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EIOPA Stress Test 2014

Supporting material

<https://eiopa.europa.eu/activities/financial-stability/insurance-stress-test-2014>

Frankfurt, May 2014

Introduction

- **Description of stress test general framework: 'Core Module + Low Yield Module + Questionnaires'**
- **Core Module: market scenarios**
- **Core Module: qualitative questionnaire on market scenario Adverse 2 (CORP)**
- **Core Module: Insurance specific stresses**
- **Low yield Module**
- **Supporting material for generation of risk free rate curves: Baseline, Core and Low Yield Modules**
 - **Stressing 'basic' risk free rates term structures / Stressing corporate and government bonds / Matching adjustment**
- **Stress test templates:**
 - **Structure/ Before stress / Common part / Core Module / Low Yield Module**



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Introduction

EU-WIDE STRESS TEST 2014 - BACKGROUND



- General approach
 - to carry out a test that focuses on impacts/vulnerabilities rather than pass/fail of individual participants.
 - Identify potential areas where further supervisory action is needed
 - Scenarios are tailored to insurance needs, consistent with risks identified by EIOPA and in ESRB risk outlook, seeking a balance between credibility, severity and consistency.
- EIOPA stress test comprises two independent main blocks
 - the core module (focuses in Groups)
 - the low yield module (only individual information collected)
- Both modules
 - use the standard stress test methodology
 - apply Solvency II market consistent valuation
 - assess the immediate impact of instantaneous shocks.
- However there is no additive property to the two modules as they are based on different samples of undertakings.

EU-wide stress Test 2014 - background – core module



- Assessment of the resilience of EU (re) insurance groups to adverse market developments.
- Identification & measurement of systemic risk posed by institutions and its potential to increase in situations of stress.
- EIOPA may, where appropriate, address a recommendation to the competent authority to correct issues identified in the stress test;
- Development of common methodologies and communication approaches, in cooperation with the ESRB, to support a coherent and coordinated EU-wide systemic risk identification, monitoring and crises management.
- Focus on EU-wide consistency and cross border comparability of the outcomes.
 - Not a substitute to any undertaking specific stress tests carried out under Pillar 2 (i.e. ORSA) when Solvency II is in place.

EU-wide stress Test 2014 - background – low yield module



- 28 February 2013: EIOPA's "Opinion on Supervisory Response to a Prolonged Low Interest Rate Environment*"
 - EIOPA recommended NSAs a coordinated supervisory response to the prolonged low interest rate environment:
 - scoping the challenge
 - promoting private sector solutions
 - supervisory action
 - EIOPA tasked itself:
 - to develop with NSAs an agreed framework for the quantitative assessment of the scope and scale of the risks posed by a prolonged low interest rate environment
 - To coordinate the exercise described above under point 1 and collate results for reflection back to NSAs.
- Goal: the 2014 EIOPA low yield exercise will provide an assessment of the financial consequences of a persistent low interest rate environment for the European insurance market.

* https://eiopa.europa.eu/fileadmin/tx_dam/files/publications/opinions/EIOPA_Opinion_on_a_prolonged_low_interest_rate_environment.pdf

Overview Process & Timeline

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General Framework

Main features of 2014 Stress test



- Extension of scope in order to cover the follow up on EIOPA opinion on supervisory reaction to low-interest rate environment
- Separation of market and insurance stresses
 - Allow for more severe stresses
 - Avoid need of correlation assumptions for aggregation (i.e. stresses outside of scenarios occur independently and inside scenarios in union)
 - More flexibility in calibrating stresses
 - Combination with insurance stresses post-hoc possible if insurance stresses are measured on single-factor basis
- Two shock levels per insurance stress parameter
 - To allow for sensitivity analysis
- Assessment of dynamic responses and possible second-round effects

- 1) Core-module (Groups & Solos) with focus on financial resilience based on
 - a. Market Stress Scenarios
 - b. Single-factor Insurance Stresses
- 2) Low yield-module (Solos only) with a focus on a low interest rate environment
 - a. Low Yield Scenario 1: Japanese Scenario
 - b. Low Yield Scenario 2: Inverse Scenario
- 3) Questionnaires



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Market Stress Scenarios

- EIOPA developed **two hypothetical market stress scenarios** jointly with the ESRB, with a view to revealing the possible effects of the main insurance sector vulnerabilities, while assuming an underlying macro environment which is cross-sectoral consistent to the fullest extent possible.
- EIOPA's order of risk materiality:
 - (1) continued low interest rates
 - (2) credit risk sovereign
 - (3) macro risk
 - (4) credit risk financial institutions
 - (5) equity risk
 - (6) credit risk corporates
- Context: persistently low growth and prolonged period of low short-term interest rates

Market variables included (per scenario):

- **Interest rate stresses** for maturities of 1, 3, 5, 7, 10, 20 and 30 years
- **Equity stresses**, for the EU-aggregate market
- **Corporate bond stresses – Financials (spreads up)** for the EU-aggregate market for rating classes: AAA-AA-A-BBB-BB-lower B-unrated
- **Corporate bond stresses – Financials covered (spreads up)** for the EU-aggregate market for rating classes: AAA-AA-A-BBB-BB-lower B-unrated
- **Corporate bond stresses – Non-Financials (spreads up)** for the EU-aggregate market for rating classes: AAA-AA-A-BBB-BB-lower B-unrated
- **Sovereign bond stresses** for the EU countries, Japan, Switzerland and US
- **Property stresses for commercial and residential property** for the EU-aggregate markets

The set-up of the scenarios:

- a) Choose a specific asset class as a shock originating market, e.g. equity prices, or corporate bond prices or a combination
- b) Set probability of scenario occurrence (e.g. 1 in 100 years)
- c) Calibrate all market stresses on a consistent & simultaneous basis assuming an instantaneous occurrence in reference to the shock originator and set probability

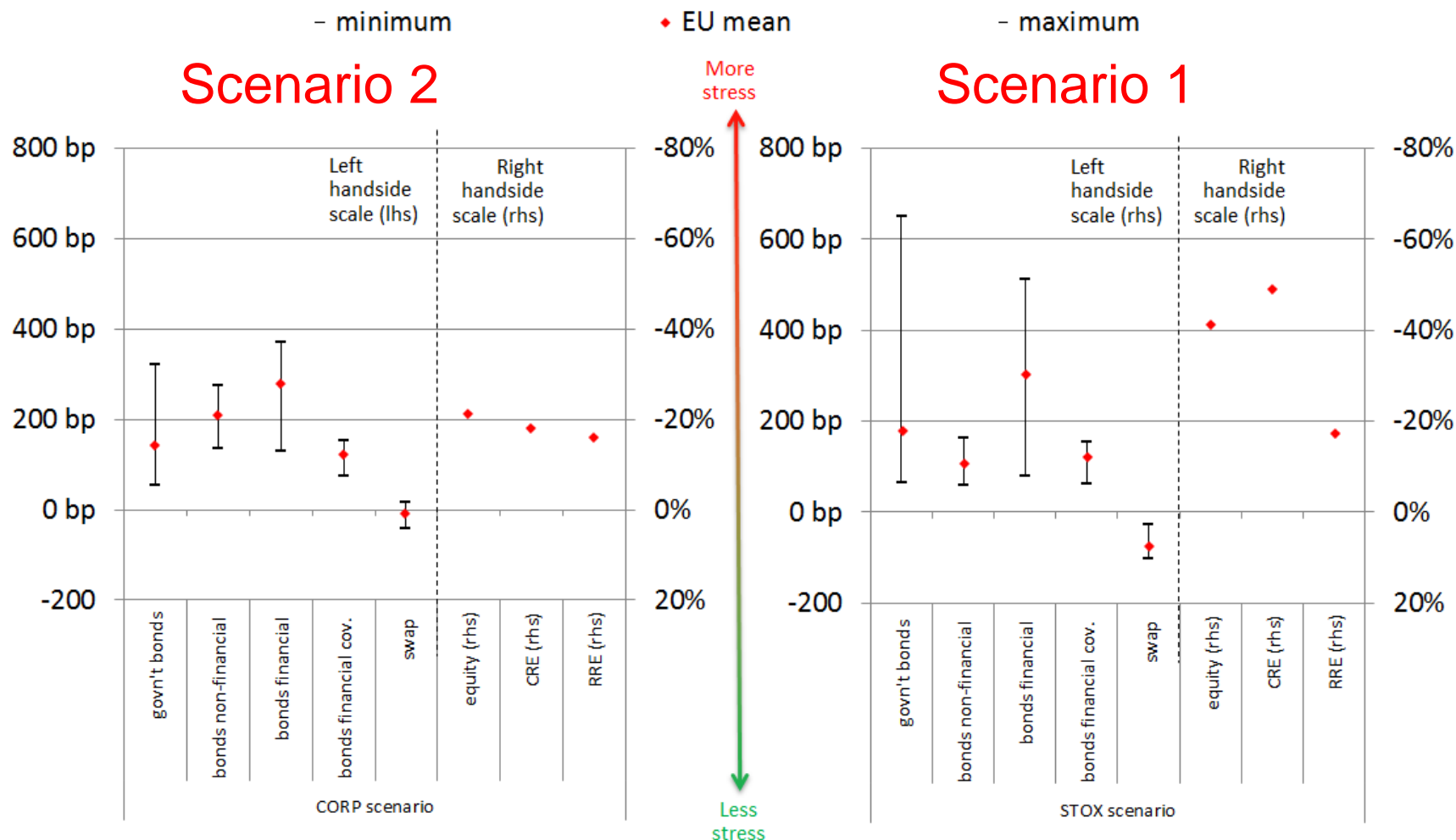
Scenario 1 (STOX scenario):

- The EU equity market is the shock originator
- Spill-over to all other market segments: in particular speculative corporate bond and government bond markets (esp. periphery countries)
- risk-free interest rates remain at exceptionally low levels

Scenario 2 (CORP scenario):

