

Bulgarian Insurance Sector Stress test

Methodology

2016

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1. Introduction

On 26 February 2016, the European Commission (EC) published its Country Report for Bulgaria for 2016¹. The report assesses the progress in the execution of Bulgaria-specific recommendations approved by the Council on 14 July 2015². The report also includes results from the in-depth review under Article 5 of Regulation (EU) No. 1176/2011 on the prevention and correction of macroeconomic imbalances. The analysis of EC gives grounds to conclude that there are excessive macroeconomic imbalances in Bulgaria. A part of country specific recommendation (CSR) 2 from July 2016 requires performing stress test of the insurance companies³.

Following the insurance sector's screening and with a view to assess the resilience of the Bulgarian insurance sector to different shocks and scenarios, the Financial Supervision Commission (FSC), on the grounds of § 10 paragraph 4 of the Transitional and Final Provisions of the Law on Recovery and Resolution of Credit Institutions and Investment Firms (LRRCIIF), awards to an independent external entity the development of stress test methodology, organization and carrying out of stress tests of the Bulgarian insurers and reinsurers not later than December 31, 2016. The methodology shall be accepted by a Steering Committee and approved by the FSC.

The above referred Steering Committee (SC) includes representatives from the FSC (member of the SC), the Ministry of Finance (Observer), the Bulgarian National Bank (Observer) and from international organizations - EC (Observer), European Securities and Markets Authority (ESMA; Observer) and European Insurance and Occupational Pensions Authority (EIOPA; member of the SC).

The organization and carrying out of the stress tests of the Bulgarian insurance and reinsurance undertakings will be performed by an independent external party of high professional reputation (hereinafter Consultant).

This manual describes the scope and definition of the stress test.

1.1. Context

The following insurance and reinsurance undertakings will be stress tested at individual and where indicated group level:

Insurance undertakings:

1. ARMEEC INSURANCE JOINT STOCK COMPANY
2. BULGARIA INSURANCE AD
3. BULGARIAN EXPORT INSURANCE AGENCY \BAEZ\ EAD
4. BULSTRAD VIENNA INSURANCE GROUP AD
5. BUL INS AD
6. DZI - GENERAL INSURANCE EAD
7. EUROINS - HEALTH ASSURANCE LLC
8. EUROINS INSURANCE PLC
9. FI HEALTH INSURANCE AD
10. GENERALI INSURANCE AD
11. EIG RE PLC
12. GROUPAMA ZASTRAHOVANE EAD
13. HEALTH INSURANCE INSTITUTE AD
14. INSURANCE COMPANY MEDICO - 21 AD
15. INSURANCE COMPANY OZOK INS AD

¹<http://www.minfin.bg/en/page/867>

²COUNCIL RECOMMENDATION of 14 July 2015 on the 2015 National Reform Programme of Bulgaria and delivering a Council opinion on the 2015 Convergence Programme of Bulgaria (2015/C 272/08).

³COUNCIL RECOMMENDATION of 12 July 2016 on the 2016 National Reform Programme of Bulgaria and delivering a Council opinion on the 2016 Convergence Programme of Bulgaria.

