JOINT STRESS TESTS BY THE CNB, EIOPA AND CZECH INSURANCE COMPANIES

Financial Stability Department
Financial Market Supervision Department

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CZECH NATIONAL BANK

SUMMARY

The aggregate results of joint stress tests conducted by the CNB, the EIOPA and selected insurance companies in 2016 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 even under the Solvency II regime. Even after the application of shocks, the sector's solvency ratio remained relatively high above the 100% regulatory minimum. The ratio reached the 186% and 240% levels in the scenarios defined by the EIOPA and the 160% level in the CNB's adverse scenario.

1. INTRODUCTION

The CNB conducts stress tests once a year to assess the resilience of the Czech insurance sector to adverse future economic scenarios. In 2016, the CNB did not perform its own stress tests because the domestic insurance sector participated in the stress tests organised by the European Insurance and Occupational Pensions Authority (EIOPA). The CNB merely supplied an additional stress scenario for the Czech insurance sector taking into account the specificities of the local insurance market. Ten domestic insurance companies, accounting for around 90% of the local market in 2015 based on gross premiums written, participated in the 2016 tests.

The stress tests assessed the impact of significant changes in risk parameters on the value of the insurance company's assets and liabilities according to the Solvency II valuation principles, and subsequently on the eligible own funds to meet the solvency capital requirement (SCR) as of 31 December 2015. To make the stress tests easier to process, no post-stress scenario recalculation of the SCR was required, so the change in the value of assets and liabilities in the tests only affected the eligible own funds to meet the SCR. The post-stress solvency ratio is therefore calculated as the ratio of post-stress eligible own funds to meet the SCR and the pre-stress SCR. Insurance companies were allowed to apply measures relating to long-term guarantees leading to a drop in the sensitivity of balance sheets to some market risks. Of these measures, most domestic insurance companies applied volatility adjustment enabling adjustment of the risk-free yield curve. However, the application of volatility adjustment did not qualitatively affect the results. Insurance companies met the regulatory requirements even without using this measure.

2. STRESS SCENARIOS

The ***CNB's adverse scenario*** is similar to the scenarios applied in the CNB's stress tests in the past years. It assumes an end to the euro area recovery and a marked drop in economic activity in Europe. The Czech economy falls back into recession owing to a decrease in external demand. This causes a return of pessimistic private sector expectations about future economic developments and renewed deferral of household consumption and corporate investment. In addition, a debt deflation scenario will materialise, with price deflation leading to real growth in private sector debt as a result of declining economic activity, rising unemployment and falling wages. The problems in the real economy later also affect the financial sector, which records a marked decline in profits. Monetary policy remains easy, the three-month PRIBOR stays very low and the exchange rate weakens sharply. However, long-term bond yields surge as global risk aversion increases[1] and the quality of some assets is re-assessed. At the same time, banks revise their view of credit risk and increase their risk mark-ups on interest rates. These adverse developments are also associated with a fall in the stock market and a drop in property prices.[2] As in the previous year, the CNB's scenario for insurance companies is supplemented with testing of non-life insurance premium risk for the motor vehicle insurance segment (motor vehicle

[1] The scenario assumed growth in Czech government bond yields of 240 bp on average, growth in euro area government bond yields of 60 bp on average and an increase in the koruna swap curve of about 60 bp or, if volatility adjustment is applied, of 150 bp.

[2] The scenario assumed a 38% drop in the value of equities, an 8.4% drop in residential property prices and a 12.8% drop in commercial property prices.

third party liability insurance and casco insurance; a 10% drop in premiums written) and natural disaster risk (floods).[3] In the case of corporate bonds and other categories of assets, the EIOPA-defined European *double-hit scenario* was applied (see below).

EIOPA defined two stress scenarios[4] – a *double-hit scenario* and a *low for long scenario* assuming a prolonged low interest rate environment. The ***double-hit scenario*** reflects prevailing systemic risks to which the European financial system is exposed and combines them with a prolonged low interest rate environment. In this scenario, both sides of insurance companies' balance sheet are hit simultaneously. Short and medium-term swap rates decline, leading to growth in the value of liabilities. A decline in the value of all material assets caused by increased risk premia is assumed at the same time. The ***low for long scenario*** assumes a situation of secular stagnation, where a lack of long-term investment opportunities and permanently low productivity growth is combined with a scarcity of risk-free assets, which drives down investment yields at all maturities. This scenario concentrates solely on a drop in the risk-free rate curve, in particular for medium-term and long-term maturities.