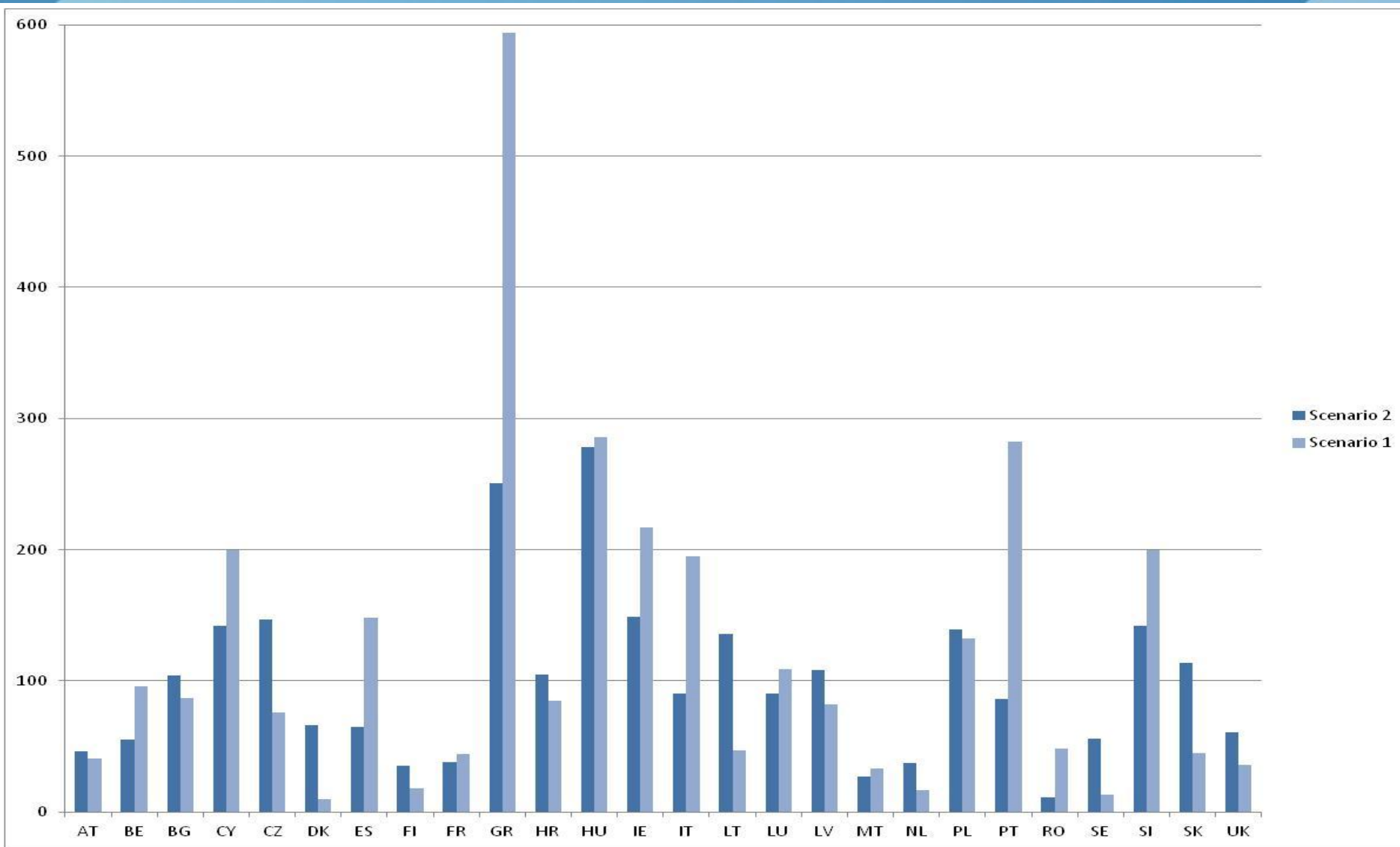
- The non-financial corporate bond market is the shock originator
- Spill-over to all other market segments: in particular investment grade rated corporate bond and government bond markets (also non-periphery countries)
- risk-free interest rates show slight inverse structure

Summary scenarios developed in cooperation with ESRB



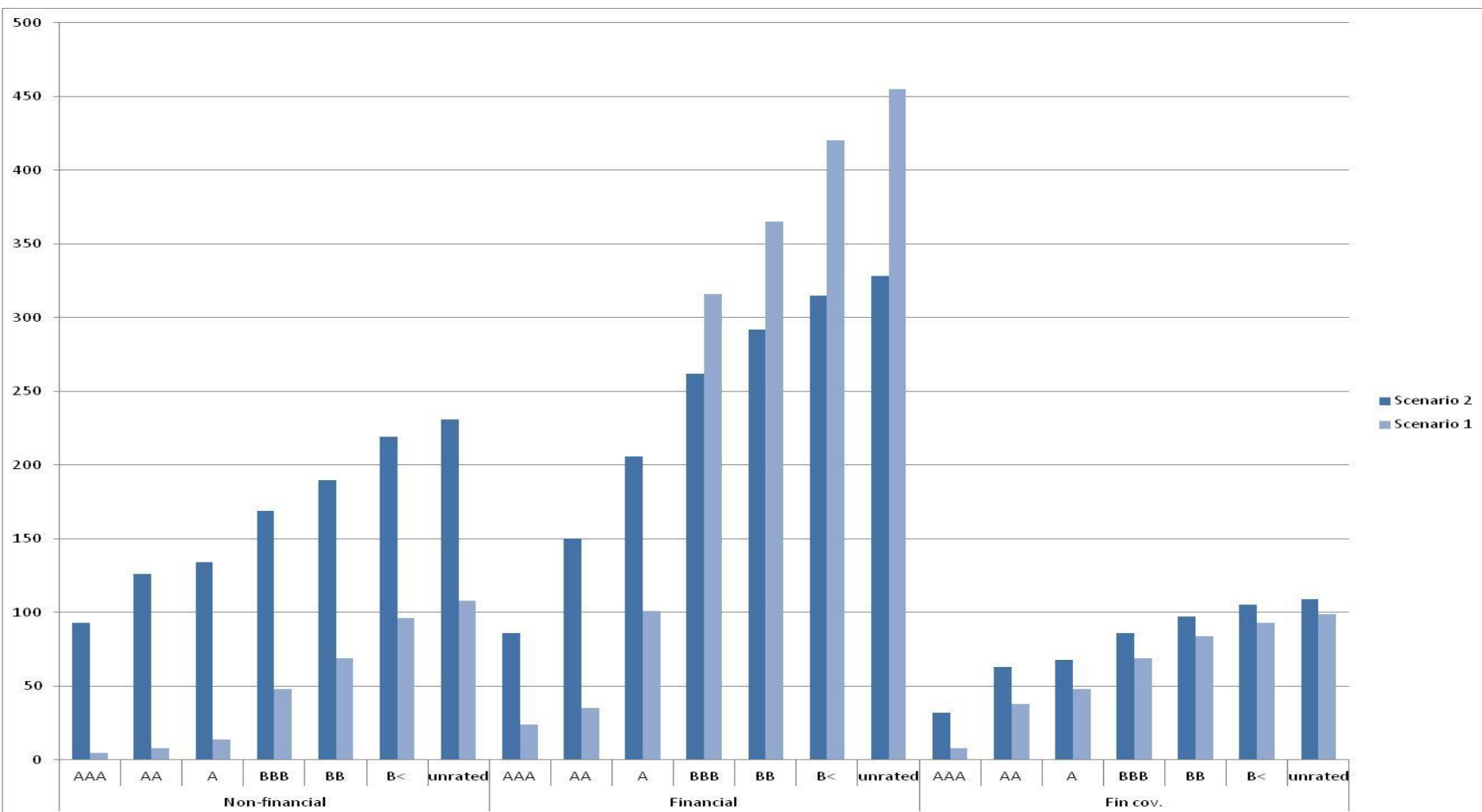
Sovereign Shocks

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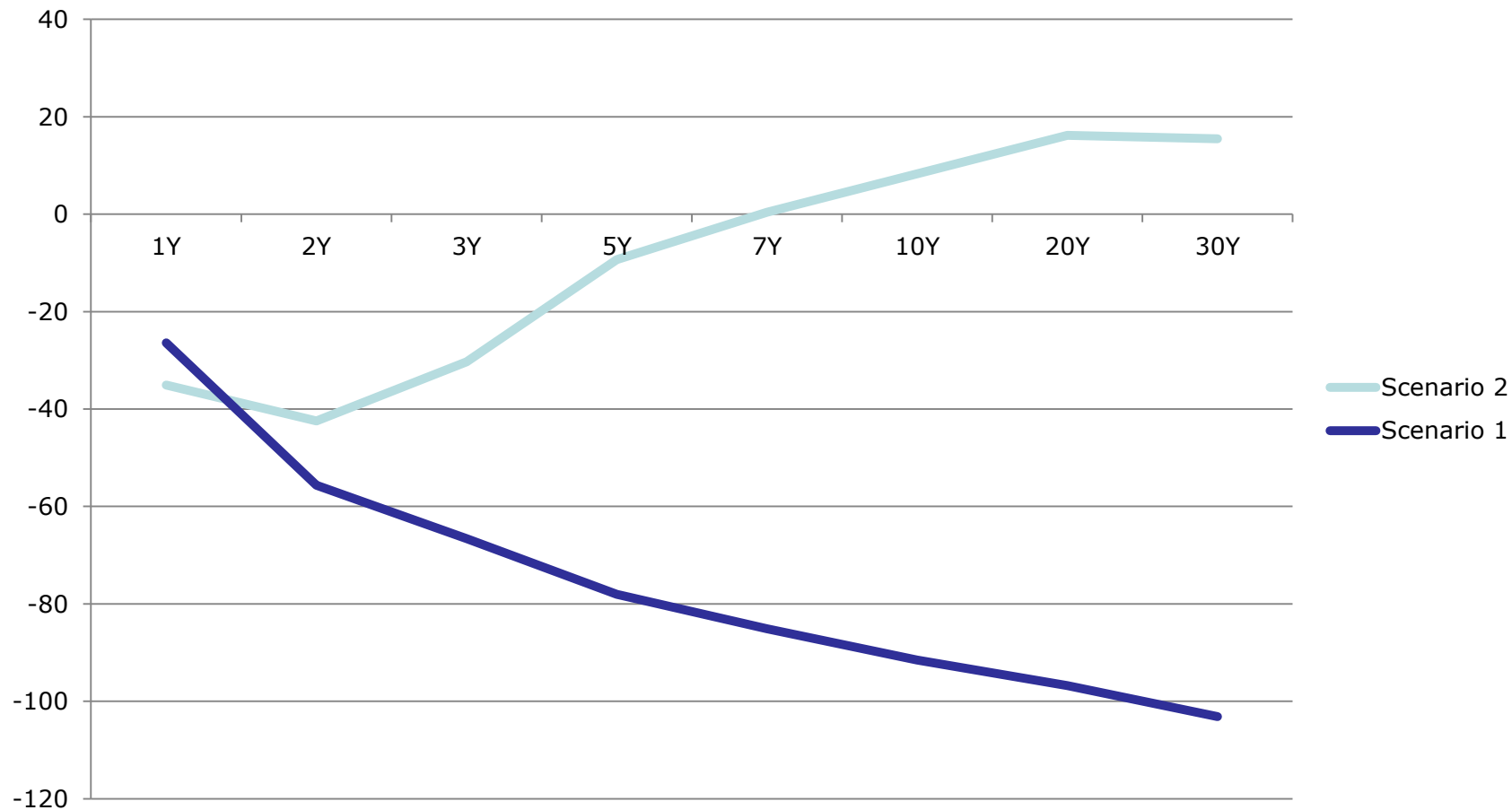
Corp. Bond Shocks

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Swap rate shocks

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Valuation – Technical Specifications preparatory phase

Technical specificities to the core module:

- Reference date for valuations: 31.12.2013
- Aligned with preparatory SII guidelines
 - Pre-/post- stress SII valuation
 - Reporting templates based on SII guidelines with some additions (e.g. bond reporting on credit quality)
 - Use of SF for reporting mandatory (additional use of IM voluntary)
 - No use of USPs allowed
 - Use of LTG-measure optional (if used reporting needs to be gross and net)
- Some adjustment of LTG-measures for core-module:
 - Post-stress VA (i.e. recalculation of spreads)
 - Transitional kept constant post-stress
- No CF projections/reporting for core-module required



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Core Module: Qualitative questionnaire on responses to market shocks in (Adverse 2 = CORP scenario)

