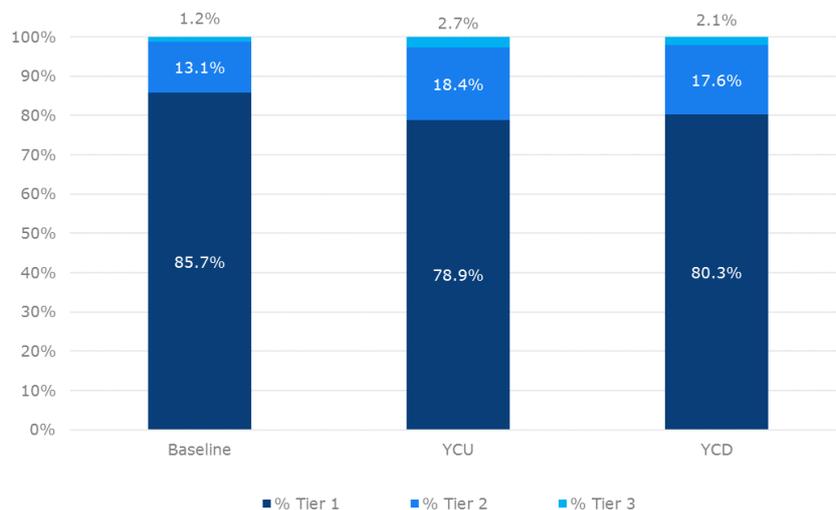

Note: figure shows the median, interquartile range and 10th and 90th percentiles

Quality of own funds

80. The overall quality of EOF deteriorates in both scenarios (Figure 2-16). In the YCU scenario, the share of Tier 1 EOF to total EOF decreases from 85.7% to 78.9%, whereas the share of Tier 2 EOF increases from 13.1 % to 18.4% and the share of Tier 3 EOF increases from 1.2% to 2.7%. Similar but less pronounced changes can be observed in the YCD scenario. The share of Tier 1 EOF decreases to 80.3% while the share of Tier 2 EOF and Tier 3 EOF increase respectively to 17.6% and 2.1%.

81. Although Tier 1 EOF still contributes approximately 80% of the total EOF, the increased contribution of Tier 2 and Tier 3 capital both in absolute value (for the YCD scenario) and relative share – indicates a greater reliance on lower quality own fund items to cover the SCR.

Figure 2-16: Quality of Eligible Own Funds

2.2.4.   SCR indicators

82. Figure 2-17 shows a breakdown of the methods applied for the SCR calculation. These are almost equally split: 20 groups in the sample are standard formula users, while 19 participants use partial internal models. The remaining 3 groups apply full internal models. The picture changes when looking at the split in terms of total assets (Figure 2-18). Size-wise, larger players make extensive use of partial internal models (61.6%) whereas standard formula users cover 32.6% of the total assets.

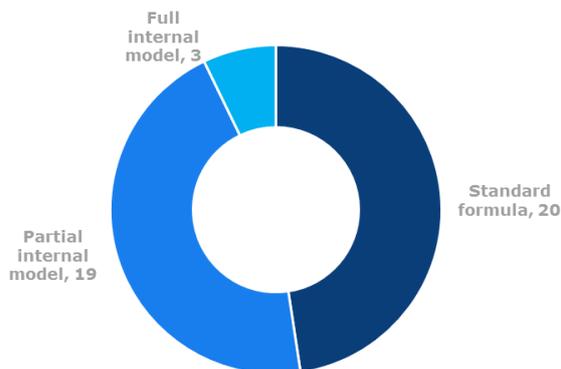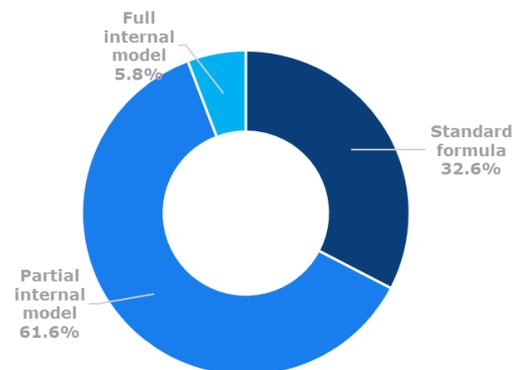**Figure 2-17: Number of participants split by method of SCR calculation**