16. JSIC OZK - INSURANCE AD
17. INSURANCE COMPANY LEV INS AD
18. SAGLASIE INSURANCE AD
19. TOKUDA HEALTH INSURANCE EAD
20. INSURANCE COMPANY NOVA INS EAD
21. UNITED HEALTH INSURANCE FUND DOVERIE INSURANCE AD
22. INSURANCE COMPANY UNIQA AD
23. ZAD ALLIANZ BULGARIA" AD
24. ZAD ENERGY AD
25. ZAD ALLIANZ BULGARIA LIFE AD
26. ZAD BULSTRAD LIFE VIENNA INSURANCE GROUP AD
27. ZAD CCB LIFE EAD
28. DZI - LIFE INSURANCE EAD
29. GRAWE BULGARIA JIVOTOZASTRAHOVANE EAD
30. GROUPAMA ZHIVOTOZASTRAHOVANE EAD
31. INSURANCE COMPANY EUROINS LIFE EAD
32. LIFE INSURANCE COMPANY SAGLASIE EAD
33. LIFE INSURANCE INSTITUTE AD
34. ZAD SOGELIFE BULGARIA AD
35. UBB-METLIFE ZHIVOTOZASTRAHOVATELNO DRUJESTVO AD
36. INSURANCE COMPANY UNIQA LIFE AD
37. ZAD DALLBOGG: ZHIVOT I ZDRAVE AD
38. ZAD EUROPEAN HEALTH INSURANCE FUND AD
39. INSURANCE COMPANY NADEJDA AD
40. SiVZK
41. INSURANCE COMPANY ASSET INSURANCE AD

Reinsurance undertaking:

42. GP REINSURANCE EAD

Insurance undertakings part of group:

1. ARMEEC INSURANCE (the undertaking has a subsidiary Armeecetil, Russia)
2. EUROINS - HEALTH ASSURANCE PLC, EUROINS INSURANCE PLC, EIG RE PLC and INSURANCE COMPANY EUROINS LIFE EAD that are subsidiaries of Euroins Insurance Group(Insurance holding company) and Eurohold Bulgaria (mixed financial holding company also identified as financial conglomerate)
3. INSURANCE COMPANY LEV INS AD (the company is a participating undertaking in Health Insurance Institute AD and Life Insurance Institute AD)
4. OZK INSURANCE (the company has a subsidiary INSURANCE COMPANY OZOK INS AD)

Insurance undertakings part of subgroup:

1. BULSTRAD Vienna Insurance Group (the company is a participating undertaking in INSURANCE COMPANY NOVA INS EAD, ZAD BULSTRAD LIFE VIENNA INSURANCE GROUP AD)
2. DZI LIFE INSURANCE (the company is a participating undertaking in DZI - GENERAL INSURANCE EAD)
3. UNIQA BULGARIA INSURANCE COMPANY (the company is a participating undertaking in INSURANCE COMPANY UNIQA LIFE AD)

More detailed statistical information about the insurance and reinsurance undertakings is available on the website of the Financial Supervision Commission, namely:

Non-lifeinsurance – <http://www.fsc.bg/bg/pazari/zastrahovatelen-pazar/statistika/obshto-zastrahovane/>

Life insurance – <http://www.fsc.bg/bg/pazari/zastrahovatelen-pazar/statistika/zhivotozastrahovane/>

Reinsurance - <http://www.fsc.bg/bg/pazari/zastrahovatelen-pazar/statistika/prezastrahovane/>

1.2. Key Tools

The Stress test will be based on the post-review Quantitative Reporting Templates (QRTs) reviewed by the Independent External Reviewers (IERS) and the templates that are provided together with this Manual (excel

file) for population by the insurance and reinsurance undertakings. Additional templates may be request by the Consultant to be populated by the insurance and reinsurance undertakings if needed to carry out the stress test.

Insurance and reinsurance undertakings will be able to request clarifications in regards to populating the templates part of this Manual to the following mailbox: ST_2016@fsc.bg

1.3. Definitions and abbreviations

BSR – Bulgarian Insurance Sector Balance Sheet Review
DA – Commission Delegated Regulation (EU) 2015/35 of 10 October 2014 supplementing Directive 2009/138/EC of the European Parliament and of the Council on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II)
CSR – Country Specific Recommendations
EC – European Commission
EIOPA – European Insurance and Occupational Pensions Authority
ESMA - European Securities and Markets Authority
LoB - Line of business
MCR – Minimum Capital Requirement
MTPL - Motor third party liability
PML - Probable maximum loss
SC – Steering Committee
SCR – Solvency Capital Requirement
SII Directive - Directive 2009/138/EC of the European Parliament and of the Council of 25 November 2009

1.4. Main assumptions

1.4.1. Reference date

The reference date for the stress test is 30 June 2016.

