Supervisory stress tests of selected insurance companies

—— 2021

CNB CZECH NATIONAL BANK

SUMMARY

The results of supervisory stress tests of selected insurance companies conducted in 2021 confirmed that the sector was sufficiently resilient to potential adverse shocks. The results demonstrated that the sector as a whole had sufficient own funds and was thus able to absorb the impacts of relatively significant changes in risk factors. The overall solvency ratio of the insurance companies tested declined from 251% to 173% after the application of adverse shocks for market and insurance risks and remained relatively high above the regulatory minimum of 100%.

I.   INTRODUCTION

Another round of supervisory stress tests of selected insurance companies took place in 2021 H1. The aim of these tests is to assess the insurance companies' ability to absorb the impacts of possible adverse developments in the macroeconomic and financial environment and the materialisation of certain insurance risks. Twenty domestic insurance companies, accounting for 99.6% of the market of domestic insurance companies in 2020 based on gross premiums written, participated in stress testing.[1]

The stress test assessed the impact of changes in risk parameters on the initial value of the insurance company's assets and liabilities according to the Solvency II valuation principles as of 31 December 2020, and subsequently on the insurance company's solvency position. The key indicator was thus the solvency ratio, i.e. the ratio of eligible own funds to the solvency capital requirement (SCR). As in the previous tests, no post-stress recalculation of the SCR was required, so the change in the value of assets and liabilities in the test only affected eligible own funds.

The market risks tested were equity risk, interest rate risk, exchange rate risk, real estate risk, credit spread risk and the risk of a decrease in government bond prices. In the case of non-life insurance risks, the test included the risk of a decrease in premiums (while maintaining the level of damage and costs) for the two most important classes of non-life insurance in each insurance company and catastrophic flood damage risk. In the case of life insurance risks, the stress tests included the shock of an immediate lapse of 10% of the insurance company's life insurance portfolio. Insurance companies were allowed to apply long-term guarantee measures leading to a decrease in the sensitivity of balance sheets to some market risks. Of these measures, only volatility adjustment was used.[2] It was applied by six of the insurance companies tested.

II.   THE STRESS SCENARIO

The stress scenario was based on similar assumptions as stress tests of insurance companies conducted in previous years but it took into account the economic conditions and the state of financial markets at the end of 2020. The scenario assumed very subdued economic activity globally due the ongoing coronavirus pandemic and persisting anti-pandemic measures. The scenario considered a sharp rise in uncertainty on global financial markets, reflected in a surge in risk premiums and, in line with that, a decline of 52% in equity prices and 9% in property prices. The spread between Czech government bond yields and the risk-free yield curve rose by between 74 bp and 110 bp depending on residual maturity. Their prices thus decreased by between 2.1% (bonds with residual maturity of up to three years) and 8.5% (residual maturity of over 10 years). In line with the assumed economic slowdown, the Czech koruna weakened by 3.2% against the euro. The size of the shock relating to foreign government bonds and domestic and foreign corporate bonds was differentiated by bond maturity and rating. The decline in prices of foreign government bonds ranged between 2.4% (bonds rated AA or higher with maturity of up to three years) and 19.9% (bonds rated BB or lower with maturity of over 10 years). Similarly, the considered decline in prices of corporate bonds amounted to 3.9%–33.3%.

The scenario assumed very loose monetary policy. Accordingly, the short end of the risk-free koruna yield curve declined by 36 bp to virtually zero in the scenario. The decline in yields was the largest for maturities in the medium range of the yield curve (e.g. down by 55 bp for the five-year yield), while the decline was lower for longer maturities (e.g. a decline of 28 bp for the 10-year yield) due to the method used to construct the risk-free yield curves (which converge towards a fixed value at the long end). When volatility adjustment was applied, a slight decline in risk-free yields was considered for two-to-five-year maturities (a maximum of 12 bp for the two-year yield), while an increase was considered for the other maturities (e.g. up by 25 bp for the 10-year yield). The predominant decline in euro and dollar risk-free yields also reflected the expected postponement of the normalisation of foreign monetary policies.

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1   Excluding insurance companies operating in the Czech Republic through a branch. If branches were taken into account, the market share of insurance companies involved in the stress test would be 92% of the Czech insurance market.

2   Volatility adjustment represents an addition to the risk-free yield curve used to calculate the best estimate of obligations arising from insurance. It is aimed at limiting the impact of excessive volatility of interest rate-sensitive assets arising from their market value on the solvency position of insurance companies.

The reaction of insurance companies' clients, who would revise their savings and expenditure, including insurance premium expenditure, was considered as a consequence of the above-mentioned adverse macroeconomic developments. The scenario assumed premature termination of life insurance policies representing 10% of the life insurance portfolio of each insurance company.