Qualitative questionnaire aims to identify 2nd round effects of market scenario



- EIOPA stress test comprises instant shocks
- In reality shocks induce behavioural responses
- Qualitative questionnaire designed to identify response of insurers to the stress => 'second round' effects.
- Explicitly linked to the corporate bond adverse market scenario (adverse 2/CORP)
- 4 questions related to
 - o balance sheet adjustments
 - o business model adjustment
 - o impact on financial markets
 - o policy holder behaviour

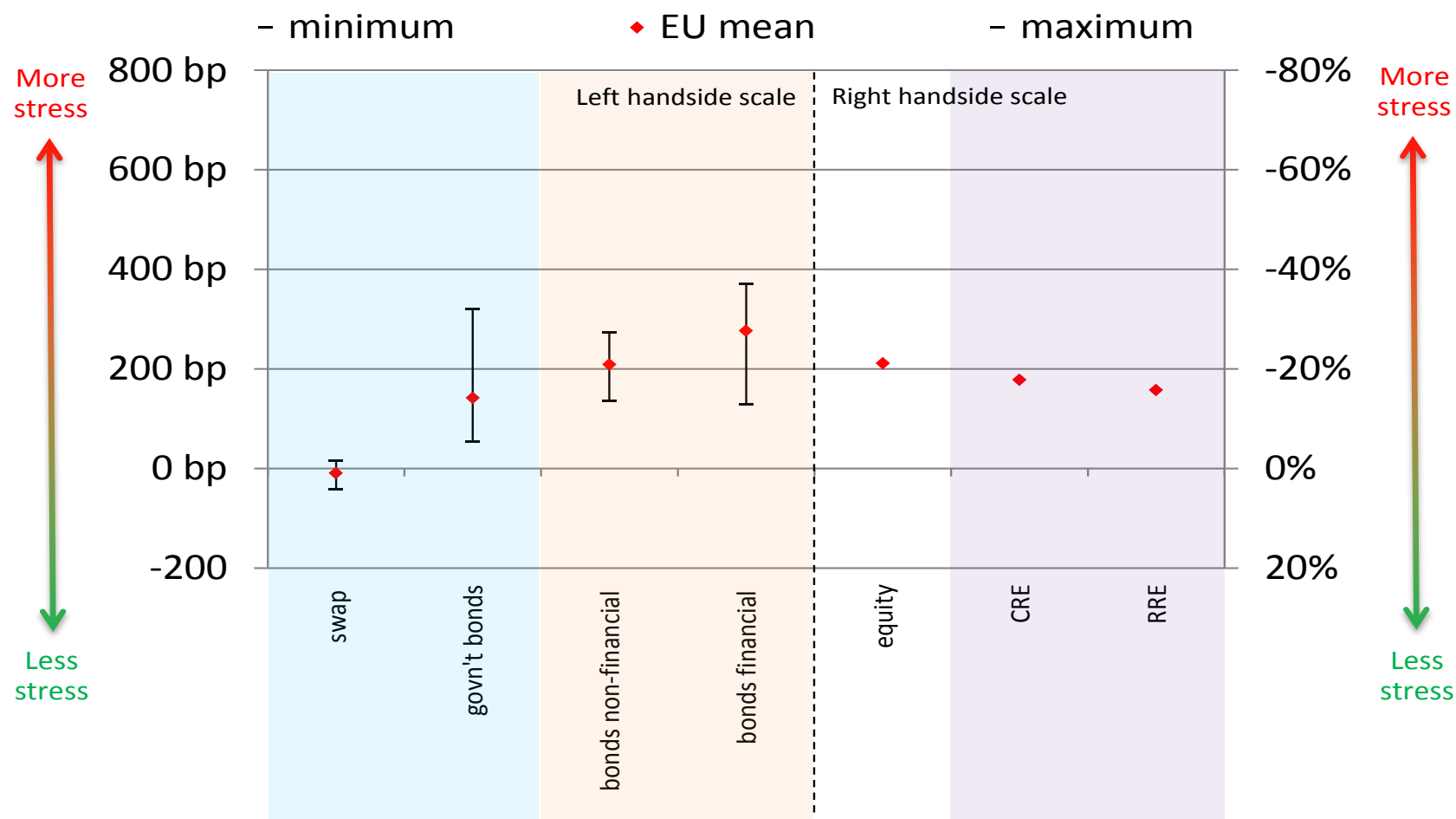
Adverse market scenario 2 follows a “double hit” narrative



- Sudden global risk reassessment
- Shocks in non-financial corporate bond markets
- Propagation to the equity and bank bond market, exacerbated by an assumed lagging of balance sheet repair
- Sovereign debt crisis aggravates with spread (over swaps) increases
- Tightening credit, unemployment and weak demand cause steep falls in real estate prices
- Expectations of accommodative monetary policy push swap rates/risk free rates down

Corporate bond adverse scenario (adverse 2 / CORP)

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Core Module: Single Factor Insurance Stresses

Single Factor Insurance Stresses

- Scope and basis are the same as Core Market Stress Scenario.
- Insurance stresses will be carried out independently from the market scenarios – using a set of single factor tests split into 3 components.
- Two different stress levels have been specified for each stress factor.

- The non-life insurance stresses cover an Undertaking specific natural catastrophe or man-made event stress, a Market wide defined event stress and a Provisions deficiency stress.
- The life insurance stresses cover Longevity, Mortality and Lapse.
- The focus is on impact of stresses rather than a pass/fail relative to a particular threshold.

- **Non-Life stress - Component 1**
- Participating undertakings to calculate their Probable Maximum Losses (PMLs) for their non-life exposures of a single catastrophic event on a:
 - 1 in 100 year basis
 - 1 in 200 year basis
- Participants shall describe the event, so that an overall concentration of exposures can be identified as part of the stress test exercise.

- **Non-Life stress - Component 2**
- **Participating undertakings to run a series of defined catastrophe scenarios:**
 - (1) Northern European Windstorm
 - (2) US Hurricane
 - (3) Turkey Earthquake (Istanbul)
 - (4) Central and Eastern European Flood, and
 - (5) Airport Crash
- Participants are expected to assess all scenarios but they need only to report results to those scenarios to which they have an exposure.

- **Non-Life stress - Component 2 (continued)**
- For each scenario an estimated aggregated market insured loss has to be provided to:
 - Assist in understanding magnitude of events.
 - Aggregately calibrated for severity across 5 events (for an insurer writing global cat exposed business).
- ST Technical specifications provide further guidance for assessing defined events.
- Reporting templates contain a supplementary questionnaire to be completed by undertakings.

- **Non-Life stress - Component 3**
 - **Participating undertakings to assess their provisions of claims deficiency stress** – estimating the potential cost per annum of the accumulative inflation increase, in excess of the best estimate inflation assumptions, of the estimated reported claims reserve on a:
 - 1% year basis
 - 3% year basis

- **Life stress - Component 1**
- Apply stress to best estimate mortality assumptions that would result in an uplift of best estimate expectations of life of 10% and 18% in stress scenarios.
 - Adjustments applied should be calibrated so increase in expectation of life is met at ages 65 & 75 and approximately met at other ages.
- **Explicit** allowances for future mortality improvements – make changes to base table only if necessary to achieve calibration.
- **Implicit** allowances for future mortality improvements – make adjustments to reflect stress scenario will need to be made to achieve the calibration.

- **Life stress - Component 2**
- Calculate impact of pandemic which leads to higher mortality rates.
- The two mortality stresses are:
 - 2 additional deaths per thousand lives
 - 0.6 additional deaths per thousand lives.

- **Life stress - Component 3**
- Two mass lapse stresses to their total book of life insurance policies:
 - A 20% rate
 - A 35% rate
- Participants should limit this to policies where there is a negative impact resulting in a loss upon a lapse.
- Mass lapses are assumed to last for 1 to 2 months only.

Single Factor Stress - Reinsurance



- We will also be asking for data collected on reinsurance recoveries.
 - For all insurance stresses, insurance undertakings should report results both gross and net of reinsurance recoveries.
 - For each insurance stress participants will be asked to provide the reinsurance recoveries from and identify their top five reinsurer counterparties at a Group level basis.



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Low Yield Module

2 Phases Approach

- 1st Phase: bottom-up
 - o calculations performed by the undertakings based on two scenarios developed by EIOPA i.e. long lasting low yield + inverted curve (upwards shock short maturities & downward shock middle to long term maturities)
 - o within timeframe of the EIOPA stress test (Low yield module)
 - o scenario curves – see next slide (derived for Euro)
 - o other currencies (EEA + USD + JPY + CHF):
“proportional” shifts, all curves provided by EIOPA
 - o Focus on BS, Value and Cash Flow impacts

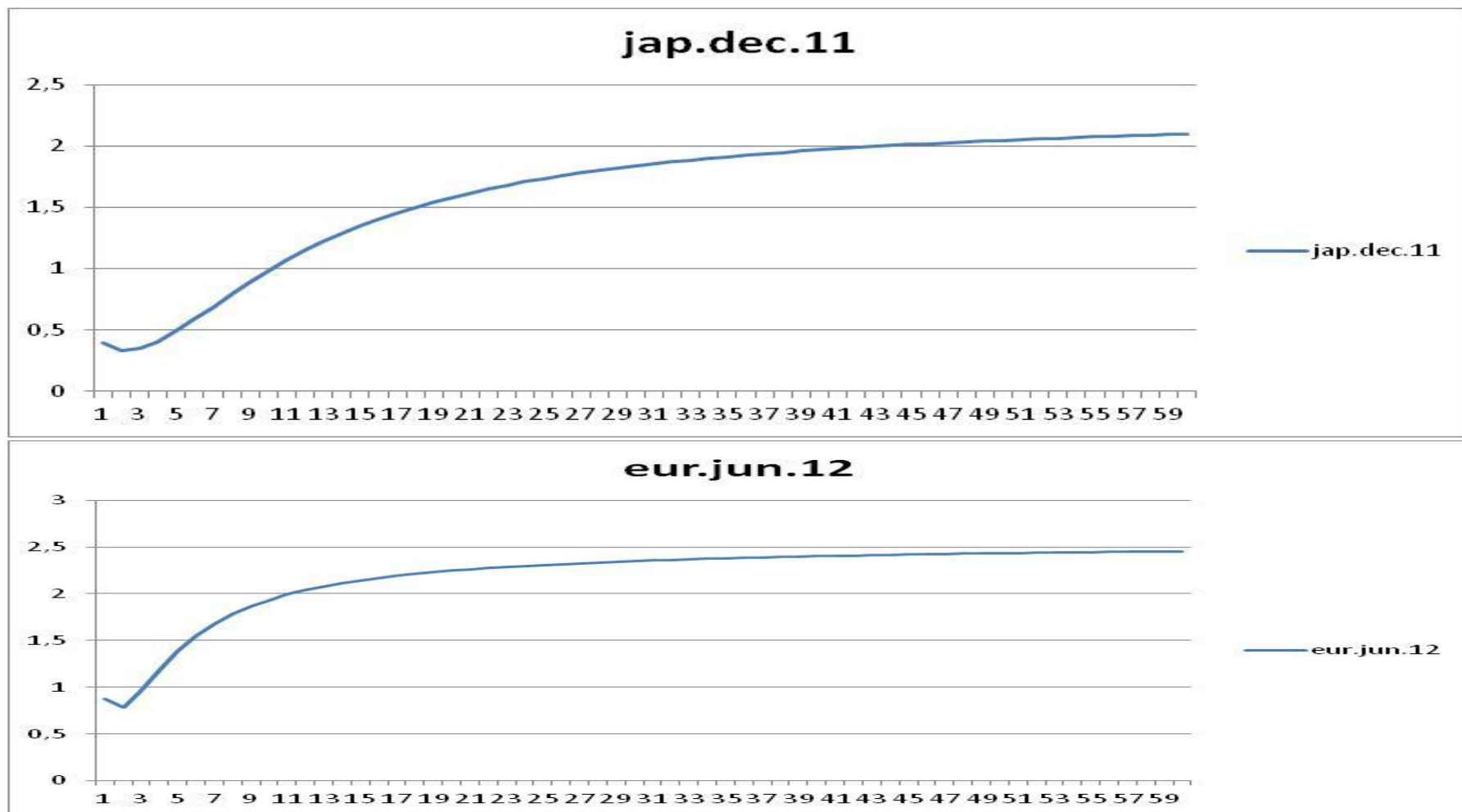
2 Phases Approach



- 2nd Phase: top down
 - work conducted after finalization & validation of first phase.
 - relevant outputs of the first phase (discounted values, undiscounted cash flows)
 - quantification/analysis of the risks under a variety of assumptions about interest rate behavior
 - conducted at level of EIOPA (no direct involvement industry participants).