1.4.2. Applicable framework

In carrying out the stress tests, will be used the post-review balance sheets (i.e. final adjusted balance sheets resulting from the BSR) which were prepared in accordance with the Solvency II requirements namely the:

- SII Directive including Omnibus II (Directive 2014/51/EU of the European Parliament and of the Council of 16 April 2014 amending Directives 2003/71/EC and 2009/138/EC and Regulations (EC) No 1060/2009, (EU) No 1094/2010 and (EU) No 1095/2010)
- Commission Delegated Regulation (EU) 2015/35 of 10 October 2014 supplementing Directive 2009/138/EC of the European Parliament and of the Council on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II)
- Commission Delegated Regulation (EU) amending Commission Delegated Regulation (EU) 2015/35 concerning the calculation of regulatory capital requirements for several categories of assets held by insurance and reinsurance undertakings published on 30 September 2015
- Technical standards for application of Directive 2009/138/EC of the European Parliament and the Council of 25 November 2009
- EIOPA Guidelines on implementation of the Directive and Regulations

For undertakings that fall under the scope of article 4 of the SII Directive (i.e. exempt from the scope of Solvency II) the post-review balance sheet refers to the balance sheet in accordance with Art. 125 par. 2 of the Insurance Code adjusted after the BSR.

1.4.3. Stress test data's input and treatment

1.4.3.1. Insurance and reinsurance undertakings

Insurance and reinsurance undertakings have 2 weeks after publication of this manual to populate the templates referred in 1.2, considering all the adjustments performed under the BSR, and send it to FSC (ST_2016@fsc.bg).

Insurance and reinsurance undertakings are required to provide any additional data and information required by the Consultant for performing the stress test within the deadlines established by the Consultant. These data and information requests shall be in written form and FSC shall be copied. If the insurance and reinsurance undertakings do not provide the information requested, the Consultant shall notify the FSC that will take the necessary measures to ensure the requested information.

1.4.3.2. Consultant

After receiving the input data and information, the Consultant will review the data's completeness and accuracy using appropriate tests as well as review the calculations made by the insurance and reinsurance undertakings.

For the purpose of the above reviews the Consultant is entitled to make written requests to the insurance and reinsurance undertakings (see 1.4.3.1).

The Consultant shall answer all of the questions asked by the insurance and reinsurance undertakings in connection with the information requested by the Consultant and resolve operational issues that arise in the course of the implementation of the stress tests.

The Consultant shall establish working procedures, analytical and IT instruments according to the approved manual.

The Consultant shall perform stress tests with professional care. The Consultant and the team members, as well as all persons engaged by the Consultant, will sign confidentiality statements.

1.4.4. Final reporting and deadlines

The Consultant shall prepare:

- a final individual report on the conducted stress test of each insurance and reinsurance undertaking as well as, where the insurance and reinsurance undertaking is part of a group or subgroup, a final individual report at the level of the group or subgroup;
- a final report (individual and aggregated results) that includes information separately for each insurance and reinsurance undertaking (solo and group level) and aggregate information.

The reports shall be drafted in Bulgarian and English language.

The reports shall be submitted to FSC and the SC up to 30 days from the date of the contract conclusion between FSC and the Consultant.

The final individual reports on the results of the stress test shall include the following minimum elements:

- Undertaking's financial statistics
- Solvency position (SCR and MCR coverage for Solvency II)
- Own funds
- Analysis of the risk profile
- Solvency position under the different scenarios
- Consultant's comments/views
- Limitations where applicable

The final report (individual and aggregated results) on the results of the stress test shall include the following minimum elements:

- Scope and objectives
- Project organization and participants
- Definition of the stress test
- Process and key milestones
- Data quality issues
- Methodology and assumptions
- Aggregated results (Solvency position, Own Funds, Analysis of the risk profile, Solvency position under the different scenarios)
- Individual results consistently with the final individual reports
- Consultant's comments/views
- Limitations where applicable

The Consultant shall provide to the FSC, upon request of the FSC detailed calculations and supporting documents files on electronic support enabling the FSC to have a proper supervisory dialogue with the insurance and reinsurance undertakings following the finalisation of the exercise. These deliverables will be used for the sole purpose of the supervisory dialogue and will not be shared outside the SC and the FSC.

