TC.12-1

# Insurance stress-test 2022

## *Results & Recommendations*

*Board of directors 20.12.2022*

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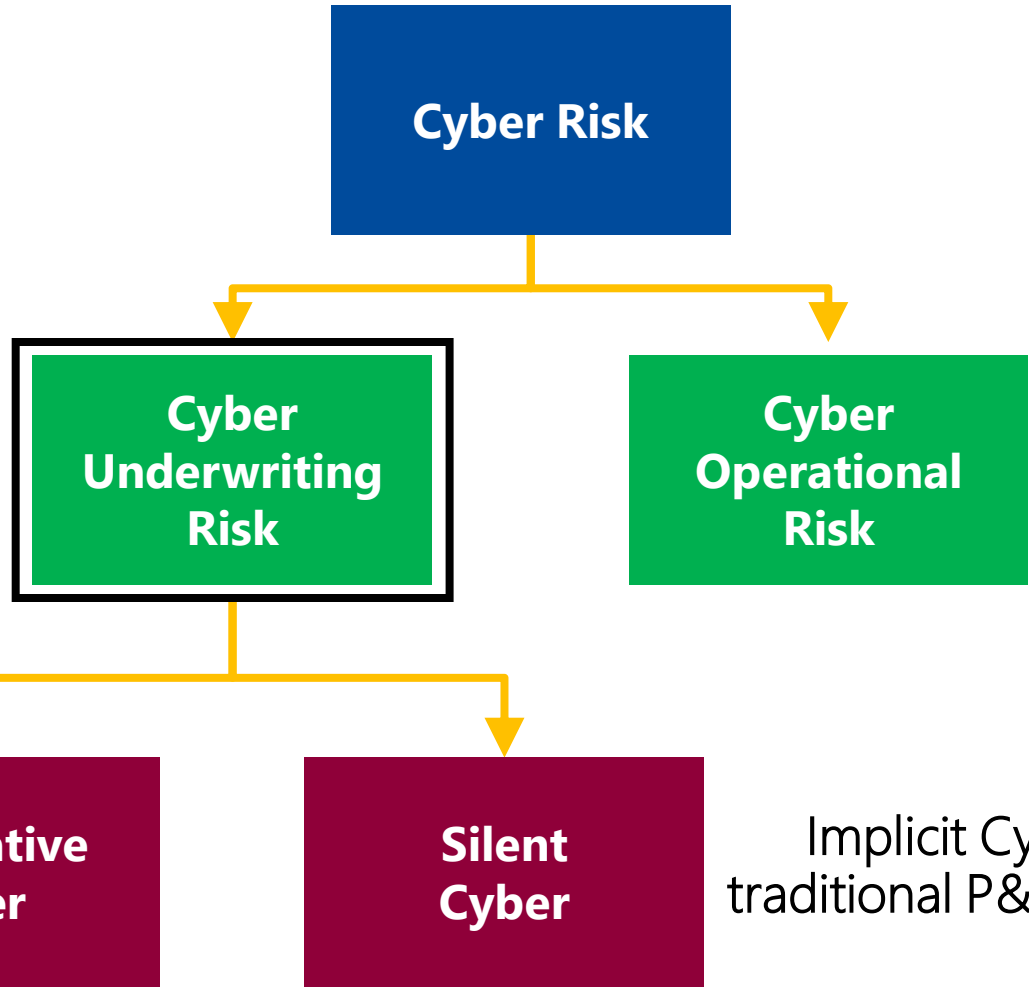
# I. Overview of the Stress Test

*Overview cyber risk types*




Cyber attack on policyholders

(Financial impact via insurance products)

Cyber attack on Insurance undertaking

(Direct operational and financial impact)

Explicit Cyber cover (stand-alone or add-on)