(Target) Scenario Curves

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- Scoping Questions: size of relevant business, evolution of relevant business e.g. guarantees offered, durations of business, ...
- “Dynamic” behavior questions: insurance responses to quantitative scenarios, look for potential 2nd order effects on e.g. strategies pursued, changes within investment mix, ...
- More detail: see Templates.

- Scope

- o Participation @ Individual (solo) Level
- o Market coverage rate: 50% 'relevant' technical provisions.
- o Relevant business? Principle based approach vs fully prescribed definition in order to capture national/product specific features. General guideline: "vulnerable" to low yield e.g.
 - Life insurance products which offer fixed interest rate guarantees and/or which offer some type of (fixed) 'profit participation' to the insured.
 - All types of annuity-products (life, non-life, health, workmen's compensation).
 - Insurance products which tariff is calculated already taking into account a certain financial income on the outstanding reserves.

- Timing
 - o See details of 2-phase approach above.
- Outputs
 - o Disclosure of effects on the value of the main balance sheet items & own funds
 - o Projection of cash flows over a period of 60 years for main asset & liability categories
 - o More detail: see templates

- Technical specificities to the low yield module
 - ▶ Shocks on yield curves: no effect on spreads (i.e. no recalculation of the Volatility adjustment)
 - ▶ Suitable CF projections are required:
 - ▶ based on valuation & contract boundaries as stipulated within SII,
 - ▶ purpose of collecting those CF that once discounted with the relevant risk-free curve, provide the best estimate value of the technical provisions when summed.
 - ▶ Transitionals (discount and TP value): adjustments assumed constant after stress (for stress test purposes – determine effect of changing risk free rates)



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EIOPA Stress Test 2014. Risk free rates for discounting

Stressing 'basic' risk free rates term structures

Stressing corporate bonds

Stressing government bonds

Matching adjustment

Volatility adjustment:

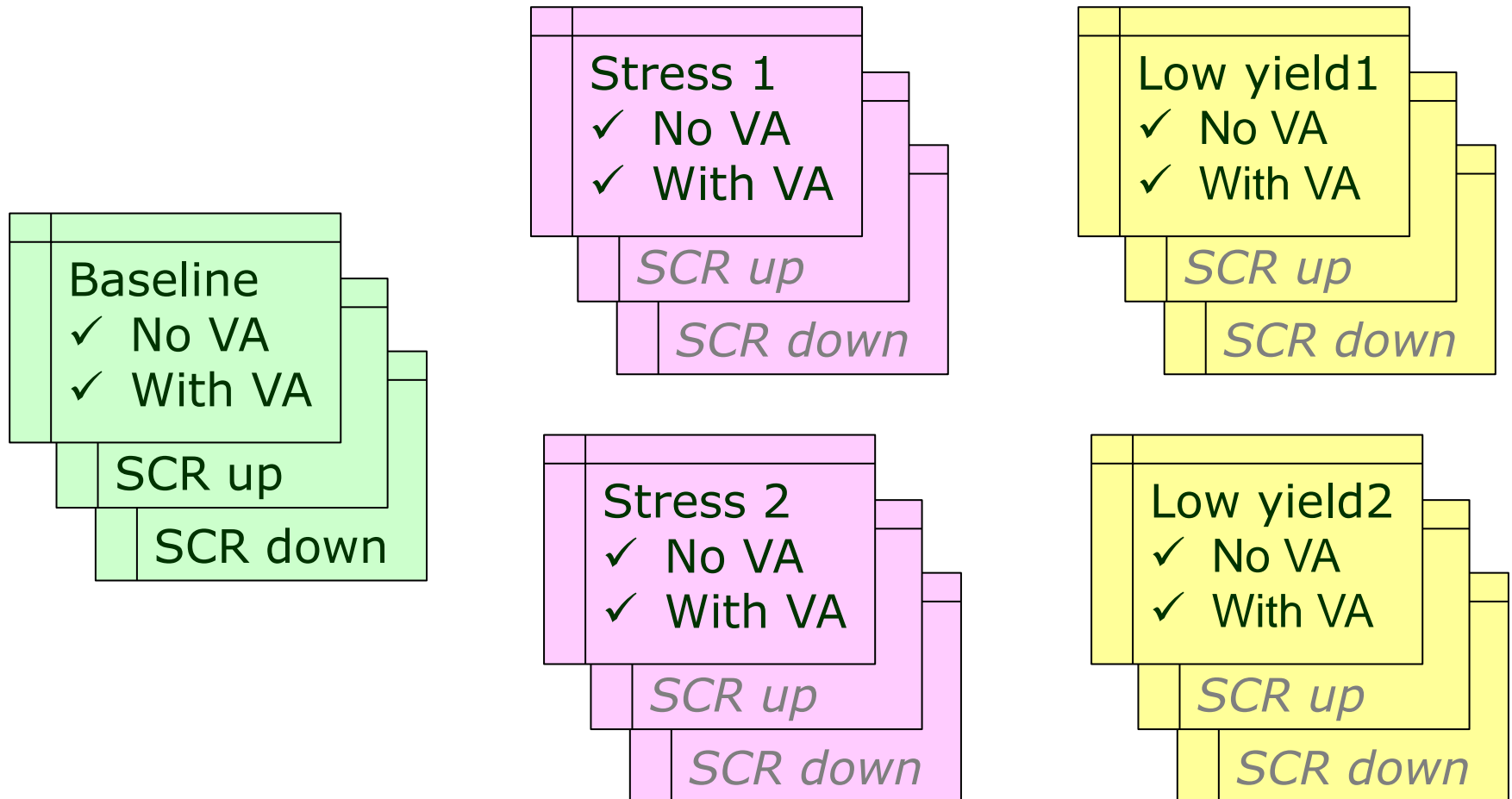
Temporary adjustment to the relevant risk-free interest rates term structure for the calculation of the best estimate of technical provisions, aimed to avoid exaggeration of market bond spreads (RC 32 OII)

It should be calculated based on the spread of representative portfolios of bonds, loans and securitizations

Matching adjustment


Adjustment to the relevant risk-free interest rates term structure applicable, previous supervisory approval, during the lifetime of a portfolio of insurance or reinsurance obligations, where there is adequate evidence the undertaking is not exposed to the risk of changing spreads of the bonds or other assets with similar cash flow characteristics covering those obligations (RC 31 OII)

Risk free interest rates term structures



Risk free interest rates term structures

G3 f_x

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	
1																				
2																				
3																				
4	2.014 EIOPA STRESS TEST. Preliminary instructions																			
5																				
6																				
7	This file provides a threefold set of inputs for EIOPA Stress Test 2014																			
8																				
9	Main_RFR Basic risk-free interest rate term structures, and also the term structures once adjusted with the relevant volatility adjustment																			
10																				
11	Main_Govts Only for the calculation fo the matching adjustment, where relevant																			
12																				
13	Main_Corps Both for the calculation of the market value of corporate bonds after stress (left table)																			
14	and the calculation of the matching adjustment, where relevant (right table)																			
15																				
16	Inputs are provided for integer term maturities																			
17																				
18	Undertakings shall apply appropriate interpolation techniques for discounting inter-annual cash flows																			
19																				
20	Notwithstanding, and for the solely purposes of EIOPA Stress test 2014																			
21	undertakings may allocate cash flows to the nearest integer maturity																			
22	provided this approximation does not have a material impact on the financial position																			
23																				
24																				
25																				

Instructions Main_RFR Main_Govts Main_Corps Annex DC1

Risk free interest rates term structures



Stressing euro swap curve (scenarios 1 and 2)

Step 1.- Par swap curve for the euro, credit risk adjusted

Step 2.- Applying the calibrated stresses to the euro par swap curve

Step 3.- Euro zero-coupon curve and extrapolation

Stressing swap curves for currencies other than euro

For each maturity, calculation of the relative change of the actual value of a **cash flow expressed in euros** - comparing with and without stress

(e.g. for a 5y cash flow in euros, its current value increases 8 % in stressed scenario 1 compared to the baseline)

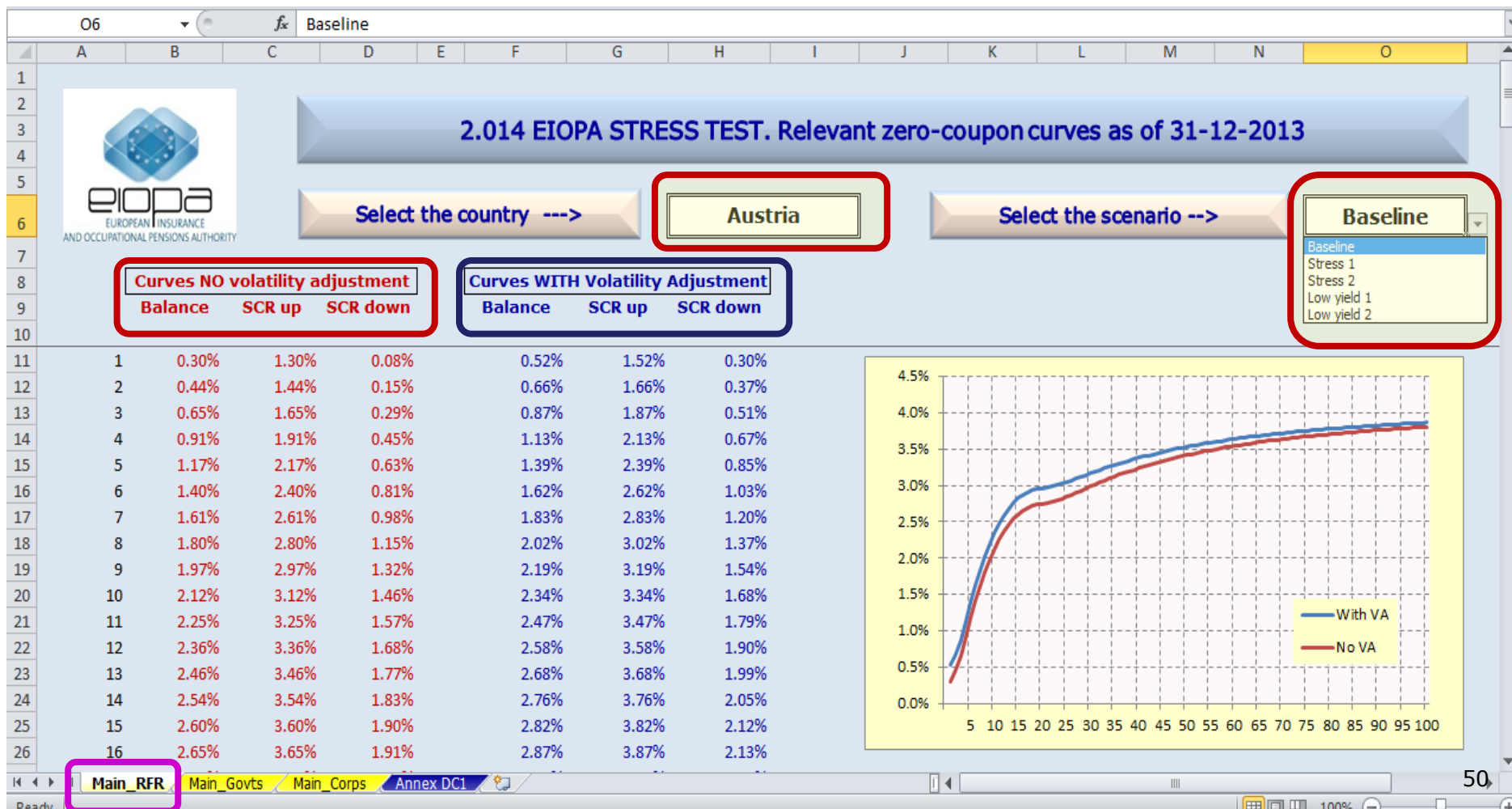
Zero coupon stress curve for other currencies should produce the same relative change of current value as for the euro (calculation and equality achieved for each maturity)

