

SUPERVISORY STRESS TESTS OF SELECTED INSURANCE COMPANIES

Financial Market Supervision Department
Financial Stability Department

2018

SUMMARY

The results of the supervisory stress tests conducted in selected insurance companies in 2018 confirmed that the sector was sufficiently resilient to potential adverse shocks. The results demonstrate that the sector as a whole had sufficient own funds to absorb relatively significant changes in risk factors. The overall solvency ratio of the insurance companies tested was 177% after the application of shocks for market and insurance risks and was thus relatively high above the regulatory minimum of 100%.

1. INTRODUCTION

Another round of supervisory stress testing of selected insurance companies took place in 2018 Q2 and Q3. The aim of these tests is to assess the ability of insurance companies to absorb the impacts of adverse developments in the economy and financial markets. A total of 18 domestic insurance companies, accounting for 93% of the domestic insurance market in 2017 based on gross premiums written, participated in the 2018 stress test.

The testing methodology was similar to that used in the stress test conducted in 2017. The stress test assessed the impact of significant changes in risk parameters on the value of the insurance company's assets and liabilities according to Solvency II valuation principles, and subsequently on the insurance company's solvency position, i.e. the ratio of eligible own funds to the solvency capital requirement (SCR) as of 31 December 2017. As in the previous test, no post-test 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 investment risks examined were equity risk, asset and liability interest rate risk, real estate risk, exchange rate risk, credit spread risk and the risk of a drop in government bond prices.¹ The risk of premium decreases for the two most important classes of non-life insurance in each insurance company² and the risk of claims due to natural disasters were included in this year's non-life insurance risks. Insurance companies were allowed to apply long-term guarantee measures leading to a drop in the sensitivity of balance sheets to some market risks. The use of volatility adjustment, applied by eight of the insurance companies tested, was important among those measures.³

2. THE STRESS SCENARIO

The stress scenario assumed a decline in domestic and foreign economic activity and an increase in uncertainty on financial markets compared to the end of 2017. The scenario assumed a decline of 39% in equity prices and of 17% in property prices. Czech government bond yields rose by between 1.0 pp (the one-year bond) and 1.5 pp (the 15-year bond) in the scenario. Their prices thus dropped by 2.4%–15.0% depending on residual maturity. In addition to repricing of risk premia, this reflected a partial outflow of the foreign capital accumulated on the Czech government bond market since 2016 due to the exchange rate commitment and speculation that it would be abandoned. In line with the economic slowdown and the outflow of foreign capital, the Czech koruna weakened by 4.2% against the euro. The size of the shock relating to foreign government bonds and domestic and foreign corporate bonds was differentiated by bond residual maturity and rating. The decline in prices of foreign government bonds ranged

¹ In contrast to the previous stress test, the impact of the stress scenarios on assets and technical provisions of unit-linked life insurance was tested this year.

² In last year's round of stress testing, the risk of a decrease in premiums only covered motor vehicle insurance (motor vehicle third party liability insurance and casco insurance).

³ 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.

between 2.3% (bonds rated AA or higher with residual maturity of up to three years) and 24.1% (bonds rated BBB or lower with residual maturity of over 10 years). Similarly, prices of corporate bonds decreased by 3.1%–32.3%.⁴

The short end of the risk-free koruna yield curve declined by 63 bp in the scenario. This reflects the return of monetary policy rates to very low levels in response to the economic slowdown as considered in the scenario. The decline in risk-free yields was lower for longer maturities (29 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). On the other hand, when volatility adjustment was considered, the risk-free curve shifted upwards (by 20 bp for the one-year yield up to 74 bp for the 20-year yield).

As regards insurance risks, the scenario also included a 10% decline in earned premiums for the two most important classes of non-life insurance in each insurance company, while maintaining the same level of costs as in 2017. Insurance companies' capitalisation in the event of recurring floods was also tested.

Like last year, the stress test also included a secondary stress scenario focused on the impact of a relatively significant drop in interest rates. The secondary scenario assumed a decline in the risk-free koruna yield curve across all maturities (by 91 bp at the short end up to 148 bp at the long end of the risk-free koruna yield curve).

3. THE IMPACT OF THE STRESS SCENARIOS ON THE SOLVENCY OF THE INSURANCE SECTOR

The baseline aggregate pre-stress Solvency II ratio⁵ as of 31 December 2017 was 251% in the group of insurance companies tested. The solvency capital requirement amounted to CZK 38.1 billion and was covered by eligible own funds of CZK 95.6 billion. The value of eligible own funds is net of planned dividend payouts for 2017 of CZK 8.8 billion.