As regards non-life insurance risks, the stress test scenario assumed a decrease in earned premiums due to increasing competition. This decrease was applied to the two most important classes of non-life insurance in each insurance company, while the same level of costs as in 2020 was maintained. Insurance companies' capitalisation in the event of recurring floods was also tested.[3]

III. THE IMPACT OF THE STRESS SCENARIO ON THE SOLVENCY OF THE INSUR. SECTOR

The initial aggregate Solvency II ratio as of 31 December 2020 was 251% in the group of insurance companies tested, up by 32 pp compared to the initial level of the previous stress test as of 31 December 2018.[4] The solvency capital requirement amounted to CZK 43 billion and was covered by eligible own funds of CZK 108 billion.

The aggregate eligible own funds would decrease by CZK 39 billion after the application of the stress scenario. This impact would be reduced by an income tax effect[5] of CZK 6 billions. The decline in eligible own funds would result in a decline in the solvency ratio of 78 pp to 173%, which would thus remain relatively high above the solvency threshold of 100% (see Chart 1). Compared to the previous stress test, the decline in the solvency ratio was 16 pp higher, due mainly to the increase in the size of shocks considered in the scenario. The impact of the stress scenario on the solvency ratio was reduced by the application of volatility adjustment. If insurance companies applying volatility adjustment did not make use of this measure, the solvency ratio for all the participating insurance companies in the stress scenario would decrease by 84 pp to 162%.

The impacts of the stress scenario on the solvency position would differ across insurance companies (see Chart 2). The differences in the magnitude of the impact of the stress test would reflect mainly the characteristics of the insurance portfolio[6], the structure of investment portfolios, the level of asset and liability management and also the application of volatility adjustment. The solvency ratios of three insurance companies would decrease below the threshold of 100% after the application of the stress scenario. Their overall capital inadequacy under the stress scenario would amount to CZK 116 million, or 0.3% of the overall impact of the stress test.
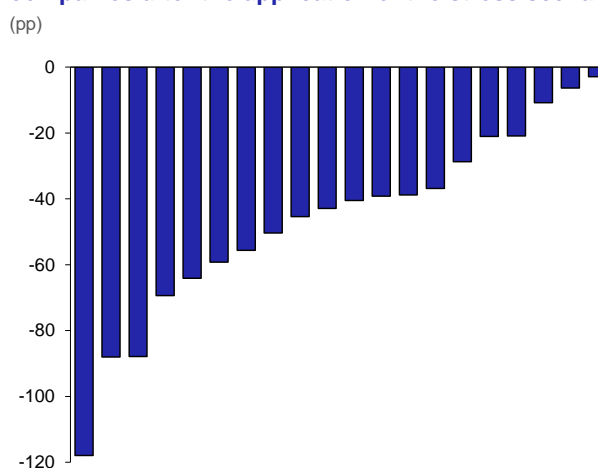
Chart 1

Solvency ratio in the previous and current stress tests

(%)
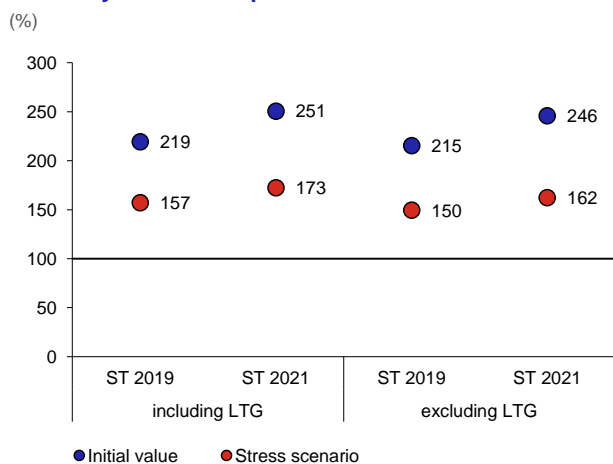
Source: CNB

Note: ST = stress test, LTG = long-term guarantee measures. Some domestic insurance companies used volatility adjustment as part of these measures.

Chart 2

Change in the solvency ratio of individual insurance companies after the application of the stress scenario

(pp)

Source: CNB

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3   Two smaller local floods are assumed, each with damages of CZK 2 billion for the entire Czech insurance market, followed by one flood with damages of CZK 20 billion for the entire Czech insurance market.

4   The aggregate solvency ratio is calculated as the ratio of the sum of eligible own funds of the insurance companies tested to the sum of their capital requirements.

5   The deterioration in profit after the application of the stress scenario would lead to a decrease in the deferred tax liability, or generate deferred tax assets.

6   E.g. the type of insurance business, the duration of insurance contracts, etc.

IV. THE IMPACT OF THE SHOCKS FOR INDIVIDUAL RISKS

Equity risk had the largest impact on eligible own funds (CZK 19.3 billion, see Chart 3), due mainly to the increase in the size of the equity shock compared to the previous stress tests. The impact of a fall in government bond prices was also significant (CZK 8.6 billion). This was due to the aggregate high share of government bonds in the portfolios of the insurance companies tested. The increase in the credit spread of corporate bonds would result in a decline of CZK 6.1 billion in eligible own funds. Given the high level of hedging of insurance companies' foreign currency investments and in view of their foreign currency liabilities, the koruna's depreciation would lead to a modest increase in eligible own funds of CZK 0.2 billion. Of the other risks tested, non-life premium risk (CZK 3.3 billion) and flood risk (CZK 3.1 billion) would have the biggest impact on the decline in eligible own funds.