(current value of 5y cash flow expressed in any currency, should increase 8% in stressed scenario 1)

$$\frac{(1 + i_{\text{rfr_stress}}^{\text{euro}})^{-t}}{(1 + i_{\text{rfr_baseline}}^{\text{euro}})^{-t}} = \frac{(1 + i_{\text{rfr_stress}}^{\text{currency}})^{-t}}{(1 + i_{\text{rfr_baseline}}^{\text{currency}})^{-t}}$$

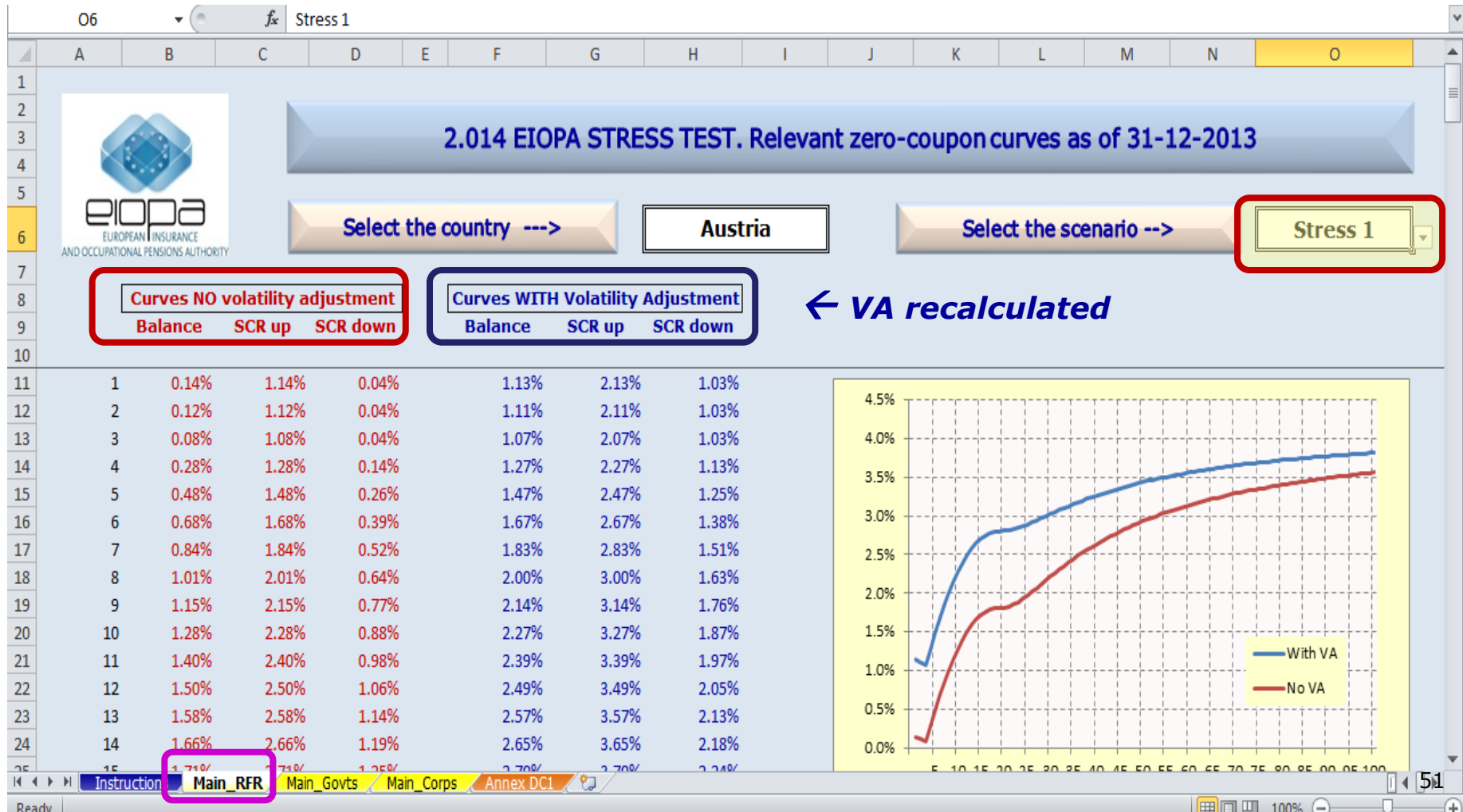
Risk free interest rates term structures

Risk-free rates curves. Selecting country and scenario



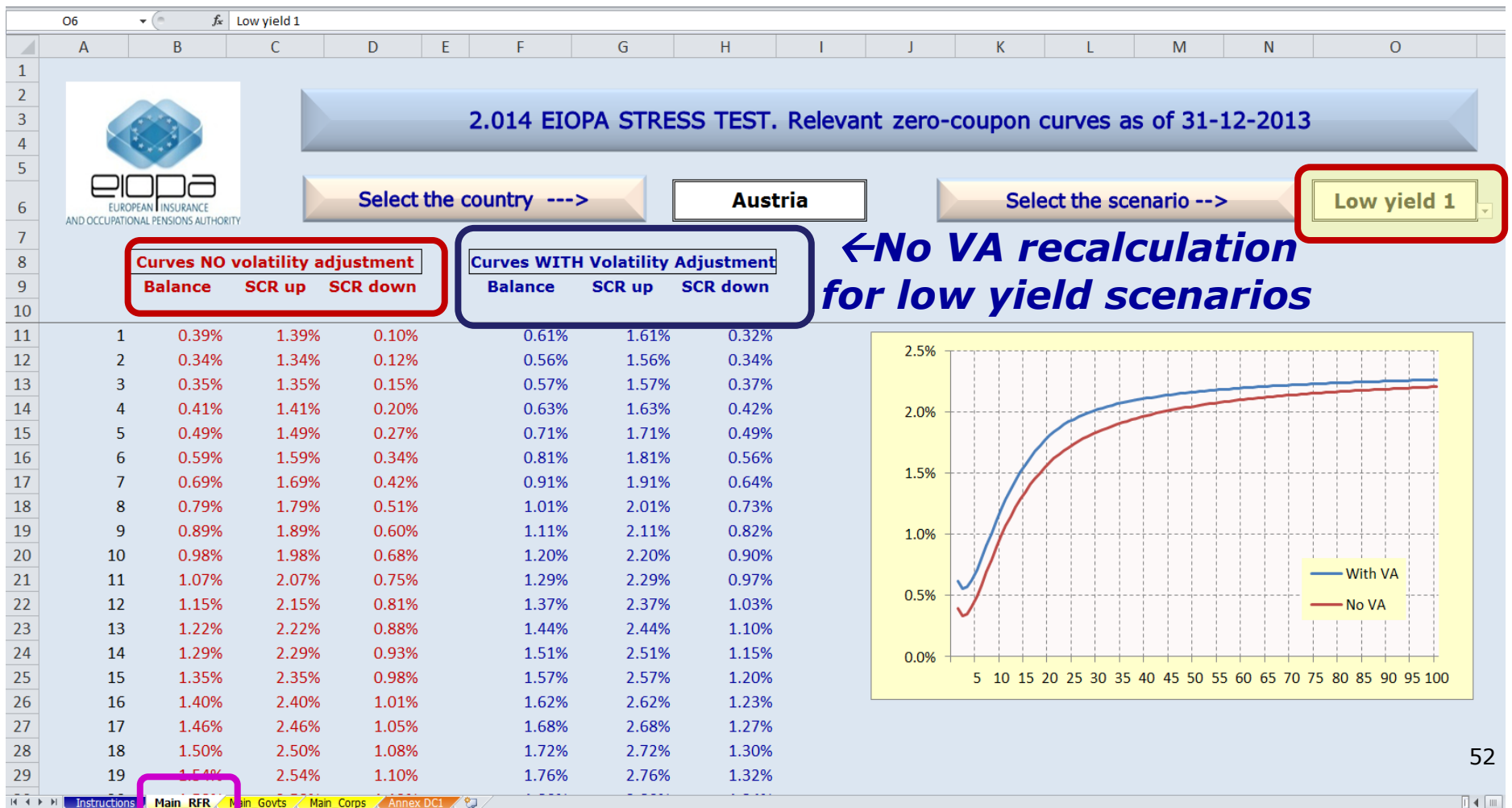
Risk free interest rates term structures