Implicit Cyber in traditional P&C policies

# I. Overview of the Stress Test

*Description scenarios*

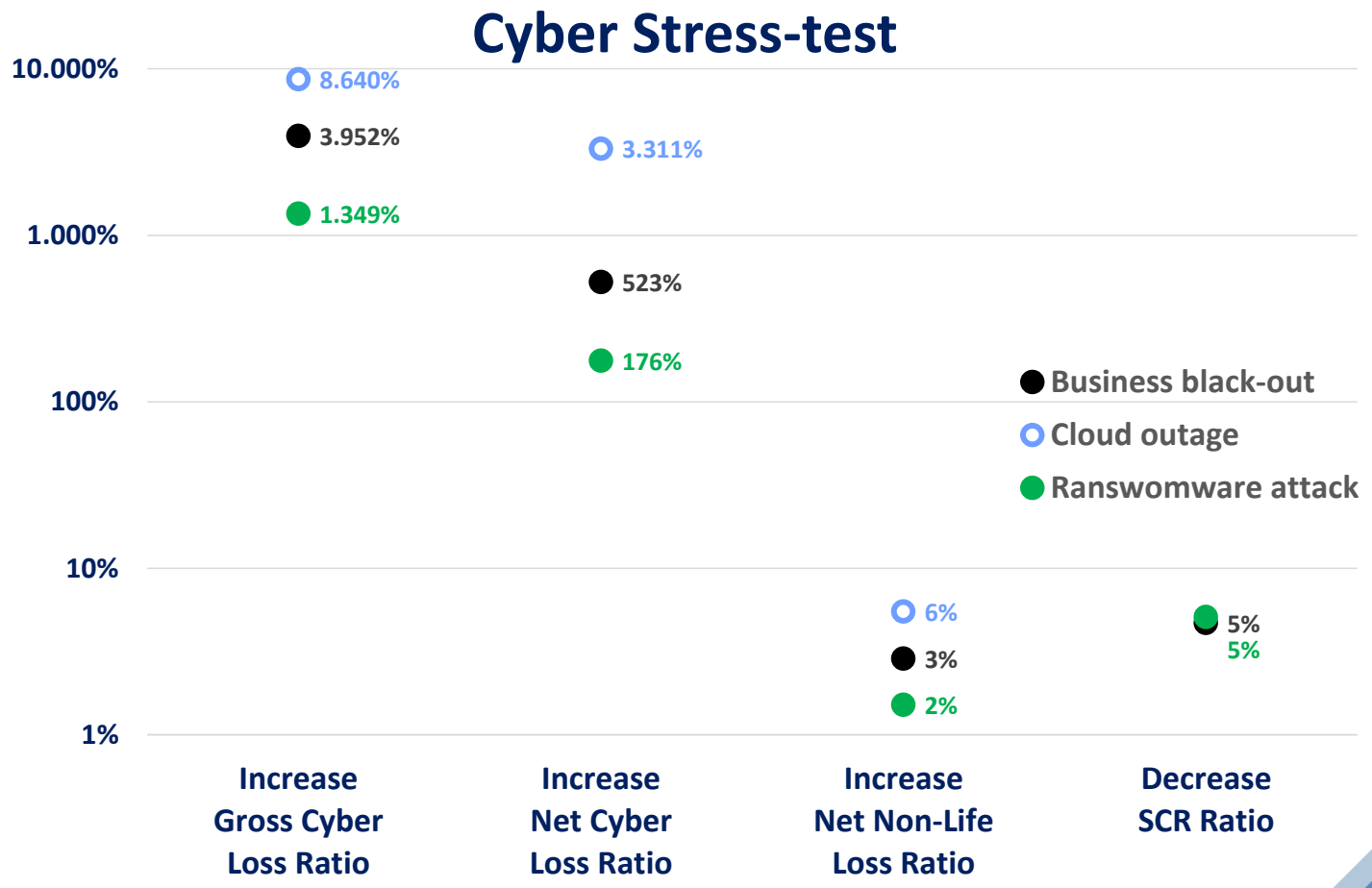
| | Business Blackout | Ransomware Attack | Cloud Outage |
|---|---|---|---|
| |  |  |  |
| **Scenario** | Cyber attack on electricity infrastructure in largest underwritten country | Ransomware attack (like WannaCry) across undertakings | Outage of largest cloud service provider across all datacentres |
| **Cyber Stress** | Blackout with downtime till 24h | Ranswomware attack on 10% of the portfolio with 300.000 EUR ransom and 14 to 22 days interruption | Cloud Outage of 3 days and business up after 17 to 25 days |
| **Impacted Lines of Business** | • Business interruption (BI)<br>• Contingent BI<br>• Property (spoiled goods)<br>• General Liability (D&O, E&O, PI, Med Mal, PL etc.) | • Business Interruption (BI)<br>• Contingent BI<br>• Cyber extortion<br>• Incident Response Cost<br>• Data and Software Loss<br>• General Liability (D&O, E&O, PI, Med Mal, PL etc.) | • Business interruption (BI)<br>• Contingent BI<br>• Incident Response Cost<br>• Data and Software Loss<br>• General Liability (D&O, E&O, PI, PL etc.) |
| **Financial Stress** | | | Tech bubble burst |

| | Cloud-using sectors | Other Sectors |
|---|---|---|
| Sovereign bond yield (OLO) | -23bps | |
| Corporate bond yield (AA) | +80bps | +64bps |
| Corporate bond yield (BBB) | +105bps | +71bps |
| Equity (EUR) | -56% | -38% |
| Commercial Real Estate | -20% | |

# II. Impact of the cyber risk underwriting part of the 3 scenarios

*Shocks in loss ratios up until 10.000% but stress in SCR ratio around -5%*

- Average loss and SCR ratios are shown
- **Strong increase in gross cyber loss ratios** (including silent cyber) between 1000% and 10.000%
- Reinsurance reduces impact but less than expected due to **limited availability of cyber reinsurance**
- Much lower impact on total Non-Life premium income due to **limited premium income from cyber insurance**