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

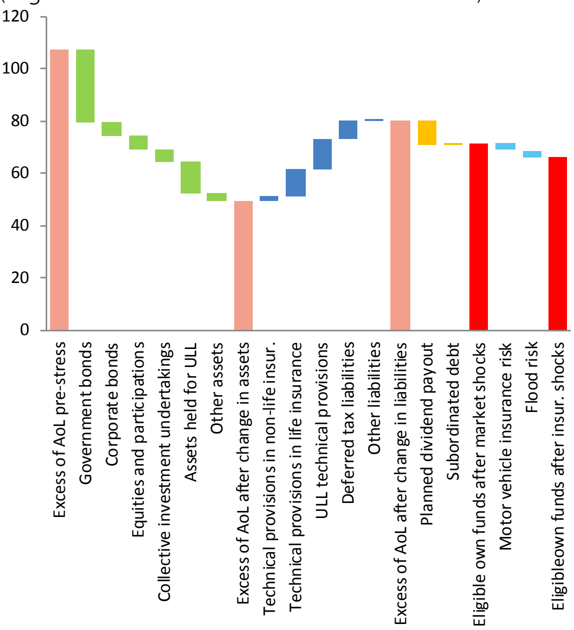
The baseline pre-stress Solvency II ratio as of 31 December 2015 was 237%, as the own funds eligible to cover the SCR of CZK 41.7 billion amounted to CZK 98.7 billion. Eligible own funds also take into account expected dividend payouts for 2015 of CZK 9.6 billion.

Table 1
Impact of stress scenarios

		Value as of 31Dec2015	CNB scenario	EIOPA Double hit	EIOPA Low for long
Total assets	CZK bn	417,8	-58,0	-35,7	12,6
	% change		-13,9	-8,6	3,0
Government bonds	CZK bn	177,8	-28,0	-11,2	10,9
	% change		-15,7	-6,3	6,1
Corporate bonds	CZK bn	68,8	-5,4	-5,5	0,8
	% change		-7,8	-8,0	1,1
Equities and participations	CZK bn	25,2	-5,2	-4,5	0,0
	% change		-20,7	-17,8	-0,1
Collective investment undertakings	CZK bn	20,0	-4,9	-4,2	0,0
	% change		-24,4	-21,0	0,2
Assets held for index-linked and unit-linked contracts (ULL)	CZK bn	63,9	-12,0	-10,7	-0,5
	% change		-18,8	-16,7	-0,8
Total liabilities	CZK bn	310,0	-30,6	-14,7	11,1
	% change		-9,9	-4,7	3,6
Technical provisions in non-life insurance	CZK bn	53,8	-1,4	0,9	2,9
	% change		-2,5	1,7	5,4
Technical provisions in life insurance (excl. ULL)	CZK bn	150,0	-10,6	-1,6	8,4
	% change		-7,1	-1,1	5,6
ULL technical provisions	CZK bn	51,4	-11,8	-11,1	-0,8
	% change		-22,9	-21,5	-1,5
Deferred tax liabilities	CZK bn	12,4	-6,6	-3,2	0,5
	% change		-53,0	-25,8	3,9
Excess of assets over liabilities	CZK bn	107,8	-27,4	-21,1	1,5
	% change		-25,4	-19,5	1,4
Assets over liabilities ratio	%	134,8	128,8	129,4	134,0
	% change		-6,0	-5,4	-0,8
Impact of market shocks on eligible own funds to meet SCR	CZK bn	98,7	-27,4	-21,0	1,5
	% change		-27,8	-21,3	1,5
Impact of motor vehicle insurance risk on eligible capital	CZK bn	98,7	-2,4		
	% change		-2,4		
Impact of flood risk on eligible own funds to meet SCR	CZK bn	98,7	-2,2		
	% change		-2,2		

Source: CNB
Note: ULL = index-linked and unit-linked life insurance.