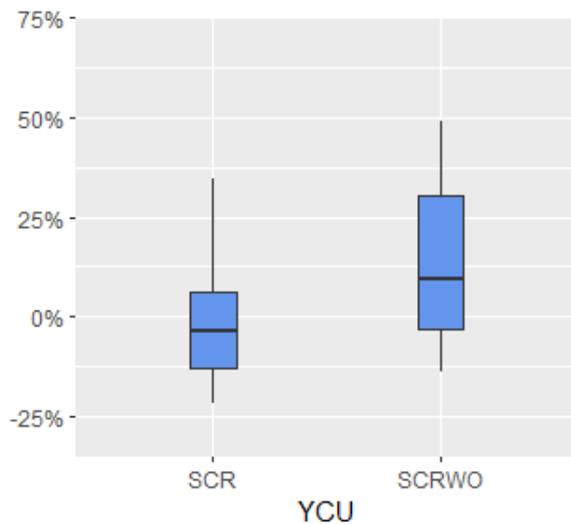**Figure 2-18: Share of total assets held by participants split by method of SCR calculation**

83. For standard formula users the main contribution to the SCR comes from the market risk and underwriting risk modules (life and non-life). The capital requirement for market risk in the baseline accounts for 59.7% of the net SCR before diversification benefits, decreasing to 57.6% and 54.8% respectively in the YCD and YCU scenario. The life underwriting risk SCR shows an opposite trend, accounting for 16.4% in the baseline and increases to 18.0% in the YCD scenario and to 21.1% in the YCU scenario. The contribution of the non-life underwriting risk module in the baseline equals to 14.3% of the net SCR and remains almost unchanged after the adverse scenarios.

84. The evolution of the aggregate SCR allows to value the shock-absorbing capacity of LACTP and LACDT under the adverse scenarios. The LACTP contribution to the SCR reduces from 29.5% in the baseline to 16.7% in the YCD scenario and to 14.9% in the YCU scenario. The same movement is observed in the LACDT whose contribution to the SCR decreases from 15.8% in the baseline to 8.4% and 9.3% in the YCD and YCU scenario respectively.

85. In general, the aggregate SCR slightly decreases in the YCU scenario (-2.3% compared to the baseline) for about two thirds of the groups (27 out of 42), while it increases for the remaining 15 groups. The heterogeneity is mainly driven by the contribution of the life underwriting risk SCR to the total SCR, which considerably increases for some groups, offsetting the general decrease of the market risk SCR. Transitional measures do not materially affect the SCR post-stress, except for very few cases, while removing the LTG measures increases the SCR in the YCU scenario for almost all participating groups with an aggregate increase of 17.7% (Figure 2-19).

Figure 2-19: Relative change in group SCR and SCR without LTG and transitional measures (SCRWO) in YCU scenario.

Figure 2-20: Relative change in group SCR and SCR without LTG and transitional measures (SCRWO) in YCD scenario.

86. The impact on the SCR is negative in the YCD scenario (Figure 2-20) where most participants (31 out of 42) report an increase of the SCR, with an aggregate increase of 12.7% compared to the baseline. Also in this scenario, the transitional measures do not have a material impact on the SCR (aggregate increase of 13.5%), while removing the LTG measures would considerably increase the aggregate SCR (35.4%).

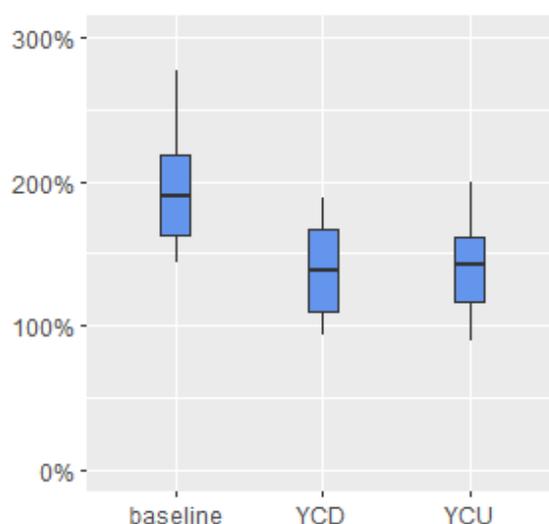## 2.2.5.   SCR ratio indicators

87. While the stress test is not a pass-fail exercise for participating groups, it is important to consider the capital position in a post-stress situation. This provides additional insight on the impact of the scenarios and potential second round effects.