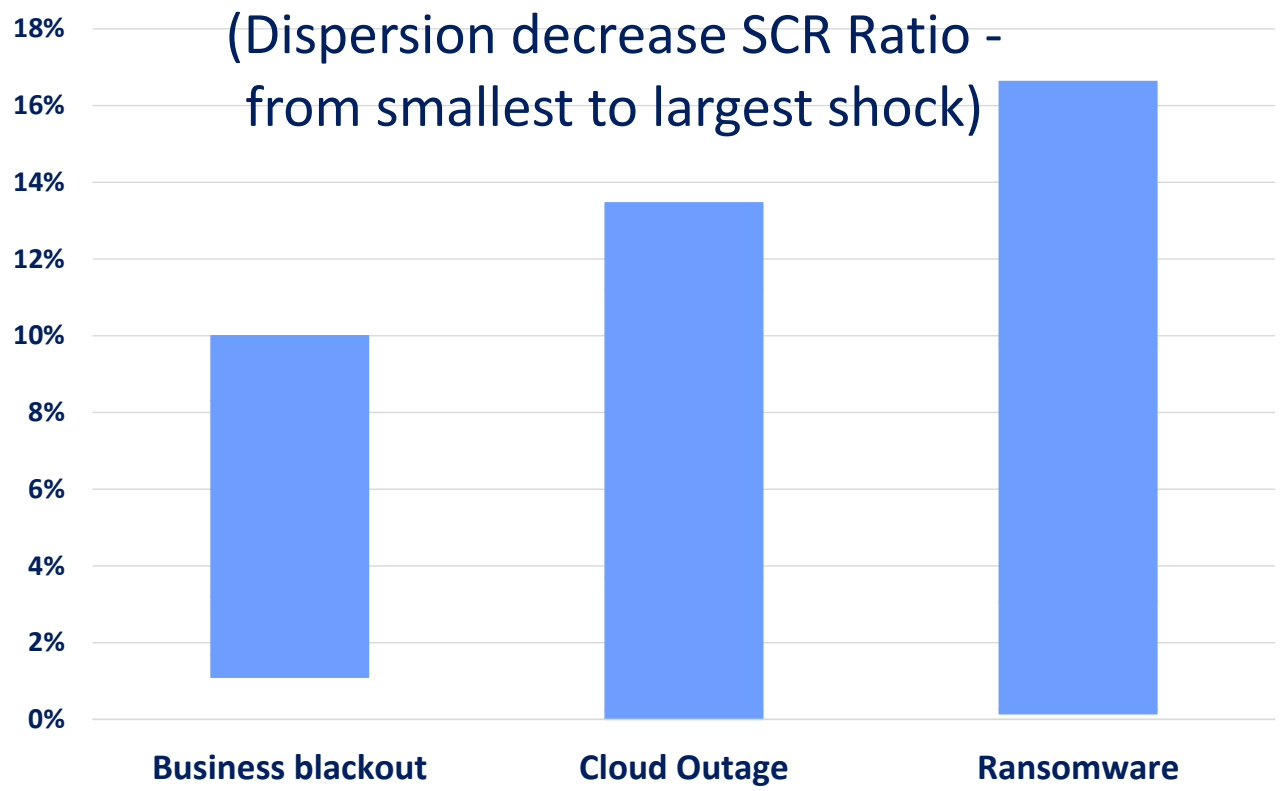



- On average the different cyber scenarios lead to a similar **5% decrease in SCR ratio**
- **The current risk is therefore limited due to small premium volume**. But given expected increase in premium income and limited cyber reinsurance, **future risk is expected to grow materially**

# II. Impact of the cyber risk underwriting part of the 3 scenarios

*Large differences between undertakings*

- The spread of impacts across undertakings is shown (from smallest to largest impact)
- The impact on the SCR ratio for undertakings shows a **large dispersion**
- The heterogeneity is driven by **differences in risk profile,** but also **in assumptions e.g. on silent cyber**
- For **business blackout**, we observe that **Property** and **Public and Product Liability** insurance have the strongest impact