The aggregate results show that due to sufficient available capital, the sector as a whole, as represented by the participating insurance companies, would absorb the impacts of a significant increase in risk factors (see Chart 1). The post-stress solvency ratio was 177% and was thus relatively high above the solvency threshold of 100%. The aggregate impact of the shocks of CZK 33.3 billion in the test was reduced by an income tax effect of CZK 5.1 billion; eligible own funds would be CZK 67.4 billion after the application of the shocks (see Chart 2). Volatility adjustment had a favourable effect on the solvency ratio after the application of the stress scenario. In line with its purpose, volatility adjustment had a favourable impact on the value of technical provisions, thus partly offsetting the decline in prices of government and corporate bonds. If the insurance companies applying volatility adjustment did not make use of this measure, the solvency ratio in the stress scenario would be 169% for all the participating insurance companies.

The impacts of the stress scenario on the eligible own funds of individual insurance companies were mixed. The solvency ratios of two insurance companies would drop below 100% following the application of the stress scenario. The aggregate market share of these two companies was relatively low. Their overall capital inadequacy under the stress scenario would amount to CZK 140 million, or 0.4% of the SCR of all the insurance companies tested.

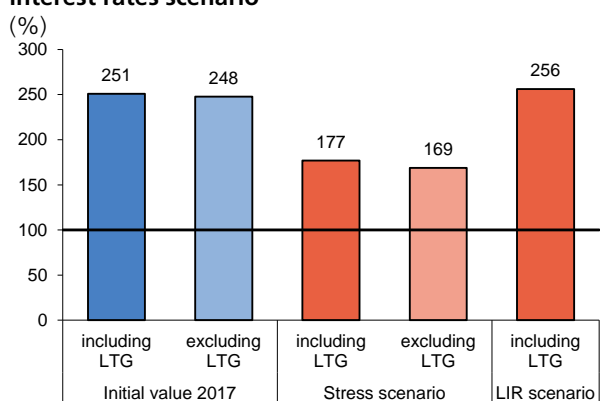
As part of the stress test, a secondary scenario focused on the consequences of a decline in interest rates for life insurance was also applied to the insurance companies which provide life insurance. This scenario resulted in a slight overall increase of CZK 0.9 billion in eligible own funds and an increase of 256% in the solvency ratio due to a slightly

⁴ The historical volatility was used to simulate the scenario for the credit spread of corporate bonds. Compared to previous test, the chosen stress variant is more consistent with the decline in government bond prices considered and with the definition of the stress for corporate bonds used in the EIOPA 2018 stress test.

⁵ The aggregate solvency ratio is calculated as the ratio of the sum of the eligible own funds of the insurance companies tested to the sum of their capital requirements.

higher overall sensitivity of assets than liabilities to a decline in the risk-free yield curve. However, the impact of this scenario on the individual insurance companies differed depending on the mismatch of cash flows on the asset and liability sides. The application of this scenario resulted in an increase in the solvency ratio in some of the insurance companies tested and a decrease in others.

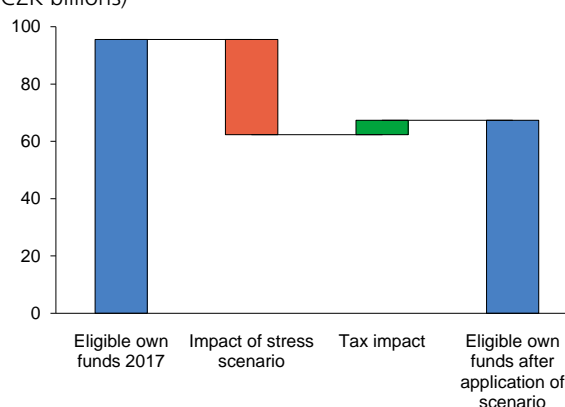
Chart 1
Solvency ratio for the stress scenario and the low interest rates scenario



Source: CNB

Note: LTG = long-term guarantee measures. Some Czech insurance companies used volatility adjustment as part of these measures. LIR = low interest rates.

Chart 2
Change in eligible own funds in the stress scenario
(CZK billions)



Source: CNB

4. THE IMPACT OF THE SHOCKS FOR INDIVIDUAL RISKS

Equity risk had the largest impact on the decline in eligible own funds in the scenario applied (see Chart 3 and Table 1), due mainly to the size of the equity shock. The impact of equity risk was lower than in the previous round of stress testing, mainly because of a decline in the size of the equity portfolio. The lower impact was also due to a decrease in the size of the shock (see Chart 4).

The impact of a fall in government bond prices was also significant. This was affected by the high share of government bonds in the portfolios of the insurance companies tested.⁶ The impact of the risk declined compared to last year's stress test due to a decrease in the size of the shock and a change in the portfolio structure. The increase in the credit spread of corporate bonds in the test resulted in a decline of CZK 7.1 billion in eligible own funds. The impact of credit spread risk increased compared to last year's stress test, due mainly to an increase in the shocks for this risk. Real estate risk also had a significant downward impact on eligible own funds, as insurance companies have in recent years been seeking other long-term investment opportunities given the low interest rate environment. This has been reflected in the allocation of part of the funds of some insurance companies to real estate investments. Given the high level of hedging of insurance companies' foreign currency investments, the koruna's depreciation in the stress scenario led to only a marginal increase in eligible own funds in the case of exchange rate risk.