88. The capital position is materially affected by the shocks prescribed in the YCU scenario. The aggregate SCR ratio drops by 57.2 percentage points compared to the baseline, but the vast majority of groups remains solvent. The aggregate post-stress SCR ratio is 145.2% and only 6 groups report a ratio below 100%.

89. The YCD scenario confirms that the European insurance industry is still vulnerable to a prolonged low yield environment (the aggregate SCR ratio drops by 64.9 percentage points compared to the baseline) but the majority of groups remains solvent. The aggregate post-stress SCR ratio is 137.4% and 7 participating groups report ratios below 100%.

90. Also the distribution of the SCR ratios (Figure 2-21) confirms the slightly higher impact of the YCD scenario with the median company losing 52.3 percentage points with respect to the baseline compared to the −48.9 percentage points observed in the YCU.
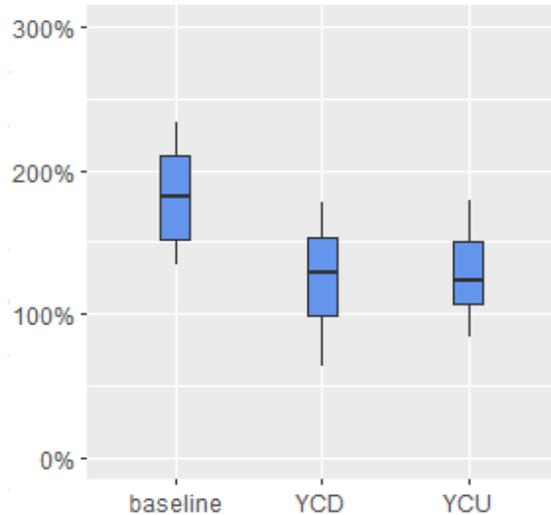
Figure 2-21: SCR ratio in the baseline and in the YCU and YCD scenario

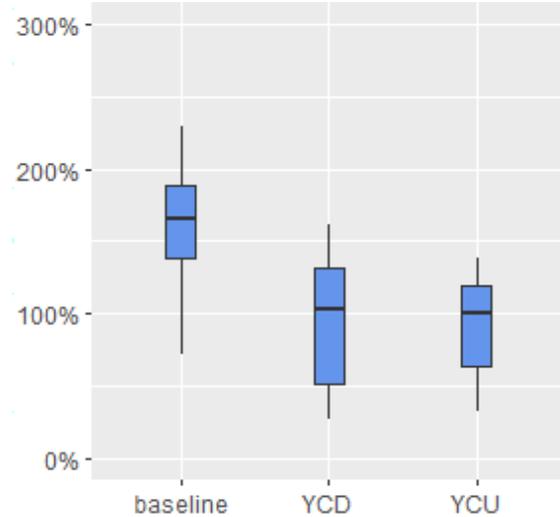Note: figure shows the median, interquartile range and 10th and 90th percentiles

91. Figure 2-22 and Figure 2-23 provide an overview of the distributions of the SCR ratios without LTG and transitional measures. The aggregate SCR ratio in the baseline falls from 202.4% to 188.5% without the transitional measures and to 154.3% if all LTG and transitional measures are excluded.

92. LTG and transitional measures play a material role in the YCU scenario as well. Without the application of these measures the aggregate SCR ratio drops by 57.2% (-115.8 percentage points) when compared to the baseline with 21 groups reporting a ratio below 100%. In detail: in absence of transitional measures, the aggregate SCR ratio drops by 14.3 additional percentage points with regard to the SCR ratio post-stress (from 145.2% to 130.9%) while in case both LTG and transitional packages are removed the SCR ratio drops by 44.3 additional percentage points to 86.6%.

93. Also in the YCD scenario, the LTG and transitional measures partly absorb the negative impact of the prescribed shocks. Without the application of the measures the aggregate SCR ratio drops by 57.8% (-117.0 percentage points) when compared to the baseline with 20 groups reporting a ratio below 100%. In detail, in absence of transitional measures the SCR ratio drops by 13.3 additional percentage points with regard to the SCR post-stress (from 137.4% to 124.1%) while in case both the LTG and transitional measures are removed the SCR ratio drops by 38.7 additional percentage points to 85.4%.

Figure 2-22: Ratio of group eligible own funds without impact of transitional measures to group solvency capital requirement without impact of transitional measures

Note: figure shows the median, interquartile range and 10th and 90th percentiles

Figure 2-23: Ratio of group eligible own funds without impact of LTG and transitional measures to group solvency capital requirement without impact of LTG and transitional measures

Note: figure shows the median, interquartile range and 10th and 90th percentiles

94. The Figure 2-24 and Figure 2-25 show the distribution of the SCR ratios across the sample. For each scenario, the groups are assigned to one of the ten equally-sized buckets.