2. Stress-test

2.1 Stress test framework

The stress test is based on both market stress and insurance stress scenarios.

The insurance stresses shall be carried out in isolation from the market stresses and as single-factor-insurance stresses. Life and non-life stresses will be covered separately in the form of a set of single risk factor tests.

The market stress scenario is developed with a view to assess the vulnerability of the insurance sector to market risks. The market variables included are:

- Interest rate stresses for maturities of 1, 2, 5, 10, 20 and 30 years;
- Equity stresses for the stock market (drop in prices);
- Corporate bond stresses – Financials⁴ (yield increase) for the EU-aggregate market for rating classes: AAA-AA-A-BBB-BB- B or lower -unrated;
- Corporate bond stresses – Financials covered (yield increase) for the EU-aggregate market for rating classes: AAA-AA-A-BBB-BB-lower B-unrated;
- Corporate bond stresses – Non-Financials (yield increase) for the EU-aggregate market for rating classes: AAA-AA-A-BBB-BB-lower B-unrated;
- Government bond stresses for the EU countries (yield increase);
- Stresses for residential property prices on EU country bases (drop in prices);
- Stresses for commercial property prices on EU country bases (drop in prices).
- Alternative investments: (drop in prices) for private equity, Real Estate Investment Trusts (REITs), hedge funds, and commodities.

The insurance specific stress test scenario includes shocks to the following variables:

- earthquake;
- floods;
- provisions deficiency;
- longevity risk.

For the single factor insurance stresses, total aggregation is not required as all stresses are considered to be independent from each other. This will not require arbitrary pre-stress correlation assumptions, still allowing ex-post analysis on combined effects assuming a simultaneous occurrence of two or more single-factor insurance stresses.

2.1.1. Market stress test

The market stress scenario is based on the assumptions of the EIOPA stress test 2016 in the insurance sector⁵.

The scenario represents an extreme situation triggered by two events, namely a rapid increase of all sovereign bond yields of the EU countries complemented by a drop in the risk free rate. Shocks to sovereign bonds are reflected in other financial market by increase in the corporate bond yields and a drop in values of stocks and the prices of other asset classes. Shocks are assumed to be instantaneous and occur at the same time in an independent manner.

Overview of the stress test parameters for the market scenario

Shocks to EURO-SWAP rates							
Maturity (Y)	1	2	3	5	7	10	20

⁴ Including securitised assets

⁵ See technical information at EIOPA webpage: <https://eiopa.europa.eu/Pages/Financial-stability-and-crisis-prevention/Stress-test-2016.aspx>

Shocks (bp)	-60	-65	-77	-71	-72	-61	-61
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Shocks to sovereign bond yields in EU Countries (bp)

	2Y	5Y	10Y	15Y	20Y	30Y
Austria	40	81	102	97	87	90
Belgium	40	86	116	105	106	100
Bulgaria	43	80	111	99	96	86
Croatia	68	119	155	138	135	120
Cyprus	45	91	132	118	115	102
Czech Republic	53	86	100	98	96	85
Denmark	41	82	94	101	85	76
Estonia*	52	100	121	110	98	89
Finland	39	88	102	101	92	49
France	37	89	112	104	102	104
Germany	33	74	92	95	79	73
Greece	204	370	487	303	298	258
Hungary	105	133	170	154	150	133
Ireland	55	86	108	126	123	109
Italy	103	154	166	148	146	136
Latvia	45	117	136	121	118	105
Lithuania	56	127	135	120	117	104
Luxembourg	40	72	95	85	82	73
Malta	56	105	139	124	121	107
Netherlands	36	89	99	94	91	81
Norway**	41	78	86	86	89	71
Poland	58	133	142	131	142	116
Portugal	102	165	197	150	127	123
Romania	86	123	162	144	141	125
Slovakia	58	85	95	78	76	68
Slovenia	73	117	146	130	127	113
Spain	91	151	167	156	164	145
Sweden	42	73	78	79	88	81
United Kingdom	46	94	94	95	73	61
European Union	52	100	121	110	98	89