Chart 1
Impact of the CNB's adverse scenario
(eligible own funds to cover risks in CZK billion)

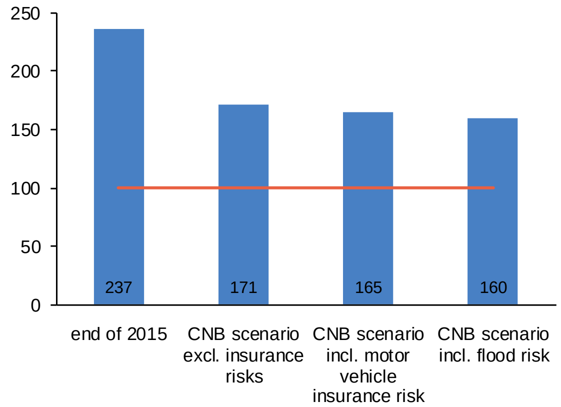


Source: CNB
Note: ULL = index-linked and unit-linked life insurance.

[3] To simplify the tests, the shocks to non-life insurance premium risks for the motor vehicle segment and natural disaster risks are applied directly to the value of eligible own funds to cover the solvency capital requirement in the CNB's stress scenario.
[4] https://eiopa.europa.eu/Pages/Financial-stability-and-crisis-prevention/Stress-test-2016.aspx

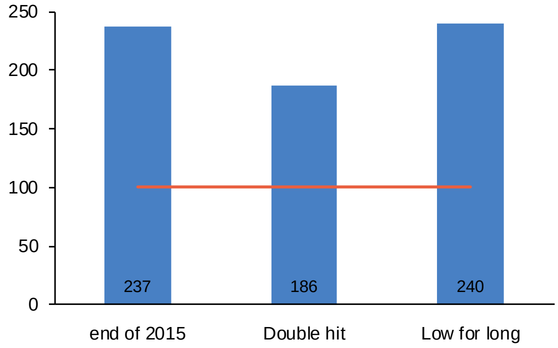
In the *CNB's adverse scenario*, the shocks relating to market risks caused a drop in total assets of CZK 58.0 billion (13.9%), a reduction in total liabilities of CZK 30.6 billion (9.9%) and a fall in the excess of assets over liabilities of CZK 27.4 billion (25.4%; see Table 1). The assets over liabilities (AoL) ratio declined by 6 pp to 128.8%. On the asset side, the scenario had the biggest impact in absolute terms on the value of government bonds, which dropped by CZK 28.0 billion, owing to their significant share in insurance companies' portfolios. Equities and participations and collective investment in investment undertakings also declined significantly in value (by CZK 5.2 billion and CZK 4.9 billion respectively) due to larger shocks in relative terms. On the liability side, technical provisions in life insurance fell by CZK 10.6 billion and technical provisions in index-linked and unit-linked life insurance by CZK 11.8 billion. Deferred tax liabilities dropped by CZK 6.6 billion. The shock applied to motor vehicle insurance premium risk led to a drop in eligible own funds of CZK 2.4 billion and the shock to flood risk implied a decline in eligible own funds of CZK 2.2 billion (see Chart 1). The post market stress solvency ratio fell by 66 pp to 171%; the addition of shocks to insurance risks reduced it by a further 11 pp to 160%[5] (see Chart 2).

Chart 2
Solvency ratio for the CNB's adverse scenario
(in%)



Source: CNB
Note: the 100% regulatory minimum.

Chart 3
Solvency ratio for stress scenarios in the EIOPA stress tests
(in%)



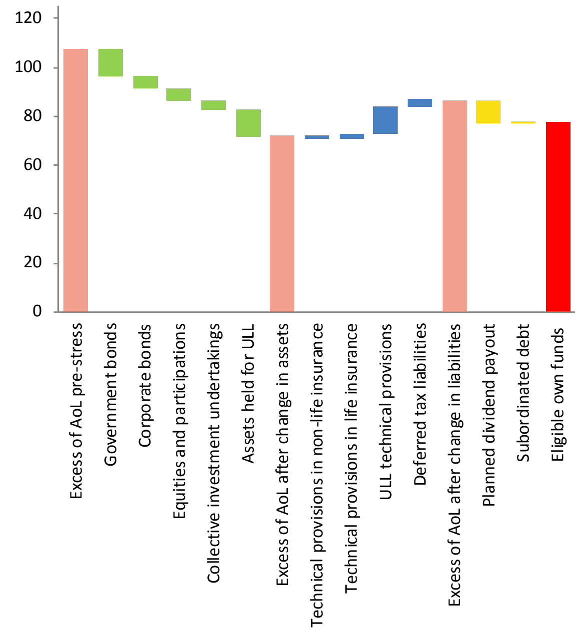
Source: CNB
Note: the 100% regulatory minimum.