95. In the baseline, the median SCR ratio is in the range [175% - 225%]. The distribution shifts significantly to the left when the stresses are applied, increasing the number of groups with a SCR ratio below 100% to 6 in the YCU scenario and 7 in the YCD scenario (Figure 2-24).

Figure 2-24: Distribution of SCR ratios with LTG and transitional measures in the baseline and in the YCU and YCD scenario

96. The outlook changes considerably when the LTG and the transitional measures are excluded (Figure 2-25). In the baseline, 6 groups report a SCR ratio below 100% without the measures. After the shocks, the distribution shifts to the very left side, with almost half of the groups showing a SCR ratio below 100%. The number of groups reporting SCR ratios below 100% reduces to 12 in the YCD and 8 in the YCU in case only the impact of the transitional measures is removed. Removing the LTG measures has the largest impact on the SCR ratio.
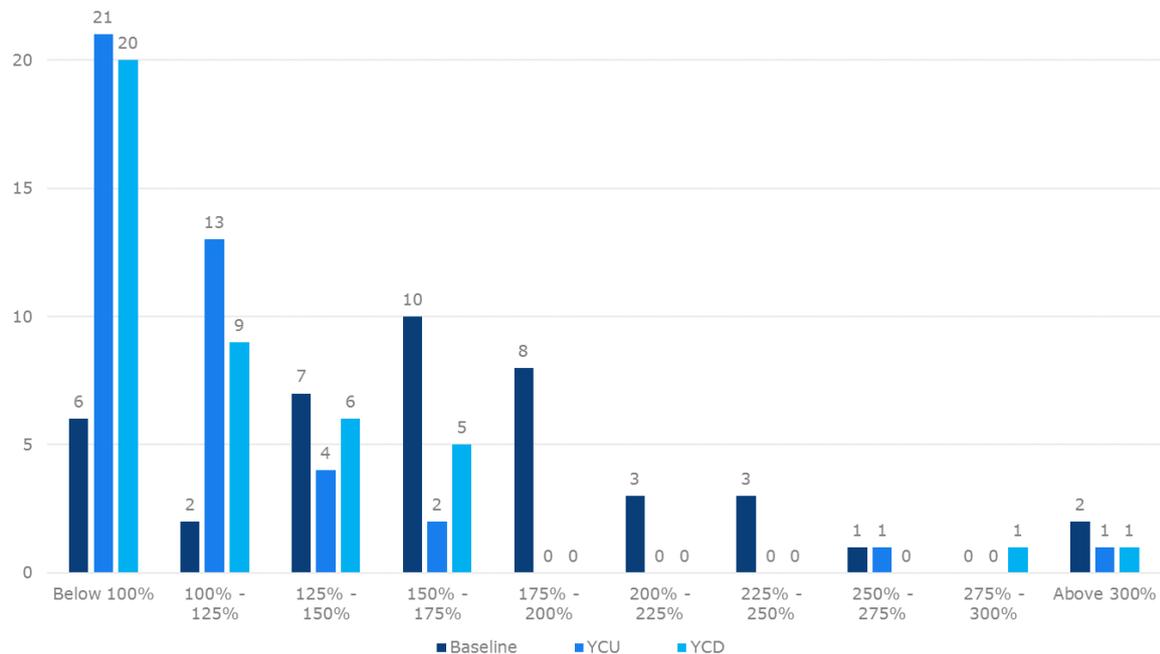
Figure 2-25: Distribution of SCR ratios without LTG and transitional measures in the baseline and in the YCU and YCD scenario

2.3. Impact of Natural Catastrophe scenario

97. Out of the 42 European (re)insurance groups participating in this ST exercise, only 25 were exposed to the prescribed set of Europe-located natural catastrophes.

98. Given the degree of freedom left by the interpretation of how the NC liability should be met by the undertakings (refer to Questions and Answers - Q&A n.73[19]), participating groups opted for three approaches to calculate the impact of the series of events:

- Immediate payment of the claims through cash and subsequent sales of assets and increase of reinsurance recoverable up to the exhaustion of the treaty (majority);

- Full reserve of the claims without disbursement with subsequent increase in the TP and increase of reinsurance recoverable up to the exhaustion of the treaty;

- An intermediate approach between the 2 options.

