



Insurance Stress Test 2014

Europe-wide stress test for
the insurance sector



Preface

On the 30th of April EIOPA launched an EU wide insurance stress test. The exercise aims to test the overall resilience of the insurance sector and to identify its major vulnerabilities. The test package comprises two modules:

- The core module address the impact of **adverse market scenarios**, covering financial asset stresses (sovereigns, corporate bonds and equities) as well, as shocks to real estate assets prices' and interest rates stresses complemented by a set of independent **insurance-specific shocks**
- The second module addresses the impact of a **low yield environment**

The exercise runs in close cooperation with national supervisory authorities (NSAs). The NSAs will collect data from undertakings in July 2014 and validate the information before it is aggregated at the EU level.

To improve consistency in the calculations, during August and September 2014, EIOPA in cooperation with NSAs will conduct an EU-wide validation of the data received. **Results of the stress test analysis will be disclosed in November 2014.**

In the remainder of this document the different scenarios tested in the 2014 stress test are discussed and a comparison is made with previous stress tests organized by EIOPA and/or the IMF. The different stress tests developed by EIOPA can also serve as inspiration for insurance companies to define stress tests in the context of the ORSA.

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Module 1

Module 1

Core-module on financial resilience

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. The stresses defined as part of the scenarios were derived in a coherent fashion assuming a simultaneous and instantaneous occurrence of the assumed shocks:

- **Adverse 1:** The EU equity market as a whole is assumed to be the source of distress. The shock to equity markets exerts significant spillover effects to other market segments, including corporate bond markets and government bond markets.
- **Adverse 2:** The non-financial corporate bond market is assumed to be the source of distress. The event can be interpreted as a correction of the currently observed low levels of corporate bond spreads. Significant spill-over effects can be observed for other market segments, including sovereign bond and bank bond markets.

The **market stresses** defined as part of the scenarios were derived in a coherent fashion assuming a **simultaneous and instantaneous occurrence of the assumed shocks**. One implication is that the resulting impacts from stress in different market segments do not need to be further aggregated by means of a 'correlation matrix'.

Life and non-life stresses are covered separately in the form of a set of **single risk factor tests**.

Module 1

Core-module on financial resilience

The tables below gives an overview of the stresses applied to the macro-economic variables in both scenarios and the single factor insurance stresses:

Interest Rates Stresses (bps)		
(shocks expressed respect euro swap rates)		
Stress	Adverse 1	Adverse 2
Maturity 1y	-26	-35
Maturity 2y	-56	-42
Maturity 3y	-67	-30
Maturity 5y	-78	-9
Maturity 7y	-85	0
Maturity 10y	-91	8
Maturity 20y	-97	16
Maturity 30y	-103	15

Equity Stresses		
Stress	Adverse 1	Adverse 2
MSCI Europe	-41%	-21%

Property Stresses		
Stress	Adverse 1	Adverse 2
Commercial	-49,00%	-18,00%
Residential	-17,10%	-15,70%

Non-Life Stresses		
Stress	Adverse 1	Adverse 2
NatCat / ManCat	1-in-100 year event	1-in-200 year event
Provisions deficiency	1,00%	3,00%

Life Stresses		
Stress	Adverse 1	Adverse 2
Longevity	10,00%	18,00%
Mortality	0.6 additional death	2 additional death

Mass Lapse Stress		
Stress	Adverse 1	Adverse 2
Mass lapse	20,00%	35,00%

Next to the single factor insurance stresses the impact of 5 pre-defined catastrophe events has to be calculated:

- Northern European windstorm
- US Hurricane
- Turkish Earthquake
- Central and Eastern European Flood
- Airport crash event

Module 1

Core-module on financial resilience

The tables below gives an overview of the stresses applied on the bond spreads:

Corporate Bond Stresses – Financials F _{up} (bps)		
Stress	Adverse 1	Adverse 2
AAA	24	86
AA	35	150
A	101	206
BBB	316	262
BB	365	292
B and lower	420	315
Unrated	455	328

Corporate Bond Stresses – Financials covered F _{up} (bps)		
Stress	Adverse 1	Adverse 2
AAA	8	32
AA	38	63
A	48	68
BBB	69	86
BB	84	97
B and lower	93	105
Unrated	99	109