In the EIOPA *double-hit scenario,* insurance companies' total assets went down by CZK 35.7 billion (8.5%), total liabilities decreased by CZK 14.7 billion (4.7%) and the excess of assets over liabilities fell by CZK 21.1 billion (19.5%; see Table 1). The solvency ratio thus declined by 51 pp to 186%[5] (see Chart 3). On the asset side, the applied shocks caused government bonds to drop in value by CZK 11.2 billion, corporate bonds by CZK 5.5 billion, equities and participations by CZK 4.5 billion and collective investment undertakings by CZK 4.2 billion. Owing to the nature of the scenarios and the composition of portfolios, a significant drop on the asset side was also recorded for index-linked and unit-linked life insurance, the portfolio of which is made up mostly of investment funds. Investment concerning unit-linked life insurance thus fell by CZK 10.7 billion. The related technical reserves on the liability side similarly dropped by CZK 11.1 billion. Deferred tax liabilities also saw a marked decline of CZK 3.2 billion (see Chart 4).

[5] The solvency ratio after the recalculation of the SCR post stress would increase with respect to the lower SCR due to the decline in exposure. The solvency ratio used is therefore more conservative.

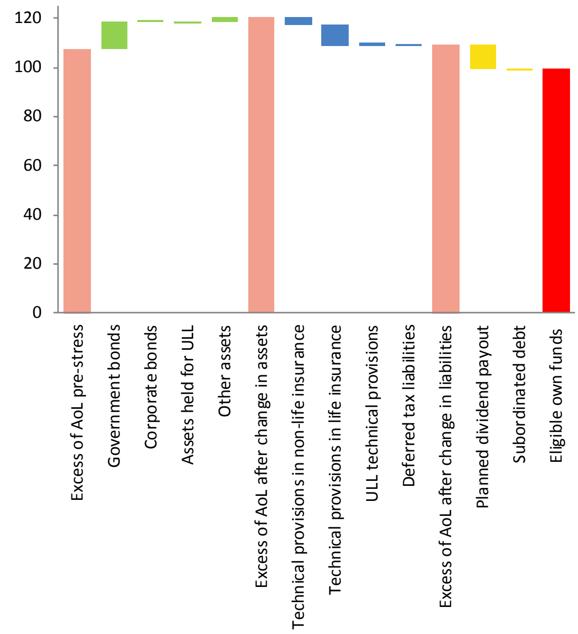
The aggregate solvency ratio in the EIOPA *low for long scenario* increased by 3 pp to 240%[6] owing to the similar, or very slightly higher, sensitivity of the sector's total assets compared to the sensitivity of technical provisions to a drop in the risk-free yield curve (see Chart 3). However, the impact of this scenario on individual insurance companies differed depending on the cash flows mismatch on the asset and liability sides. The drop in the risk-free interest rate curve in this scenario, focused on a prolonged low interest rate environment, led to an increase in total assets of CZK 12.6 billion (3.0%), owing mainly to a rise in the value of government bonds of CZK 10.9 billion (see Chart 5). Liabilities increased by CZK 11.1 billion (3.6%), due mainly to a rise in technical provisions in life insurance of CZK 8.4 billion, and the excess of assets over liabilities went up by CZK 1.5 billion (1.4%). The AoL ratio decreased by 0.8 pp to 134.0%.

Chart 4
Impact of the double-hit scenario
(eligible own funds to cover risks in CZK billion)



Source: CNB
Note: ULL = index-linked and unit-linked life insurance.

Chart 5
Impact of the low for long scenario
(eligible own funds to cover risks in CZK billion)



Source: CNB
Note: ULL = index-linked and unit-linked life insurance.

[6] The solvency ratio after the recalculation of the SCR post stress would be slightly lower than the current values with respect to the higher SCR due to the increase in the value of assets and liabilities. However, the decrease in the solvency ratio after the recalculation of the SCR would not lead to a significant worsening of the solvency position of the Czech insurance sector due to the high level of the solvency ratio.