*Shocks to Estonia are proxied with the EU average due to lack of liquid sovereign debt instruments.

**Shocks to Norway's sovereign bonds are proxied by computing the average of the shocks applied for different maturities to two neighbour countries' sovereign bonds.

Shocks to corporate bond yields (bp)

	AAA	AA	A	BBB	BB	B<=	unrated
Non-Financials	24	120	135	214	260	323	350
Financials	16	116	198	372	432	484	516
Financials Covered	20	72	115	162	207	230	247

Shocks to stock prices in EU countries (% drop of end-2015 market value)

Country	(%)	Country	(%)
Austria	-35.8	Latvia	-17.1
Belgium	-30.6	Lichtenstein	
Bulgaria	-20.9	Lithuania	-30.1
Croatia	-20.4	Luxembourg	-27.1
Cyprus	-27.6	Malta	-22.3

Czech Republic	-27.0	Netherlands	-34.1
Denmark	-30.9	Norway**	-32.0
Estonia*	-33.4	Poland	-26.3
Finland	-31.0	Portugal	-31.3
France	-35.6	Romania	-25.1
Germany	-34.1	Slovakia	-22.0
Greece	-34.2	Slovenia	-24.2
Hungary	-25.1	Spain	-35.8
Ireland	-31.3	Sweden	-28.4
Italy	-36.5	United Kingdom	-32.9
European Union	-33.4		

*Shock to stock prices in Estonia are proxied with the European Union average.

**Shock to stock prices in Norway are proxied by computing the average of the shocks applied to stock prices in two neighbour countries.

Shocks to other asset classes (% drop of end-2015 market value)

	Private equity	Hedge Funds	REIT	Commodities
Global	-23.3	-4.8	-22.4	-16.2
EU	-23.5	-2.3	-26.2	-6.8

Shocks to residential property prices in EU countries (% drop of end-2015 market value)

Country	(%)	Country	(%)
Austria	-7.4	Latvia	-9.8
Belgium	-2.6	Lichtenstein*	-10.8
Bulgaria	-4.4	Lithuania	-13.1
Croatia	-14.6	Luxembourg	-10.8
Cyprus	-2.4	Malta	-4.0
Czech Republic	-1.4	Netherlands	-6.7
Denmark	-5.8	Norway**	-4.6
Estonia	-8.9	Poland	-7.5
Finland	-4.7	Portugal	-2.5
France	-5.3	Romania	-7.0
Germany	-2.3	Slovakia	-9.8
Greece	-4.0	Slovenia	-1.9
Hungary	-4.2	Spain	-9.0
Ireland	-8.9	Sweden	-4.6
Italy	-3.2	United Kingdom	-14.2
European Union	-6.7		

*Shocks to residential property prices in Lichtenstein are proxied with the shocks applied to residential property prices in Luxembourg.

**Shocks to residential property prices in Norway are proxied by computing the average of the shocks applied to residential property prices in two neighbour countries.