The scenario for interest risk would result in an increase in eligible own funds. The downward shift of the risk-free koruna yield curve in the stress scenario would lead to an increase in the value of interest rate-sensitive assets (of CZK 4.1 billion), which was offset by an increase in liabilities (of CZK 2.2 billion). The overall net positive impact of interest rate risk would thus be CZK 1.9 billion. Six of the insurance companies tested applied volatility adjustment, the consideration of which would lead to an increase in the risk-free yields used to calculate the best estimate of obligations arising from insurance compared to both the risk-free yields without volatility adjustment considered in the stress scenario and, for most of the maturities, the initial risk-free yields with volatility adjustment. This would result in an aggregate decrease in the value of liabilities of CZK 1.1 billion. The application of volatility adjustment would thus increase the positive impact of the scenario on interest rate risk by CZK 3.2 billion, partly offsetting the impact of the decline in prices of government and corporate bonds considered.

The impact of market risks considered would increase compared to the previous round of the stress test, mainly because of an increase in the size of the shocks (except for real estate risk). The increase would also be due to a rise in the volume of investment portfolios (see Chart 4). In the case of credit spread risk, the impact of an increase in the volume of the portfolio was offset by a less risky portfolio structure than in the previous test. Compared to the previous stress test, the impact of the risk of immediate lapse of part of the life insurance portfolio would decrease more sharply (down by CZK 2 billion), due mainly to a different initial level of the risk-free yield curve[7] and a change in methodology regarding the contract boundaries in the calculation of the life insurance obligations of some insurance companies. The impact of the risk of a decrease in non-life premiums would increase by CZK 0.4 billion, compared to the previous stress test, due to an increase in premiums written. Although the impact of the shocks for flood risk increased by CZK 0.5 billion compared to the 2019 stress test, it would continue to be relatively less significant, confirming that insurers have well-structured reinsurance programmes for catastrophic flood damage.

Chart 3
Decrease in eligible own funds broken down by individual risks considered
(CZK billions)
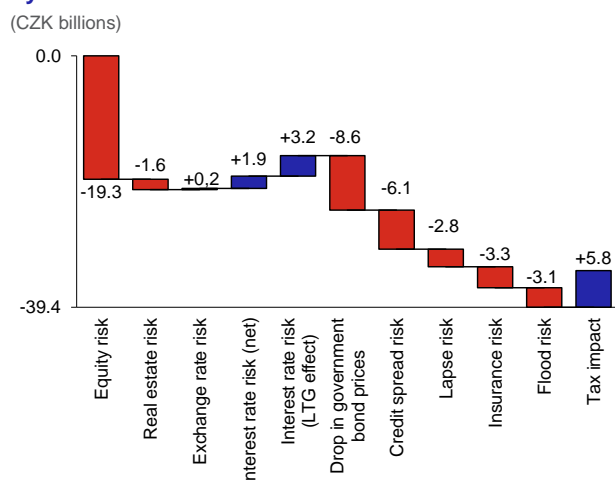
Source: CNB
Note: LTG = long-term guarantee measures. Some domestic insurance companies used volatility adjustment as part of these measures.

Chart 4
The analysis of a change in the impact of market risks compared to the previous stress test
(absolute value of the impact in CZK billions)
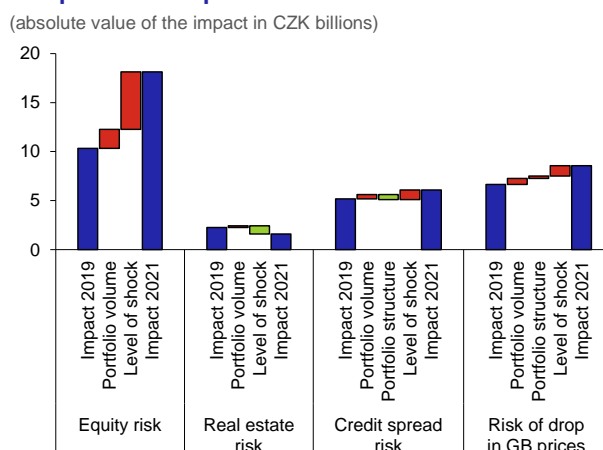
Source: CNB
Note: GB = government bond. The values capture the impact of market risks for the insurance companies included in the stress test both in 2019 and 2021. The results do not include the impact on assets relating to unit-linked products.

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7   The initial risk-free yield curve in this year's supervisory stress test was at a lower level than the initial risk-free yield curve in the previous test (i.e. the curve as of 31 December 2018). This resulted in a higher value of technical provisions in this year's test and hence a lower volume of expected future profits "at risk", which insurance companies would lose due to immediate lapse.