Risk-free rates curves. Selecting country and scenario



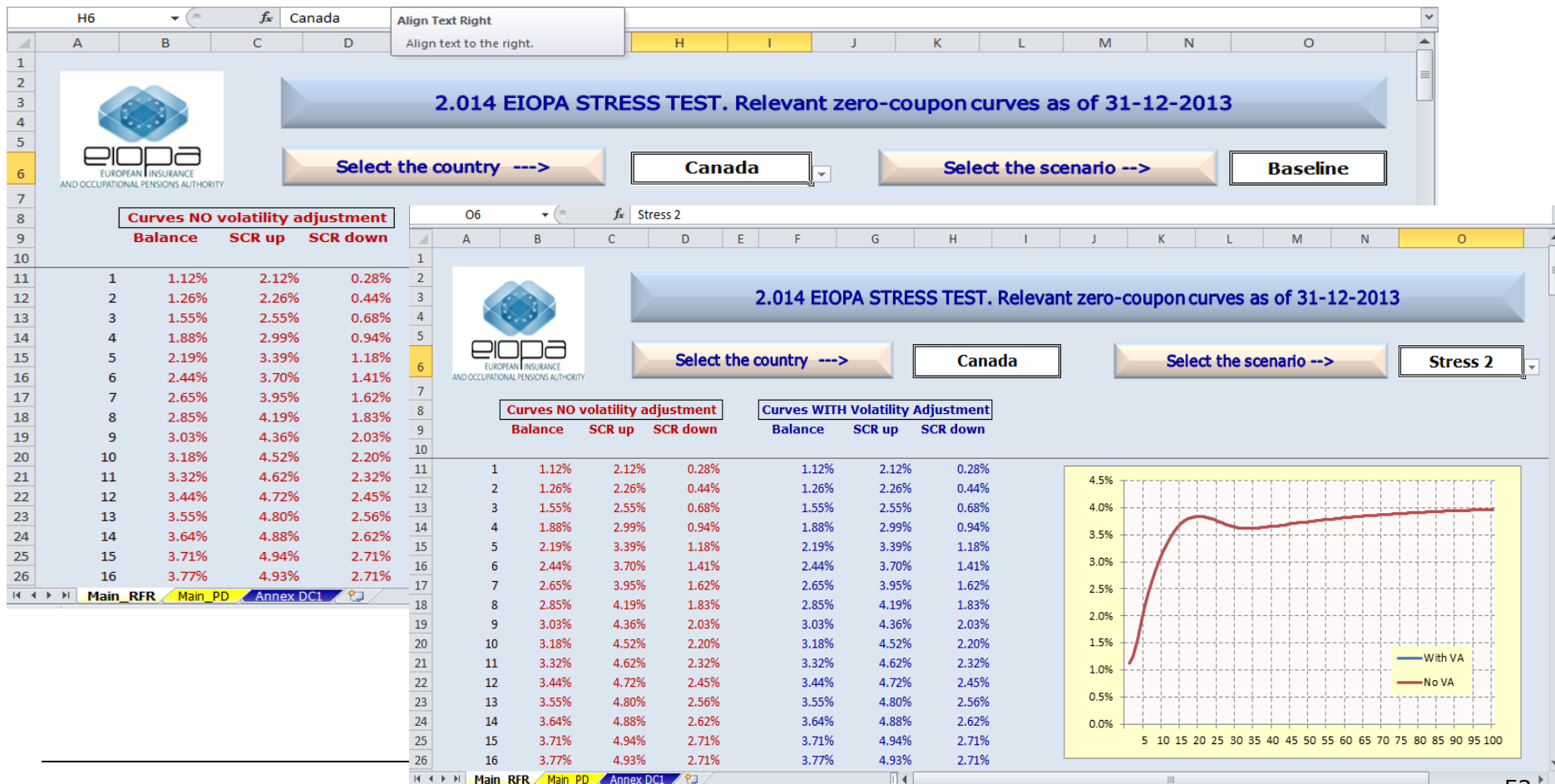
Risk free interest rates term structures

Risk-free rates curves. Selecting country and scenario



Risk free interest rates term structures

Only EEA currencies + CHF + JPY + USD stressed



Risk free interest rates term structures



Stressing 'basic' risk free rates term structures

Stressing corporate bonds

Stressing government bonds

Matching adjustment

Risk free interest rates term structures

Stressing corporate bonds. Selecting currency and credit quality

Q2

fx

2.014 EIOPA STRESS TEST. Corporates bonds.

Select the currency/country --->

Austria

2

Market value balance sheet. Stress refers to corporate bond rates

Credit quality corporate bond (0 to 6) --->

1

Only for the calculation of the matching adjustment

Basic RFR	Non financial	Financial non-covered	Financial covered
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RR	PD in bp for the euro	PD in bp for crncy	Basic RFR + PD	PD for de-risking	Cost down Euro	Grade (bp) Currency
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Adverse 1	Adverse 2	Adverse 1	Adverse 2	Adverse 1	Adverse 2
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1	1.7	1.8	0.321	0.02%	2.2	2.2
2	2.7	2.7	0.465	0.08%	2.6	2.6
3	3.7	3.7	0.689	0.16%	3.3	3.3
4	5.0	5.0	0.956	0.28%	3.9	3.9
5	5.9	5.9	1.231	0.41%	4.3	4.3
6	6.0	6.0	1.465	0.51%	4.8	4.8
7	6.0	6.0	1.672	0.59%	5.2	5.2
8	5.9	5.9	1.857	0.66%	5.7	5.7
9	5.9	5.9	2.027	0.74%	6.3	6.3
10	6.1	6.1	2.179	0.84%	6.9	6.9
11	6.5	6.5	2.313	0.99%	7.4	7.4
12	7.1	7.1	2.434	1.19%	7.9	7.9
13	7.7	7.7	2.534	1.39%	8.4	8.4
14	8.0	8.0	2.617	1.55%	8.8	8.8
15	8.2	8.2	2.684	1.70%	9.2	9.2
16	8.2	8.2	2.734	1.82%	9.6	9.6
17	8.2	8.2	2.770	1.93%	10.0	10.0
18	8.2	8.2	2.797	2.04%	10.3	10.3
19	8.2	8.2	2.815	2.15%	10.6	10.6
20	8.2	8.2	2.823	2.27%	11.0	11.0

Instructions

Main_RFR

Main_Govts

Main_Corp

Annex DC1

55

Risk free interest rates term structures



Stressing 'basic' risk free rates term structures

Stressing corporate bonds

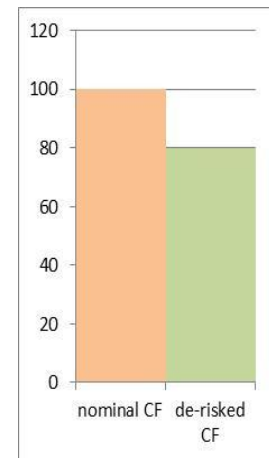
Stressing government bonds

Matching adjustment

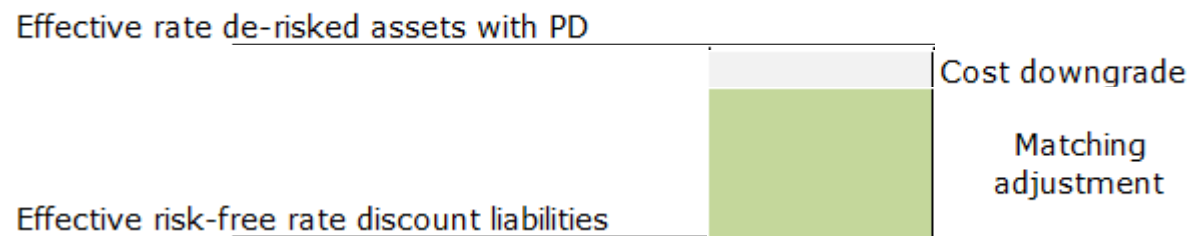
Risk free interest rates term structures

Matching adjustment.
Fundamental spread =
Fundamental PD + Cost of Downgrade

FPD = Fundamental Probability of default
de-risked cash flows = nominal cash flow * (1 - PD)



CD = Cost of downgrade (reducing the adjustment)(*)



Matching adjustment

Baseline scenario. SCR spread risk sub-module

The instantaneous shock in form of increase of the market spreads of the assets, leads at the same time to the same increase (in bp) of the fundamental spread (FPD+CD), although with the relevant reduction factor according to CQS of the asset

Stressed scenarios

Stressed balance sheet. The fundamental spreads remain unchanged (same value as in the baseline scenario).

Voluntary SCR after stressed (SCR spread risk sub-module). Same increase of the fundamental spread as for the baseline scenario

Risk free interest rates term structures

Matching adjustment

De-risking of cash
flows from
government bonds

Market value
stressed balance

	A	B	C	D	E	F	G	H	I	J	K	N	O
1													
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2.014 EIOPA STRESS TEST. Government bonds			
Probabilities of default for de-risking			
Basic RFR	30% average spread	RFR+Fund. Spread	PD for de-risking
0.303	-	0.303	0.00%
0.437	-	0.437	0.00%
0.652	-	0.652	0.00%
0.906	-	0.906	0.00%
1.173	0.019	1.192	0.14%
1.405	0.029	1.434	0.24%
1.612	0.037	1.650	0.37%
1.798	0.045	1.843	0.50%
1.968	0.049	2.017	0.62%
2.119	0.050	2.169	0.70%
2.249	0.051	2.300	0.78%
2.363	0.051	2.414	0.86%
2.457	0.052	2.508	0.94%
2.537	0.052	2.589	1.02%
2.601	0.053	2.654	1.10%
2.652	0.055	2.707	1.21%
2.688	0.057	2.745	1.33%
2.715	0.059	2.774	1.46%
2.732	0.061	2.795	1.59%
2.741	0.063	2.808	1.73%
			1.73%
			1.73%

Select Government Issuer	
Austria	
Asset value	
Parallel shift term structure valuation balance sheet	
Stresses to add to Government bond rates Euroswap 2y rate	
Stress Market Adverse 1	41 97
Stress Market Adverse 2	46 88


Instructions	Main_RFR	Main_Govts	Main_Corps	Amix DCL
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Risk free interest rates term structures

Matching adjustment.

Sub investment grade assets (below credit quality step 3)

Undertakings need to adjust inputs in order to respect Article 77c(1c) OII Directive

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	U	V	W	X	AE
1			2.014 EIOPA STRESS TEST. Corporates bonds.																					
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11	1	0.303	69	190	365	292	84	97	1	79.9	79.9	1.102	1.13%	10.2	10.2	0.303	1.102	0.405						
12	2	0.437	69	190	365	292	84	97	2	116.1	116.1	1.599	3.25%	14.9	14.9	0.437	1.599	0.586						
13	3	0.652	69	190	365	292	84	97	3	141.3	141.3	2.066	5.85%	19.3	19.3	0.652	2.066	0.845						
14	4	0.906	69	190	365	292	84	97	4	158.3	158.3	2.489	8.62%	24.2	24.2	0.906	2.489	1.148						
15	5	1.173	69	190	365	292	84	97	5	162.9	162.9	2.802	10.97%	29.6	29.6	1.173	2.802	1.468						
16	6	1.405	69	190	365	292	84	97	6	164.6	164.6	3.050	13.15%	35.0	35.0	1.405	3.050	1.755						
17	7	1.612	69	190	365	292	84	97	7	163.5	163.5	3.248	15.11%	40.5	40.5	1.612	3.248	2.017						
18	8	1.798	69	190	365	292	84	97	8	162.5	162.5	3.423	17.00%	45.9	45.9	1.798	3.423	2.257						
19	9	1.968	69	190	365	292	84	97	9	161.2	161.2	3.580	18.81%	51.2	51.2	1.968	3.580	2.480						
20	10	2.119	69	190	365	292	84	97	10	160.6	160.6	3.724	20.64%	56.4	56.4	2.119	3.724	2.682						

Bonds credit quality 4, 5 & 6: Matching adjustment cannot be higher than the matching adjustment for bonds credit quality step 3. Undertakings shall increase either PD and/or Cost Downgrade in the amount necessary



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Stress test templates:

**1. Structure / 2. Before stress /
3. Common part / 4. Core
Module / 5. Low Yield Module**

1 – Stress test structure

- 3 sets of information

Common part

- Participant information
- Before stress situation
- Overview of results

Core module

- Adverse scenario 1 (equity originated)
- Adverse scenario 2 (non-corporate bond originated)
- Single factor insurance stresses
- Qualitative questionnaires