Shocks to commercial property prices in EU countries (% drop of end-2015 market value)

Country	(%)	Country	(%)
Austria	-6.4	Latvia	-7.5
Belgium	-1.4	Lichtenstein*	-7.6
Bulgaria	-2.2	Lithuania	-8.2
Croatia	-2.5	Luxembourg	-7.6
Cyprus	-1.4	Malta	-5.8
Czech Republic	-2.1	Netherlands	-11.4
Denmark	-11.1	Norway**	-3.7
Estonia	-5.2	Poland	-3.0

Finland	-3.2	Portugal	-2.4
France	-4.4	Romania	-5.7
Germany	-3.4	Slovakia	-5.6
Greece	-6.5	Slovenia	-0.4
Hungary	-2.7	Spain	-6.6
Ireland	-9.6	Sweden	-4.2
Italy	-6.6	United Kingdom	-14.7
European Union			-6.0

*Shocks to commercial property prices in Lichtenstein are proxied with the shocks applied to commercial property prices in Luxemburg.

**Shocks to commercial property prices in Norway are proxied by computing the average of the shocks applied to commercial property prices in two neighbour countries.

2.1.2. Insurance stress test

3 single-factor scenarios are pre-defined for non-life undertakings:

- Earthquake stress
- Flood stress
- Provisions Deficiency Stress

1 scenario is pre-defined for life undertakings: longevity stress.

2.1.2.1. Earthquake and floods

Aiming to reduce the level of complexity also considering the possible different levels of preparedness of the Bulgarian insurance market, for the pre-defined earthquake and floods scenarios it is considered that the impact on own funds (pre reinsurance) is equal to 120% * PML; meaning that the severity of this loss is 20% higher than 1-in-200 event calculated according to the Standard Formula methodology.

2.1.2.2. Provisions Deficiency Stress

Non-life undertakings should assume provisions deficiency stress based on the following (to be applied on a cumulative basis where applicable):

2.1.2.2.1. Motor liability

- 10 percentage points higher claims inflation (claims and expenses related to claims) than presumed for existing best estimate calculations for the claims related to accidents which did not occur at the territory of Bulgaria. For example, where non-life insurers assume that claims costs will increase by 0.5% p.a. due to impact of inflation, they would have to add a further 10 percentage points (i.e. a total of 0.5+10%) for the post-stress calculations.

This scenario is based on increase in the travelling of Bulgarian vehicles outside the territory of Bulgaria and a related increase in accidents.

- 5 percentage points higher claims inflation (claims and expenses related to claims) than presumed for existing best estimate calculations for all claims following an increase in the hourly labour costs in Bulgaria regarding car repair shops.
- 10 percentage points higher claims inflation (claims and expenses related to claims) than presumed for existing best estimate calculations for the claims in litigation.

This scenario is based on increase in the amounts awarded by the court considering that there is an increase of cases going to the second instance court, which confirms the decision of the first instance judge and increases the award amount in 10%.

2.1.2.2.2. Other Non-life LoBs

- 5 percentage points higher claims inflation (claims and expenses related to claims) for all liability claims reserves (e.g. world-wide for groups). For example, where non-life insurers assume that claims costs will increase by 0.5% p.a. due to the impact of inflation, they would have to add a further 5 percentage points (i.e. a total of 0.5+5%) for the post stress calculations.
- 10 percentage points higher claims inflation (claims and expenses related to claims) than presumed for existing best estimate calculations for the claims in litigation.

The scenarios (2.1.2.2.1 and 2.1.2.2.2) apply to all unsettled claims (RBNS and IBNR).

2.1.3. Life risk

Life undertakings shall consider an uplift to the best estimate expectations of life of 15%.

The stress adjustments which are applied should be calibrated so that the increases in expectation of life is met at ages 65 and 75 and should be approximately met at other ages. Where the best estimate mortality assumptions comprise a base mortality table and explicit allowances for future mortality improvements the calibration should be achieved by increasing the allowance for future mortality improvements, making changes to the base table only if necessary to achieve the calibration. Where best estimate mortality assumptions make implicit allowance for future mortality improvements adjustments to reflect the stress scenario will need to be made to this table. In either case an iterative approach will probably be required to achieve the calibration.

Where additional guidance is needed, insurance and reinsurance undertakings shall use EIOPA 2014 and 2016 stress test specifications.