---

[19] Q&A can be consulted on the EIOPA website at: https://eiopa.europa.eu/Pages/Financial-stability-and-crisis-prevention/Stress-test-2018.aspx.

99. The extent to which assets, TP and SCR components are impacted post-stress (Market Risks, Non-Life Underwriting risks, Reinsurance Counterparty Credit Risks) is predicated on the choice of the approach selected. It is worth noting that the different approaches had the same impact on the eAoL and on the OF.

100. In total, the aggregate insured loss from the 8 events sum to EUR 48 bn. for the insurance industry over the course of the year. In aggregate, the 25 European group gross exposures represent 70% of the estimated industry loss[20].

Table 2-2: NC scenario - Overview of the impacts

	Aggregate values
Estimated market loss (RMS) (EUR bn.)	47.2
Gross loss (participating groups) (EUR bn.)	33.2
% of Estimated market	70%
Net loss (participating groups) (EUR bn.)	15.1
% ceded	55%
% of EOF at 31.12.2017 (participating groups)	3%

2.3.1. Balance sheet and own funds indicators

101. The 25 groups account for some EUR 3.38 tn. of Gross Technical Provisions, representing approximately 50% of the European non-life insurance sector, and held some EUR 451 bn. of EOF as at 31 December 2017.

102. Overall, the impact on the eAoL is generally comparable with the level of aggregate net of reinsurance losses owing to European groups' exposure to the scenarios (Figure 2-26). The AoL ratio dropped by 0.3 percentage points from an aggregate value of 110.0% to 109.7% (Figure 2-27). In general, the highly affected participants are reinsures and those direct insurers largely involved also in reinsurance activities.

Figure 2-26: Change in excess of AoL and Net aggregated losses (EUR/mn.)

Figure 2-27: Percentage change in AoL

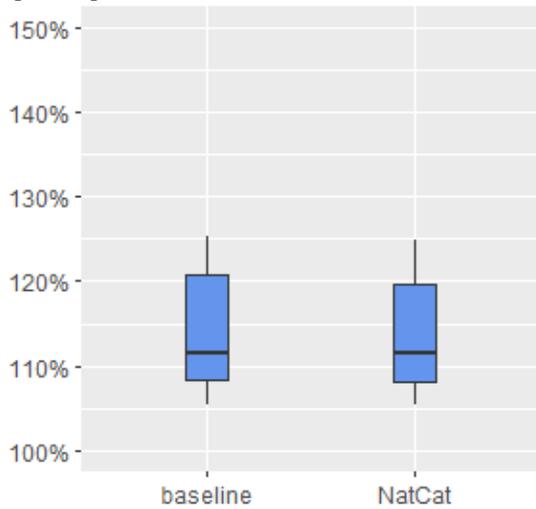103. The resilience of the groups to the series of natural catastrophes included in the scenario is confirmed by a limited aggregate drop in the eAoL of -2.7% (Figure 2-29) with respect to the baseline. The marginal (in absolute terms) effect of the LTG and transitional measures in the scenario is confirmed by the

---

[20] As estimated by RMS based on their Industry database for the relevant Cat Scenario IDs.

-15.1% change in the eAoL excluding the 2 packages is with respect to the baseline.
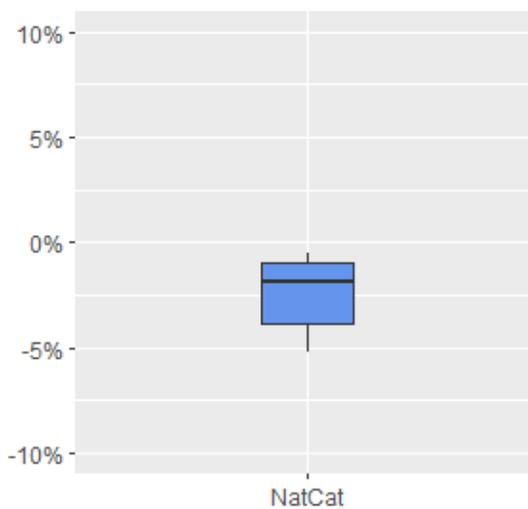
104. The limited impact on the groups can be traced back to the reinsurance treaty in place at the reference date. 55% of the gross loss is ceded through reinsurance, leaving a net aggregate loss of EUR 15.1 bn. on the direct insurers. This represents 3% of the aggregate EOF for this cohort. By a geographical perspective, out of EUR 18.3 bn. ceded to reinsurance, 55% is captured by reinsurance carrier based in EU and the remaining part is distributed to Bermuda (22.0%), Switzerland (16.3%), US (10.9%) and other non-EU jurisdictions (5.9%).