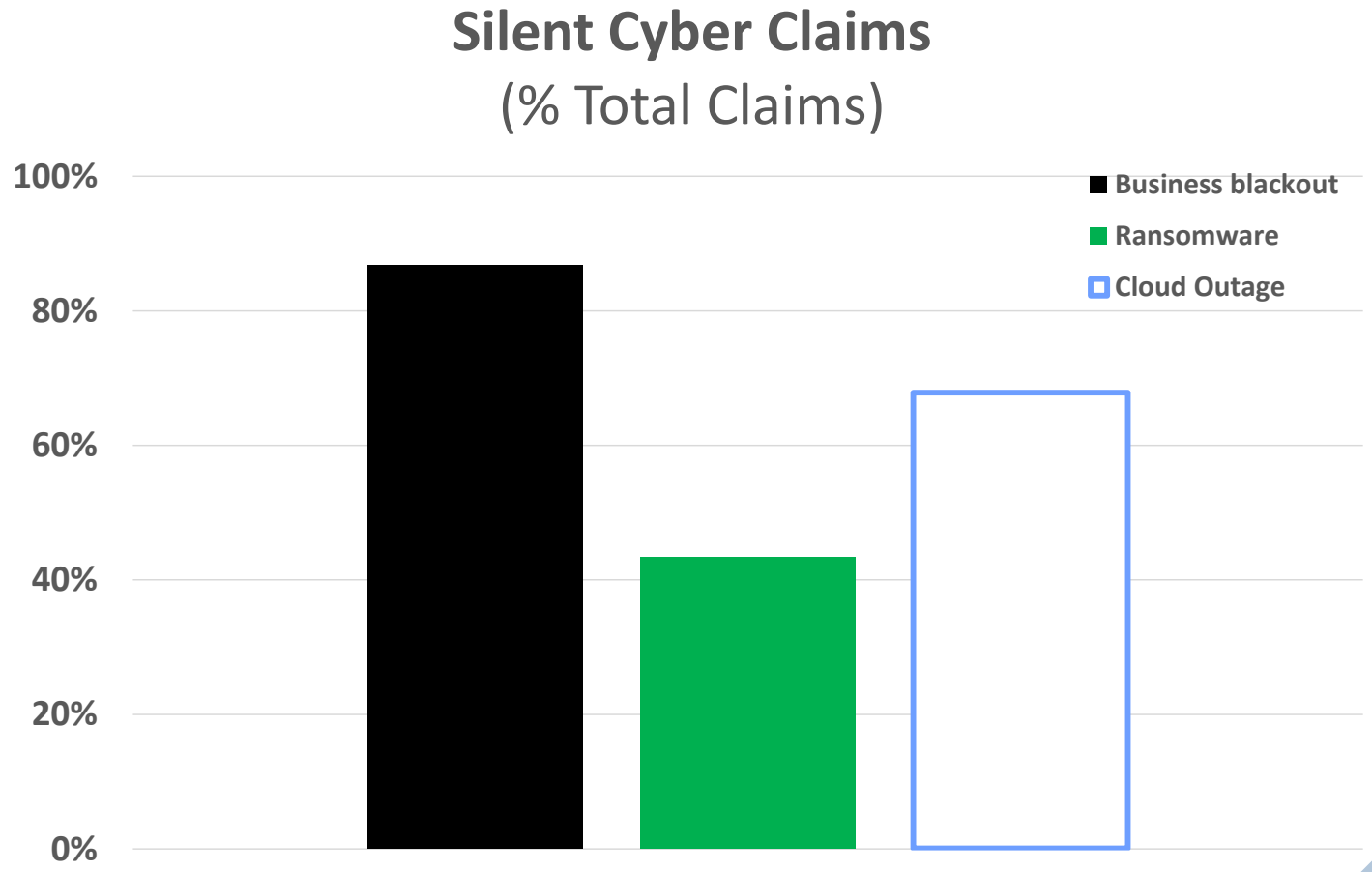



- For **cloud outage**, the **affirmative cyber** covers show the most significant impact mainly driven by data and software losses and contingent business interruption
- For **ransomware**, the impact is mainly driven by affirmative cyber, Public and Product Liability and Professional Indemnity. A large impact due to silent cyber is provoked by the **silent coverage of data loss which is growing in materiality in Belgium**

# II. Impact of the cyber risk underwriting part of the 3 scenarios

*Silent cyber risk determines 40% to 80% of claims*

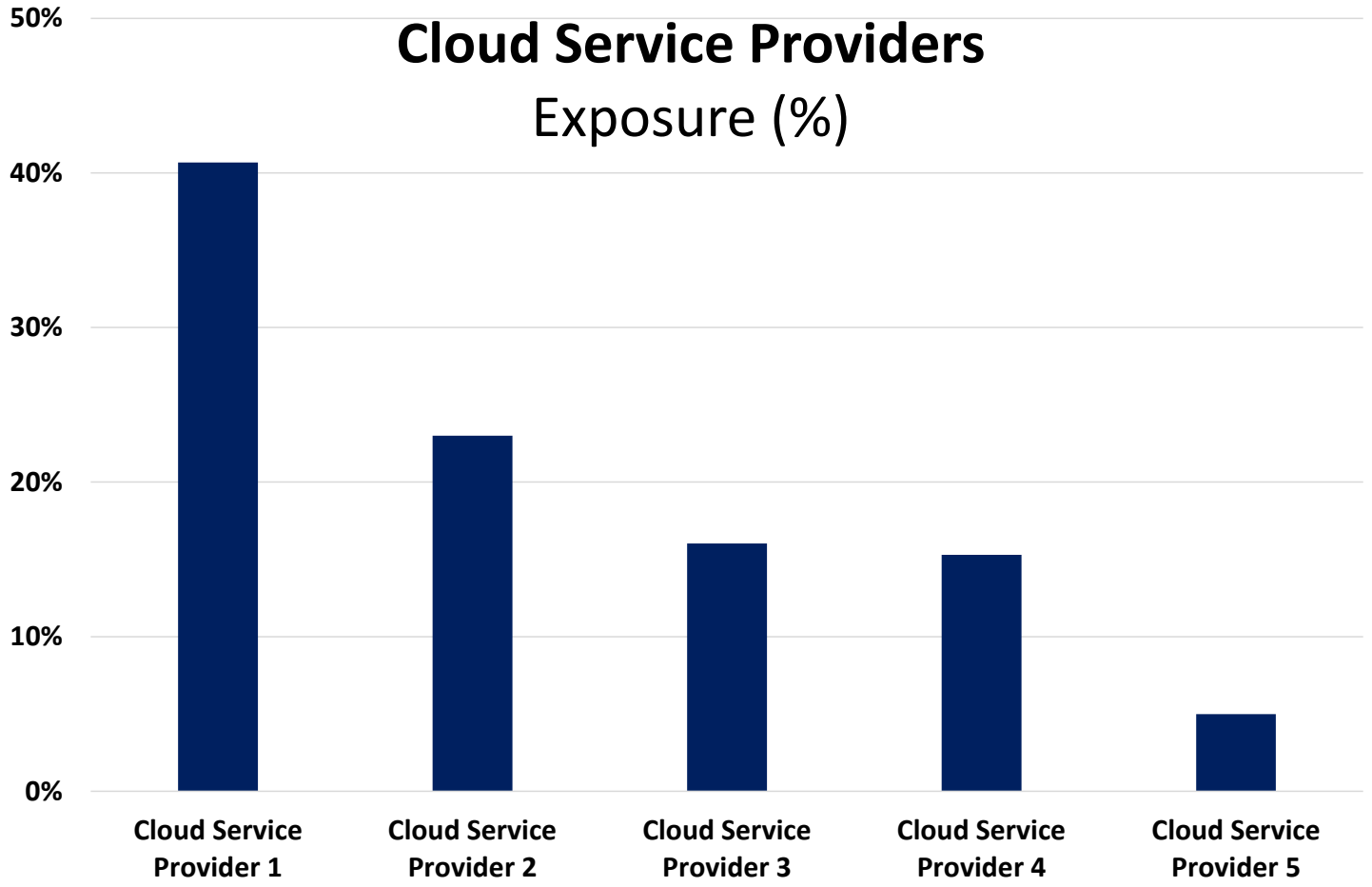
- Cyber risk is materially driven by silent cyber
- Business black-out has the largest impact due to silent cyber
- Some insurers have clarified the wording of their insurance policies, but most are still exposed to silent cyber
- **Silent cyber is a potential material issue for the Belgian insurance sector**