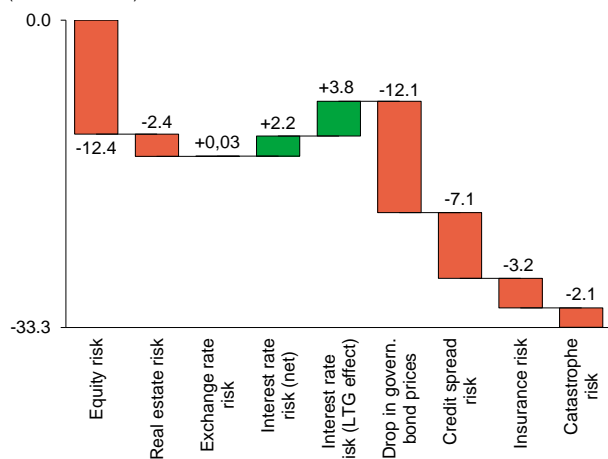
The scenario for interest rate risk resulted in an aggregate increase in eligible own funds in this year's stress test. The downward shift of the risk-free koruna yield curve in the stress scenario resulted in an increase in the value of rate-sensitive assets (of CZK 3.3 billion) and liabilities (of CZK 1.2 billion). The overall net positive impact of interest rate risk

⁶ The test also included government bonds classified as held to maturity at amortised cost. They are valued at fair value in accordance with the principles of Solvency II and formed a large proportion of some insurance companies' portfolios.

would thus be CZK 2.2 billion. Nevertheless, eight of the insurance companies tested applied volatility adjustment, the consideration of which led to an upward shift of the risk-free yield curve used to calculate the best estimate of obligations arising from insurance compared to the initial risk-free yield curve. This resulted in an aggregate decline in the value of liabilities of CZK 2.6 billion. The application of volatility adjustment thus increased the positive impact of the scenario on interest rate risk by CZK 3.8 billion, partly offsetting the impact of the decline in prices of government and corporate bonds considered.

The impact of the risk of a decline in premiums was higher than in last year's stress test due to methodology changes. A decline in premiums for the two most important classes of non-life insurance was tested for the first time in each insurance company tested this year. The impact of shocks for flood risk was comparable to that in the 2017 stress test. The relatively limited impact of the shocks for this risk shows that insurance companies have well-structured reinsurance programmes for catastrophic flood damage.

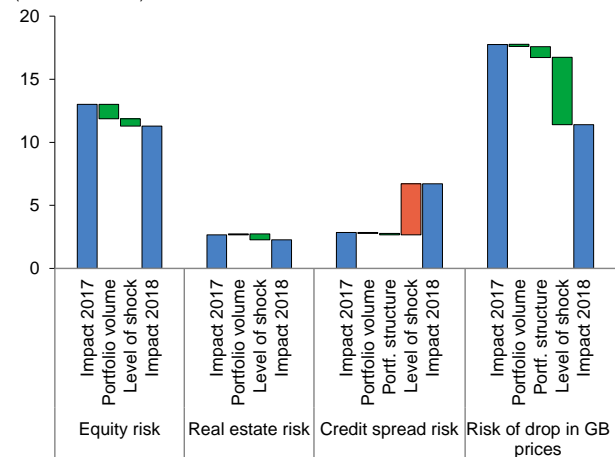
Chart 3
Decrease in eligible own funds due to the impact of shocks in the stress scenario broken down by risks (CZK billions)



Source: CNB

Note: The chart represents the decomposition of the *Impact of stress scenario* column in Chart 2. LTG = long-term guarantee measures. Some domestic insurance companies used volatility adjustment as part of these measures.

Chart 4
Year-on-year change in the absolute value of the impact of market risks and its decomposition (CZK billions)



Source: CNB

Note: The values capture the impact of market risks for the eight largest insurance companies included in the stress test in 2017 and 2018. GB = government bonds. The results do not include the impact on assets relating to unit-linked products.

Table 1
Impact of the stress scenario

	CZK billions	% of assets
Eligible own funds as of end-2017	95.60	22.73
Equity risk	-12.35	-2.94
Real estate risk	-2.41	-0.57
Exchange rate risk	0.03	0.01
Interest rate risk	5.94	1.41
Risk of drop in government bond prices	-12.06	-2.87
Credit spread risk	-7.12	-1.69
Insurance risk of decrease in premiums	-3.21	-0.76
Natural disaster insurance risk	-2.10	-0.50
Total impact of risks on eligible own funds	-33.29	-7.91
Other impacts (tax)	5.09	1.21
Eligible own funds after test application	67.40	16.02

Source: CNB