Figure 2-28: Assets over liabilities (AoL)

Note: figure shows the median, interquartile range and 10th and 90th percentiles

Figure 2-29: Relative change in Excess of AoL

Note: figure shows the median, interquartile range and 10th and 90th percentiles

105. The ceded losses are concentrated in a limited number of reinsurers: the top 10 reinsurance recoveries (reduced for any reinstatement premiums payable) reported by each group exposed to NC represents EUR 10 bn. and corresponds to 70% of all reinsurance recoveries in the NC scenario. Furthermore, the top 5 reinsurers accumulate 52% of the top 10 reinsurance recoveries (see Figure 2-30).

Figure 2-30: Ceded losses – concentration of reinsurers

2.3.2. SCR Indicators

106. Given the structure of the NC scenario, the SCR is expected to be marginally affected by the prescribed shocks. Additionally, the overall impact on the capital requirements is subject to a number of factors commensurate to each individual group's underlying exposure after taking into account reinsurance protection. The theoretical impacts to the SCR components follow:

- Market risks: potential reduction of the capital requirements driven by the reduction of the assets upon instantaneous payment of the claims;
- Non-life underwriting risks: potential increase of the capital requirement due to incorporating the events in the estimation for future claims;
- Counterparty credit risks: potential effect driven by increased concentration of Type 1 exposures due to the increase in reinsurance recoverables.

107. These impacts are strictly related to the approach taken in applying the NC scenario (ref. to par.85).

108. The results support the general expectations of a marginal impact on the aggregate SCR: the overall SCR did not change in its median value and increased by 0.5% (Figure 2-31). However, given the immateriality of the impacts and the heterogeneity in the approaches to calculate the NC scenario, the changes in the SCR components do not allow to fully confirm all theoretical impacts. If on the one hand the movements in the market, non-life and counterparty components are in line with the expectations, on the other hand, for some groups among those who opted for the immediate payment of the claims, the change in the overall SCR is mainly driven by the LACDT.

109. The aggregate SCR ratio post-stress shows a decrease of 3% mainly driven by the decrease in EOF (Figure 2-32).

Figure 2-31: Relative change in group SCR

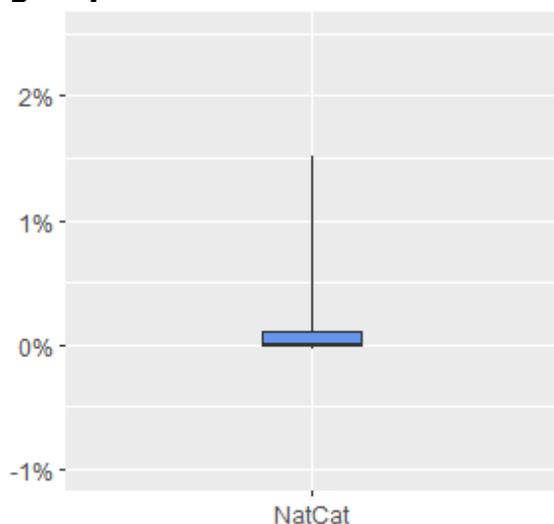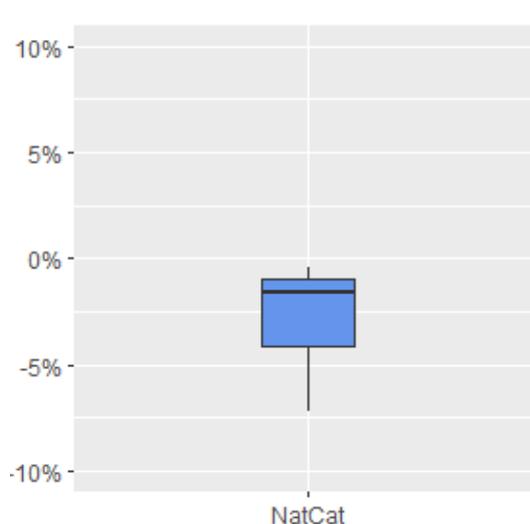Note: figure shows the median, interquartile range and 10th and 90th percentiles

Figure 2-32: Relative change of SCR ratio

Note: figure shows the median, interquartile range and 10th and 90th percentiles

3. Conclusions and next steps

3.1. Conclusions

110. The ST exercise highlights the vulnerabilities of the European insurance industry to market shocks combined with insurance specific shocks. The exercise reveals that not only a decrease of interest rates accompanied with a prolonged life expectancy impacts the sector but also that a sharp and sudden increase in yields (driven by increasing RP) triggering higher lapses and costs of claims has a substantial negative impact on the insurers' capital positions.