# II. Impact of the cyber risk underwriting part of the 3 scenarios

*Most undertaking are unaware which clouds they insure*

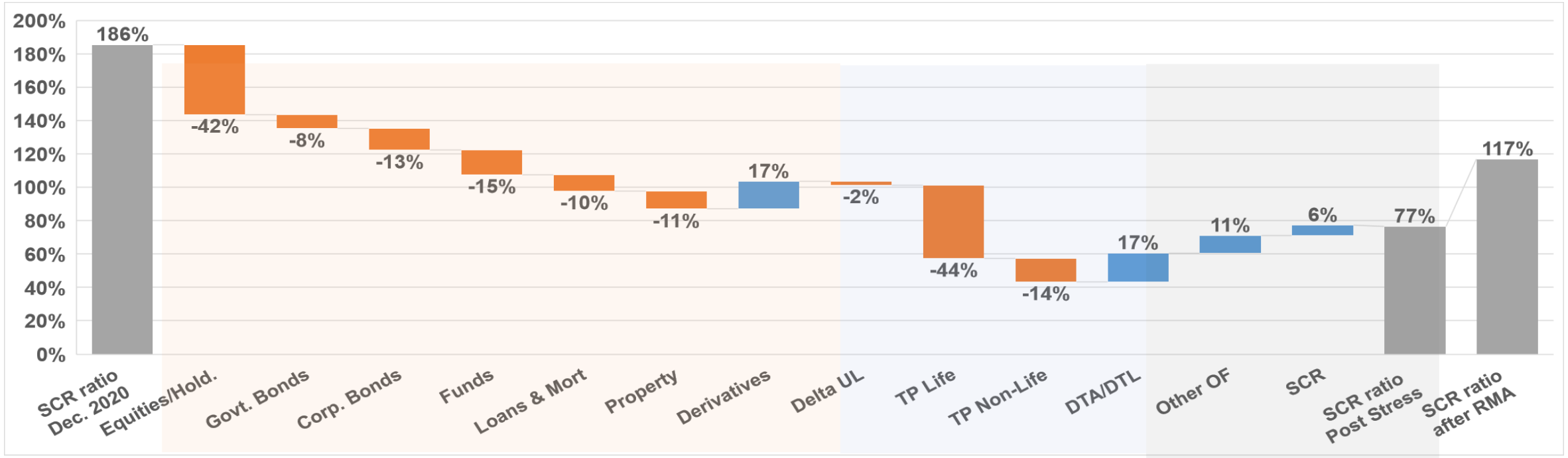
- The cloud service providers used by policyholders and insured by undertakings are shown
- Material concentration exists towards a limited number of cloud service providers
- A large number of undertakings are not aware which IT service providers are used and which exposures they insure




- **Exposure management for cyber insurance is not yet fully mature**

# III. Impact of the financial part of the cloud outage scenario

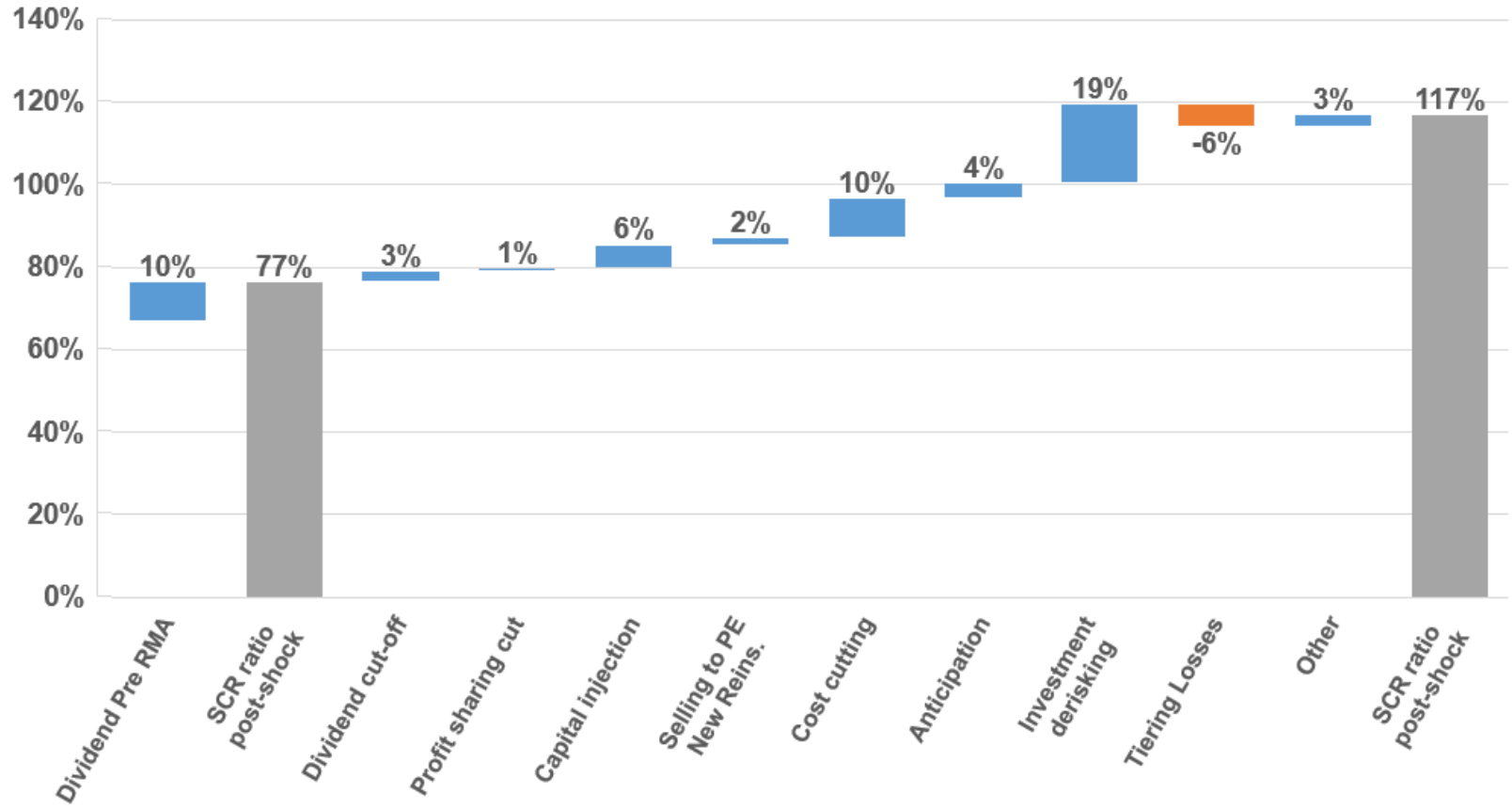
*The 2022 stress test simulates a very intense shock affecting solvency*