Low yield module

- Additional information on the before stress situation (cash flows)
- Long lasting low rates for all maturities
- Atypical reverse shocked interest rate curve
- Qualitative questions

1 – Spreadsheet implementation

Content	Sheet	GoTo	Required for ...
This sheet	P.Index	GoTo	
Explanations on the structure and content of this spreadsheet	P.Readme	GoTo	
1. Participant information	Participant	GoTo	Both
2. Information on the end 2013 before stress situation			
Solvency II balance sheet and capital requirements	BS	GoTo	Both
Additional information on end 2013 situation	BS+	GoTo	Both
3. Core stress test scenarios using the end 2013 financial position as the starting point			
A) Core module market stress scenarios			
Comprehensive scenario 1	BS.CA1	GoTo	Core
Comprehensive scenario 2	BS.CA2	GoTo	Core
Questionnaire on EIOPA-ESRB market stress scenarios	CA.Q	GoTo	Core
B) Core module single factor insurance stresses			
Single factor insurance stresses	SFIS	GoTo	Core
Questionnaire on single factor insurance stresses	SFIS.Q	GoTo	Core
4. Low yield module using the end 2013 financial position as the starting point			
Additional information on the before stress situation			
Asset cash flows before stress	BS+.Assets(CF)	GoTo	Low yield
Liability cash flows before stress	BS+.Liabilities(CF)	GoTo	Low yield
A) Long lasting low rates for all maturities			
Impact on balance sheet and capital requirements	BS.LYA	GoTo	Low yield
Asset cash flows post stress	BS+.LYA.Assets(CF)	GoTo	Low yield
Liability cash flows post stress	BS+.LYA.Liabilities(CF)	GoTo	Low yield
B) Atypical reverse shocked interest rate curve			
Impact on balance sheet and capital requirements	BS.LYB	GoTo	Low yield
Asset cash flows post stress	BS+.LYB.Assets(CF)	GoTo	Low yield
Liability cash flows post stress	BS+.LYB.Liabilities(CF)	GoTo	Low yield
Questionnaire on Low yield	LY.Q	GoTo	Low yield
5. Overview of results	Overview	GoTo	

2 – The before stress situation

- Based on the latest available technical specifications for the Solvency II preparatory phase
- <https://eiopa.europa.eu/publications/technical-specifications/index.html>

SOLVENCY II TECHNICAL SPECIFICATIONS

30.04.2014	☞ Technical Specifications for the Solvency II Preparatory Phase - Part I ☞ Annexes to Part I
30.04.2014	☞ Technical Specifications for the Solvency II Preparatory Phase - Part II

- With some additional information needed for stress test purposes
- <https://eiopa.europa.eu/activities/financial-stability/insurance-stress-test-2014/stress-test-specifications/index.html>

STRESS TEST SPECIFICATIONS:

[☞ Stress Test 2014 specifications](#)

2 – Spreadsheet implementation

- Information defined in the guideline on submission of information

- Consolidated in a single sheet : “BS”

- With a few differences:

- Detail of investment funds

In public disclosure but not in the supervisory reporting to supervisors

- Group and individual views merged

With distinct colours for group specific information

All

Group specific

- Duplication of the SCR information

Standard formula used as the baseline

Investment funds
Equity funds
Debt funds
Money market funds
Asset allocation funds
Real estate funds
Alternative funds
Private equity funds
Infrastructure funds
Other

S.25.01	Solvency Capital Requirement						
		Standard Formula		[Optional] Partial internal model			
		Net solvency capital requirement (including the loss-absorbing capacity of technical provisions)	Gross solvency capital requirement (excluding the loss-absorbing capacity of technical provisions)	Elements of the risks covered by partial internal model (Y/N)	Net solvency capital requirement (including the loss-absorbing capacity of technical provisions)	Gross solvency capital requirement (excluding the loss-absorbing capacity of technical provisions)	
	Market risk	-	-	-	-	-	-
	Counterparty default risk	-	-	-	-	-	-
	Life underwriting risk	-	-	-	-	-	-
	Health underwriting risk	-	-	-	-	-	-

2 – BS: Content definition already published

- Spreadsheet view:

429	S.28.01	[Solo] Minimum Capital Requirement (except for composite undertakings)
430		
431		Linear formula component for non-life insurance and reinsurance obligations
432		MCR _{NL} Result

- Right side of the spreadsheet

429	[Solo] Minimum Capital Requirement (except for composite undertakings)	
430		
431	Linear formula component for non-life insurance and reinsurance obligations	MCR components
432	MCR _{NL} Result	A1

- <https://eiopa.europa.eu/publications/eiopa-guidelines-new/guidelines-on-submission-of-information-to-national-competent-authorities/index.html>

(annex II)

S.28.01 Minimum Capital Requirement (except for composite undertakings)		
	ITEM	INSTRUCTIONS
A1	Linear Formula component for non-life insurance or reinsurance obligations	This is the linear formula component for non-life insurance or reinsurance obligations and is calculated in accordance with requirements.

2 – BS+: Additional information

- On the split of life TP between with profit and others
 - *Needed for the stress test results analysis but not available in the Solvency II balance sheet.*
- On the assets modelled in the Core stress test scenarios
 - *Sovereign exposures*
 - *Corporate bonds per credit quality steps and type of counterparty (financial covered, financial others, non-financial)*
 - *Same information post stress required*
- Some information to back check the volatility adjustment computations
 - *Modified duration of corporate bond portfolio*
- Some information on the comparability of returns
 - *More explanations later in the presentation*

2-

BS+. {Assets | Liabilities} (CF)

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- Cash flows pattern under the Low Yield module are required.
- For comparability purposes, the same cash flows patterns are required for the before stress situation
- The discounted value is first asked

	Total	Government bonds	Corporate bonds	Structured notes	Collateralized securities	Other (unrated) fixed income	Loan and Mortgage	Other assets
Value at end 2013	-	-	-	-	-	-	-	-

- Followed by the set of associated undiscounted cash flows

	Total	Government bonds	Corporate bonds	Structured notes	Collateralized securities	Other (unrated) fixed income	Loan and Mortgage	Other assets
Year to maturity								
1	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-

- Liabilities breakdown uses the split of life between with profit and others

Life insurance with profit participation		Other life insurance	
Cash out-flows	Cash in-flows	Cash out-flows	Cash in-flows

3 – The common part – Participant information



- This include 3 categories of information
 - o General information:
 - name, legal form, country, currency and unit used
(**only one currency and one unit allowed per report !**)
 - o Scope and basis of reporting
 - Core and/or low yield modules
 - List of reinsurance entities included for group reporting to allow EEA coverage calculation for the core module
 - o Reporting possibilities with a potential effect on the comparability of returns
 - due care will be needed during the analysis of results phase

3.1 – Information on the comparability of results

Reporting includes ring fenced funds information ?	-
Reporting includes internal model information ?	-
<i>If Yes, which kind of internal model (Partial or Full) ?</i>	-
Before stress situation includes effects of LTG measures ?	-
Capital requirements have been re-assessed post-stress ?	-

- Ring fenced funds have an effect on diversification (SCR) and capital (restrictions)
- The standard formula is used as baseline for comparability purposes.
- Long term guarantee measures can be used
- Capital requirement may be reassessed in the post stress situation

3.2 – Comparability of results – Ring fenced funds

- Specific information (before stress)

Number of ring fenced funds	-									
Total ring fenced liabilities (gross TP)	-									
		Liabilities	Impact on capital requirements / own funds							
Ring fenced funds information (net risks, notional SCR and OF restrictions)	Gross TP in the balance sheet	Market risk	Counterparty default risk	Life underw. risk	Health risk	Non-Life underw. risk	Operational risk	Notional SCR	Own funds restriction	
<ring fenced fund 1>	-	-	-	-	-	-	-	-	-	-
<ring fenced fund 2>	-	-	-	-	-	-	-	-	-	-
<ring fenced fund 3>	-	-	-	-	-	-	-	-	-	-
<ring fenced fund 4>	-	-	-	-	-	-	-	-	-	-
<ring fenced fund 5>	-	-	-	-	-	-	-	-	-	-
<ring fenced fund 6>	-	-	-	-	-	-	-	-	-	-
<ring fenced fund 7>	-	-	-	-	-	-	-	-	-	-
<ring fenced fund 8>	-	-	-	-	-	-	-	-	-	-
<ring fenced fund 9>	-	-	-	-	-	-	-	-	-	-
All others RFF (sum)	-	-	-	-	-	-	-	-	-	-

3.3 – Comparability of results

– IM information

- Risk margin is linked to the projected SCRs
- Effect of using IM to assess SCR on risk margin asked

Risk margin in the balance sheet	19
Risk margin with (P)IM	-

3.3 – Comparability of results

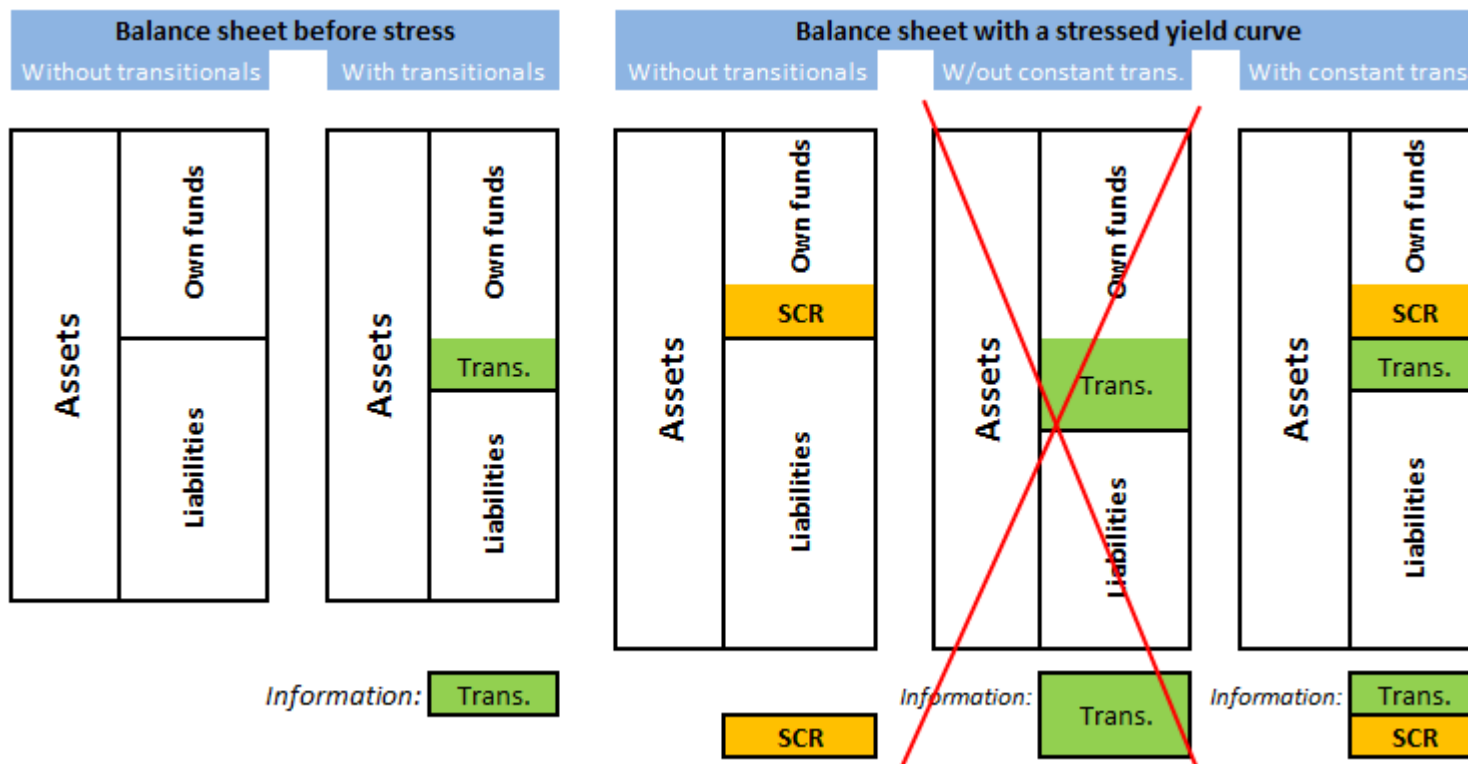
– Long term guarantees

- Specific information (before stress)