111. The impact of the YCD scenario is driven by increasing TP for life business leading to lower EOF and higher SCR. Hence, the post-stress capital position is significantly impacted. While the eAoL remains positive for all groups, the share of high quality OF decreases and SCR ratios fall below the regulatory threshold for 7 groups. The LTG and transitional measures have a significant impact with 3 groups reporting an AoL ratio below 100% and almost half of the groups reporting SCR ratios below 100% when these measures are excluded.

112. The impact of the YCU scenario is driven by a decrease in assets values that is not fully compensated by a reduction in the value of the liabilities, especially for those groups more exposed to non-life business. This leads to a material decrease in the EOF that exceeds the drop in the SCR, which results in decreasing SCR ratios with 6 groups falling below 100%. Removing LTG and transitional measures would cause a material impact with half of the sample reporting an SCR ratio below the regulatory threshold.

113. The 25 groups exposed to the events included in the NC scenario show resilience to the shocks with a limited decrease in the EOF, mainly due to the reinsurance coverages in place, which absorb more than half of the gross aggregated losses. Changes in the SCR are also limited. Potential vulnerabilities might stem from the concentrations of the ceded losses to a limited number of counterparties.

3.2. Next steps

114. This exercise represents an important step forward in the reassessment of capital requirements under adverse scenarios. Furthermore, it provides a valuable basis for a follow-up dialogue between the group supervisors and the participating groups on the identified vulnerabilities. In this respect, it is important that the participants further enhance their corresponding risk management capabilities.

115. EIOPA will further analyse the results obtained in order to get a deeper understanding of the risks and vulnerabilities of the sector. Based on that, EIOPA in cooperation with the group supervisors will issue recommendations on the relevant aspects if appropriate.

116. In addition, it is planned to elaborate on the responses obtained from the cyber risk questionnaire and to communicate the outcome in future EIOPA publications.

117. EIOPA will further enhance its approach to insurance stress testing, in particular with regard to BE and to SCR calculations under adverse scenarios and potential second-round effects.

Annex 1 - Sample

Group	Country
Vienna Insurance Group AG Wiener Versicherung Gruppe	Austria
KBC Insurance Group	Belgium
Ageas	Belgium
HUK-COBURG Versicherungsgruppe	Germany
HDI Haftpflichtverband der Deutschen Industrie VVaG	Germany
Münchener Rückversicherungs-Gesellschaft AG	Germany
Allianz SE	Germany
R+V Versicherung Aktiengesellschaft	Germany
PFA_PENSION	Denmark
Forsikringsselskabet Danica, skadeaktieforsikringsselskab	Denmark
VIDACAIXA S.A.U. DE SEGUROS Y REASEGUROS	Spain
MAPFRE S.A.	Spain
Sampo plc	Finland
AXA	France
BNP Paribas Cardif	France
Crédit Agricole Assurances	France
CNP Assurances	France
COVEA	France
GROUPAMA SA	France
GROUPE DES ASSURANCES DU CREDIT MUTUEL	France
Natixis Assurances	France
Sogecap	France
Assicurazioni Generali S.p.A.	Italy
Poste Vita Group	Italy
UNIPOL GRUPPO SPA	Italy
Intesa Sanpaolo Vita S.p.A.	Italy
Achmea	Netherlands
Aegon N.V.	Netherlands
NN Group N.V.	Netherlands
Gjensidige Forsikring	Norway
Storebrand ASA	Norway
Nordea Life Holding AB	Sweden
Livförsäkringsbolaget Skandia, ömsesidigt	Sweden
The Royal London Mutual Insurance Society Limited	United Kingdom
Aviva plc	United Kingdom
Legal & General Group Plc	United Kingdom
Scottish Widows Group Limited	United Kingdom
RSA Insurance Group plc	United Kingdom
Phoenix Group Holdings	United Kingdom
Prudential plc	United Kingdom
ReAssure Group Limited	United Kingdom
Standard Life Aberdeen plc	United Kingdom

Annex 2 – Submitted information: Areas of improvement

- Shocks to assets: the shocks prescribed to the different assets classes were in general properly applied; however, the comparison between the impact on the balance sheets and the implied shocks highlighted situations which most of the times requested clarifications. In some cases the quality checks spotted the wrong application of the shocks, therefore resubmission of the data was needed to solve the issue.