- The main vulnerabilities for the Insurance sector originate from financial market shocks:
  - The equity asset class (including holding and participations) has one of the largest impact on the SCR ratio (-42 points)
  - The impact of lower interest rates leads to a strong increase (having a negative impact on solvency) in Life (-44 points) and Non-Life (-14 points) technical provisions
- DTA/DTL and derivatives (both +17 points) have a strong compensating impact (more details, see further)
- Finally, by applying reactive management actions, the participating insurers were able to (partly) restore their solvency
  - SCR ratio increases from 77% to 117% after application of these measures

# III. Impact of the financial part of the cloud outage scenario

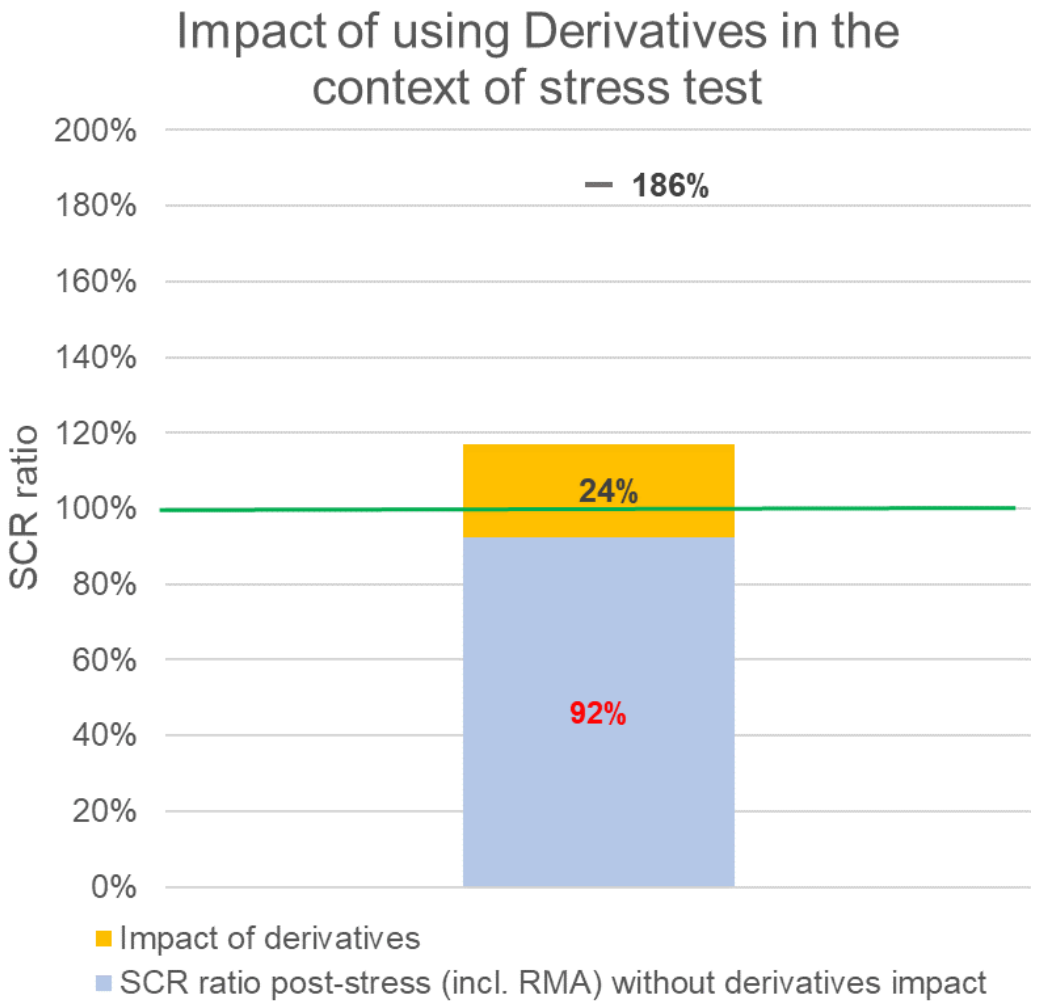
*Reactive management measures allow the overall SCR ratio to reach 117% after shocks*




- The most important impacts from reactive management actions are linked to de-risking of the investment portfolio (+19 points), cost reduction measures (+10 points) and, to a lesser extent, capital injections (+6 points)
- Note that tiering losses (-6 points) partially reverse the impact (mainly of investment de-risking). De-risking measure tend to work well in normal situations but, due to the impact on tiering of these measures can lose part of their mitigating impact
- As 'dividend and profit sharing cuts' are often directly included in the calculation models of the insurers, the additional impact of these measures as reactive management actions is low (+3 points)