LTG measures	Used ?	Amount after usage	Amount without measure	Impact on SCR	Impact on OF
Matching Adjustment	Yes	123	132	1	9
Volatility Adjustment	Yes	1,000	1,010	-	10
Transitional on RFR	N/A	-	-	-	-
Transitional on TP	No	-	-	-	-
Transitional on equity	-	-	-	-	-
Transitional on own funds	-	-	-	-	-
All LTG measures				1	19

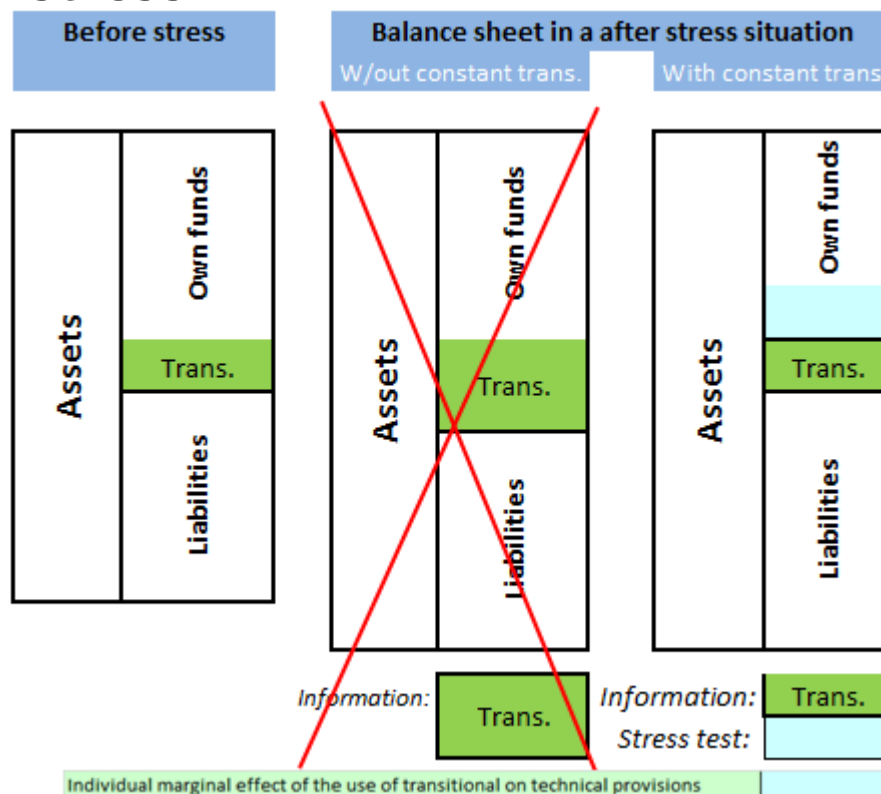
- The impact on SCR and own funds is in general not additive

3.4 – Transitional – SCR approach



3.5 – Transitional – Consistent Stress Test approach

- Transitional (discount and TP value): adjustments assumed constant after stress



3.6 – re-assessment of SCR post stress

- **not** required but possible
- *E.g.: market stresses may decrease the volume measures for capital requirements*

Optional additional information on the effect of the stress on the capital requirements (if reassessed)	Before stress situation	Reassessed SCR post stress	
		Using the standard formula	Using an internal model
SCR	0	-	-
Risk margin (if reassessed)	19	-	-

4 – The common part – overview

- The overview sheet is automatically filled based on the template content
- It starts with the before stress situation

I Before stress situation							
Total assets	1,000						
of which investments	803						
of which reinsurance recoverables	59						
Insurance liabilities	792						
of which:							
Non-Life	67						
Health	59						
Life (with profit)	0						
Other life	459						
Unit linked	207						
		Use of Long term guarantee measures	TRUE				
		Impact on surplus (amount)	20				
		of which impact of transitional on RFR	0				
		Impact on SCR coverage (%)	%				
		of which impact of transitional on RFR	%				
		Incidence of ring fenced funds					

- Followed by a comparison between the before and post stress situations (both on a monetary basis - impact on surplus -, and on a % of SCR coverage basis)

Assets	<i>before risk mitigation, including impact on reinsurance recoverables</i>
Liabilities	<i>before reinsurance and risk mitigation</i>
Mitigation	<i>LAC of technical provisions and deferred taxes</i>
others	<i>e.g. effect of SCR re-assessment</i>

5 – The Core module part

- Includes two identical sheets for the two adverse market scenarios
- An implementation of the associated qualitative questionnaire
- The set of single factor insurance stresses
- The associated qualitative questionnaire for predefined events

5.1 – the adverse market scenarios

- A summarised balance sheet

Inputs: items stressed under the scenario

Other: propagated from the BS sheet

- + post stress values for assets modelled in the stress scenarios

- + Details on the stress effect per item modelled

	Before stress situation	Post stress situation
Total Assets	1,000	996
Assets not directly subject to the stress assumptions	163	163
Assets stressed under the scenario assumptions	576	504
Property in EEA	0	0
Commercial property	-	-
Residential property	-	-
Equities	108	60
Bonds	431	410
Government Bonds	204	194
Corporate Bonds	227	216
Structured notes	-	-
Collateralised securities	-	-
Investment funds	37	35
Derivatives	-	-
Assets held for index-linked and unit-linked funds	200	200
Reinsurance recoverable	59	59
Deferred tax assets	3	10
Deferred taxes liabilities	13	0
Technical provisions – non-life (excluding health)	67	67
Technical provisions – health	59	59
Technical provisions - life (excluding index-linked and unit-linked) with profit	-	-
Technical provisions - life other	459	459
Technical provisions – index-linked and unit-linked	207	207
Derivatives	-	-
Liabilities not directly subject to the stress assumptions	68	68
Total liabilities	873	860
Excess of assets over liabilities	127	75
Eligible own funds to meet the SCR	0	-51
Eligible own funds to meet the MCR or the floor to the group SCR	0	0

	Change in excess of assets over liabilities		Assets			Liabilities		
	Allowing for the LAC of technical provisions	Before the LAC of technical provisions	Initial	Allowing for the LAC of technical provisions	Before the LAC of technical provisions	Initial	Allowing for the LAC of technical provisions	Before the LAC of technical provisions
Change in the interest rate curve compared to the before stress situation	-	-	-	-	-	-	-	-
Equity stress information	-	-	-	-	-	-	-	-
Corporate bond stress on financials information	-	-	-	-	-	-	-	-
Corporate bond stress on financials covered information	-	-	-	-	-	-	-	-
Corporate bond stress on non financials information	-	-	-	-	-	-	-	-
Sovereign bond stress information	-	-	-	-	-	-	-	-
Property stress information	-	-	-	-	-	-	-	-
All parameters of the scenario simultaneously	-	-	-	-	-	-	-	-
Overall loss absorption effect of changes in deferred taxes	-	-	-	-	-	-	-	-
Overall stress effect on the excess of assets over liabilities	-	-	-	-	-	-	-	-

And global effect of the use of LTG measures

	Change in excess of assets over liabilities		Assets (without LTG measure)			Liabilities (without LTG measure)		
	Allowing for the LAC of technical provisions	Before the LAC of technical provisions	Initial	Allowing for the LAC of technical provisions	Before the LAC of technical provisions	Initial	Allowing for the LAC of technical provisions	Before the LAC of technical provisions
Overall stress effect without LTG measures (If LTG measures used)	-	-	-	-	-	-	-	-
Overall stress effect on the excess of assets over liabilities without LTG measures	-	-	-	-	-	-	-	-

5.3 – Single factor insurance stresses

- A common way to report results

I.i Largest probable maximum loss under a 1-in-200 year basis	Pre stress	Post stress	Post stress	% Change
1. Aggregate Loss, gross of reinsurance			-	
2. Aggregate Loss, net of reinsurance			-	
3. Aggregate Loss, net of reinsurance and LAC of TP and DT		-		
4. Own Funds	0	-		-
5. SCR	0	0		-
6. Solvency ratio	-	-		-

- With specific additional information depending on the stress
 - E.g. Top 5 reinsurers (group basis) or evolution of underlying TP

Reinsurance recoveries	Reinsurer
8. Expected reinsurance recoveries for losses arising from this scenario from your largest 5 reinsurers less any unavoidable costs (e.g. Reinstatements etc)	1
	2
	3
	4
	5

IV.C Lapse stress	before stress situation	
	Total life obligations before stress	of-which concerned by the stress
Technical provisions - total	-	-
Technical provisions minus recoverables from reinsurance and SPV - total	-	-
Best Estimate of products with a surrender option	-	-

6 – The Low yield module

- Includes two identical sheets for the two low yield scenarios
 - o *Same structure as the Core module sheets*
 - o *Without the information on assets modelled in the Core scenarios*
 - o *+ information on cash flows pattern of assets and liabilities under the Low yield scenario assumptions (Sheets identical to the before stress ones)*
- An implementation of the associated qualitative questionnaire
 - o *Extract of replies propagated to the Overview sheet*

		end 2013 liabilities		Guaranteed rate				Years to shortfall (run-off)
				Average		Offered	Expected evolution	
	Contract features	Value	Duration	end 2009	end 2013	2014	over the next 10 Y	
Life	without options and guarantees	-	-					-
	with options and guarantees without surrender value	-	-	%	%	%	-	-
	without options and guarantees with surrender value	-	-	%	%	%	-	-
Unit or index linked	without options and guarantees	-	-					-
	with options and guarantees without surrender value	-	-	%	%	%	-	-
	without options and guarantees with surrender value	-	-	%	%	%	-	-
Health	without options and guarantees	-	-					-
	with options and guarantees without surrender value	-	-	%	%	%	-	-
	with options and guarantees with surrender value	-	-	%	%	%	-	-
Non-life	without options and guarantees	-	-					-
	with options and guarantees	-	-	%	%	%	-	-



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End of presentation

Relevant material for EIOPA Stress Test 2014 is available at EIOPA website:

<https://eiopa.europa.eu/activities/financial-stability/insurance-stress-test-2014>