- Cash flows: the quality of the liability cash flows was sufficient to verify the proper applications of insurance specific shocks via pre-post stress comparisons for most of the participants. However, the applied simplifications and the limited granularity of the model point cash flows did not always allow for a proper assessment of the post-stress BE. The validation process would benefit from a more prescriptive definition of the expected cash flows.

- Application of the general side condition on the neutralisation of positive marginal impacts of the insurance specific shocks to the OF in the YCU and YCD scenario. The conventions defined in the paragraphs 81 and 104 of the TS and in the Q&A n.20, 47, 56, 62, 83, 87, 92 were not always followed.

- Application of the provision deficiency shock. The application of the shock to inflation was thoroughly scrutinised with particular reference to the applied inflation (compounded vs constant).

- Impact of the shocks combined with the use of LTG and transitional measures. ST prescribed that the impact of the transitional measure on TP shall be kept constant in the post-stress scenario. This led to a correct calculation of the post-stress TP but in few specific cases to implausible breakdown between BE and RM.

- Application of the NC scenario. The majority of the groups followed the approach of an immediate payment of the claims generated by the series of natural events include in the scenarios while others opted for a full reserving of the claims without any disbursement or an intermediate approach between the two. It is worth noting that the impacts on the excess of assets over liabilities and on the OF was the same.

Annex 3 – Information on third party data

Risk Management Solutions, Inc.

Information on catastrophe events are provided by Risk Management Solutions, Inc. ("RMS") against the targets defined by EIOPA. The RMS information on stochastic events in this document (the "Information") are provided by Risk Management Solutions, Inc. ("RMS"). The Information is provided under license to EIOPA and is RMS' proprietary and confidential information and may not be shared with any third party without the prior written consent of RMS. Furthermore, this Information may only be used for the specific business purpose specified by EIOPA and for no other purpose, and may not be used under any circumstances in the development or calibration of any product or service offering that competes with RMS. RMS specifically disclaims any and all responsibilities, obligations and liability with respect to any decisions or advice made or given as a result of the information or use thereof, including all warranties, whether express or implied. In no event shall RMS (or its parent, subsidiary, or other affiliated companies) be liable for direct, indirect, special, incidental, or consequential damages with respect to any decisions or advice made or given as a result of the contents of this information or use thereof.

AIR Worldwide Corporation

AIR Worldwide Corporation ("AIR") provided a set of comparable events. The information on these stochastic events is provided by AIR Worldwide Corporation ("AIR"). It may be used only by participants of and in direct connection to the EIOPA 2018 Insurance Stress Test and may not be re-distributed without prior written consent of AIR Worldwide. AIR disclaims any and all responsibilities, obligations and liability with respect to any decisions or advice made or given as a result of the information or use thereof, including all warranties, whether express or implied. In no event shall AIR (or its parent, subsidiaries, or other affiliated companies) be liable for direct, indirect, special, incidental, or consequential damages with respect to any decisions or advice made or given as a result of the contents of this information or use thereof.

GETTING IN TOUCH WITH THE EU

In person

All over the European Union there are hundreds of Europe Direct information centres. You can find the address of the centre nearest you at:

https://europa.eu/european-union/contact_en

On the phone or by email

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

– by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),

– at the following standard number: +32 22999696, or

– by email via: https://europa.eu/european-union/contact_en

FINDING INFORMATION ABOUT THE EU

Online

Information about the European Union in all the official languages of the EU is available on the Europa website at: https://europa.eu/european-union/index_en

EU publications

You can download or order free and priced EU publications from: https://publications.europa.eu/en/publications. Multiple copies of free publications may be obtained by contacting Europe Direct or your local information centre (see https://europa.eu/european-union/contact_en).

EU law and related documents

For access to legal information from the EU, including all EU law since 1952 in all the official language versions, go to EUR-Lex at: http://eur-lex.europa.eu

Open data from the EU

The EU Open Data Portal (http://data.europa.eu/euodp/en) provides access to datasets from the EU. Data can be downloaded and reused for free, for both commercial and non-commercial purposes.

Publications Office