# III. Impact of the financial part of the cloud outage scenario

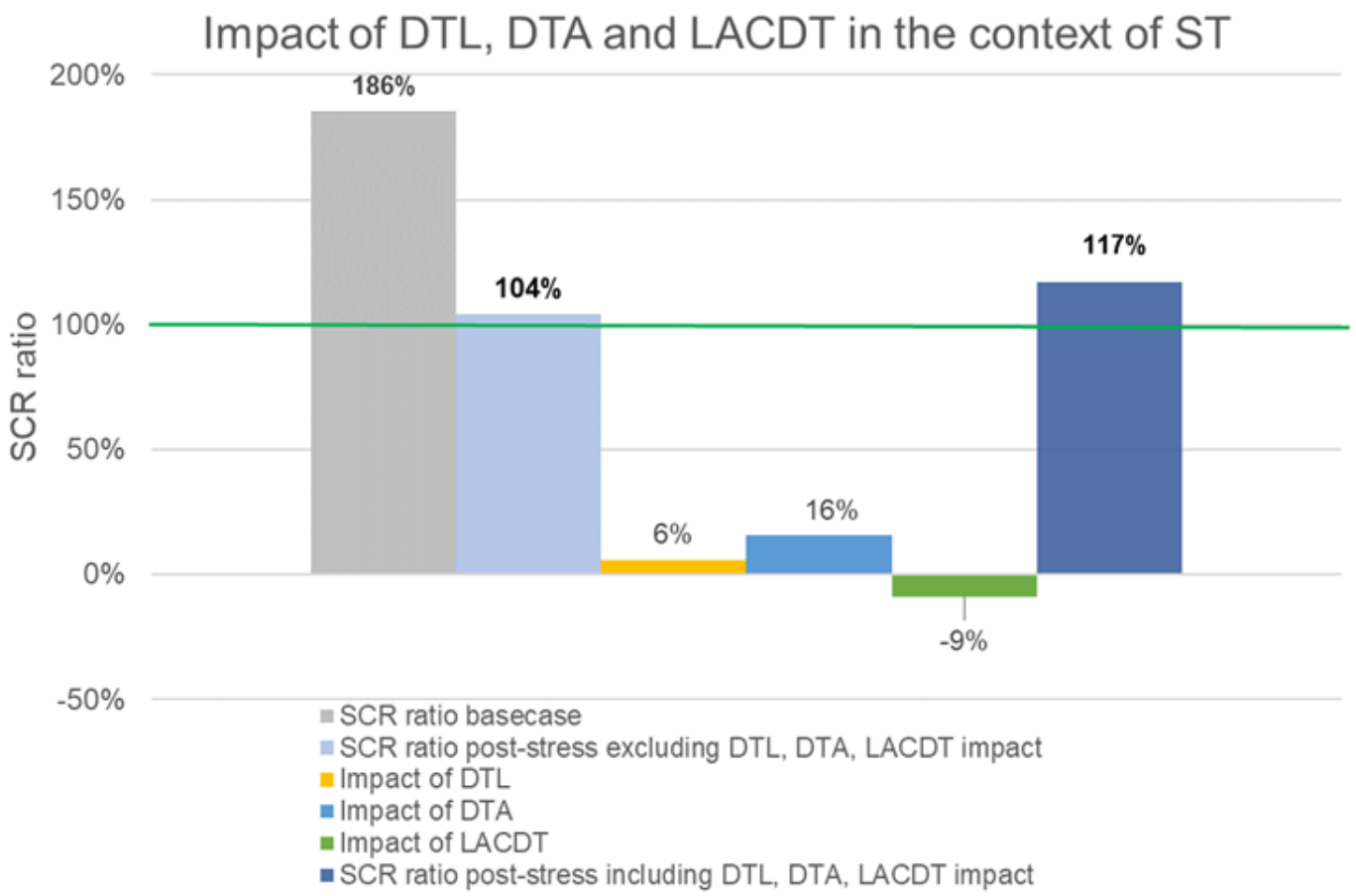
*Impact of derivatives*




- The main classes of derivatives with an impact on the balance sheet of Belgian insurers are interest rate derivatives, spread lock mechanisms and equity hedges
- As illustrated in the graph above, also these derivatives have played an important role on mitigating the impact of the stress scenario on the SCR ratio

# III. Impact of the financial part of the cloud outage scenario

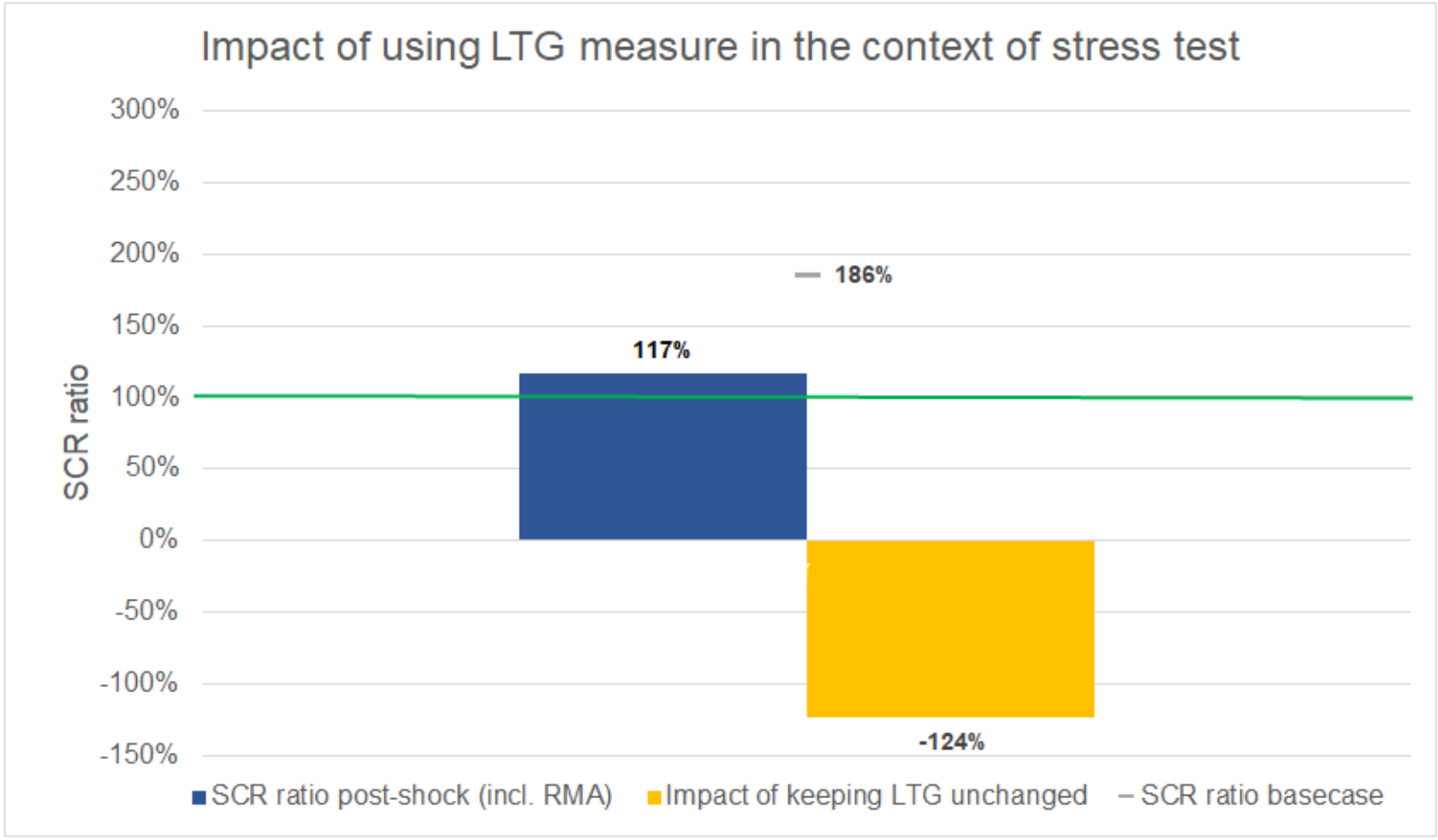
*Impact of deferred tax liabilities, assets and LAC DT*




- The net deferred tax position (DTA-DTL) increases following the shocks in the stress scenario, positively impacting the SCR ratio (+22 points). This increase is however rebalanced by the loss in the compensating effect of the LAC DT, which decreases the SCR ratio (-9 points)
- The net impact of the changes in the deferred tax balance sheet positions and the loss absorbing capacity related to deferred taxes can therefore be considered as countercyclical on average. This is not the case for all companies

# III. Impact of the financial part of the cloud outage scenario

*Additional impact of using LTG measures after stress*




- The results of this stress test exercise shows that the LTG measures have an important role in dampening the impact of the market volatility on the solvency ratios of the Belgian insurers
- The important role of the volatility adjustment for the Belgian insurance sector was also observed during the Covid-19 crisis

# IV. Conclusions

I. The 2022 NBB stress test scenarios was based on pure cyber scenario (business blackout and ransomware attack) and a combined cyber and financial scenario (cloud-outage leading to a bursting of the tech bubble).

II. Currently, cyber underwriting only leads to moderate impacts with impacts on the SCR ratio from 0% to 20%. However, stresses in cyber loss ratio (between 1000% and 10.000%) indicate that the potential future risk is large if premiums were to increase according to expectations.

III. Silent cyber remains a material issue for some undertakings with 40% to 80% of claims (according to the scenario) being driven by this risk.

IV. The insurance sector is concentrated up to 40% to the same cloud service provider. However, not all insurers have a clear view on the cloud service providers which are used by their policyholders and are covered by their policies.

V. The cloud-outage scenario has led to an important adverse impact on the solvency ratios of Belgian insurers. The scenario can be considered as severe, but plausible.

- This high severity allows for a clear identification of the vulnerabilities on the balance sheet of Belgian insurers

# IV. Conclusions

VII. On 31 December 2021, the reference date, the weighted average solvency ratios (SCR) of the participating insurers was 186%, indicating a comfortable starting position for most of them. The stress test scenario leads to a decrease of the SCR ratio to 117%.

VIII. Reactive management actions were applied by all participants which would have had a breach in SCR ratio otherwise. This is a clear improvement compared to the 2021 EIOPA/NBB stress test exercise. The main reactive management actions applied were:

- Partial sale of riskier assets
- Cost cutting
- Dividend cancellation and further reduction of profit sharing
- Additional purchase of reinsurance and adaptation of the composition of the insurance portfolio

IX. The holding of derivatives helps to maintain the solvency of the Belgian insurance sector. However, it is important to bear in mind that the NBB's stress test scenario for 2022 was developed assuming a low-yield environment. By the end of 2022, the economic environment changed (interest rate increases). The holdings of certain derivatives, which intend to protect against a fall in interest rates and neutralise the impact on solvency, may still have a negative impact on the liquidity profile of the insurance companies holding such derivatives (due to margin calls).