Corporate Bond Stresses – Non- Financials F _{up} (bps)		
Stress	Adverse 1	Adverse 2
AAA	5	93
AA	8	126
A	14	134
BBB	48	169
BB	69	190
B and lower	96	219
Unrated	108	231

Sovereign Bond Stresses (bps)		
Stress	Adverse 1	Adverse 2
AT	41	46
BE	96	55
BG	87	104
CY	200	142
CZ	76	147
DE	0	0
DK	10	66
ES	148	65
FI	18	35
FR	44	38
GR	594	251
HR	85	105

Sovereign Bond Stresses (bps)		
Stress	Adverse 1	Adverse 2
HU	286	278
IE	217	149
IT	195	90
LT	47	136
LU	109	90
LV	82	108
MT	33	27
NL	17	37
PL	132	139
PT	282	86
RO	48	11

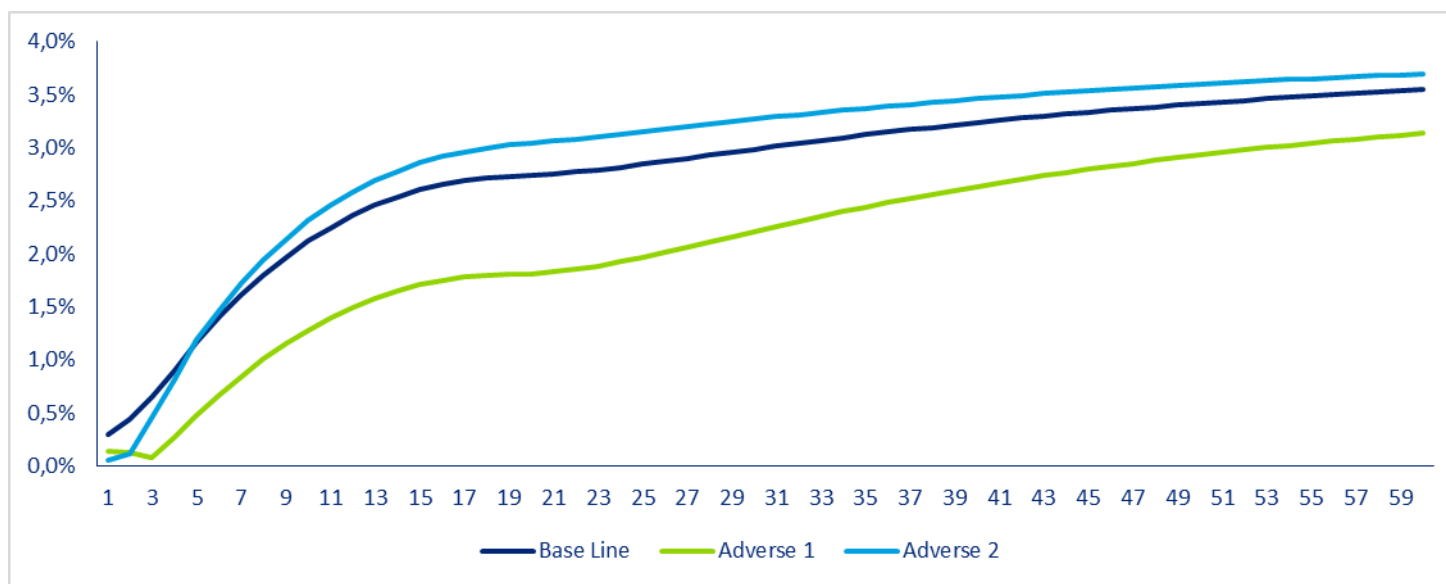
Sovereign Bond Stresses (bps)		
Stress	Adverse 1	Adverse 2
SE	13	56
SI	200	142
SK	45	114
UK	36	61
EU mean (info)	121	99
EU std (info)	127	64
IC	74	90
NO	33	112
CH	44	60
US	46	61
JP	80	125

The spread shocks should be added to the total yield as observed @ 31/12/2013.

Module 1

Core-module on financial resilience

The graph below gives an overview of the interest term structure under the different scenarios:



In scenario 1 the EUR swap rates decreased for all maturities, while in scenario 2 a steepening of the interest rate curve is observed, the short term interest rates decreased while the long term interest rates increased.

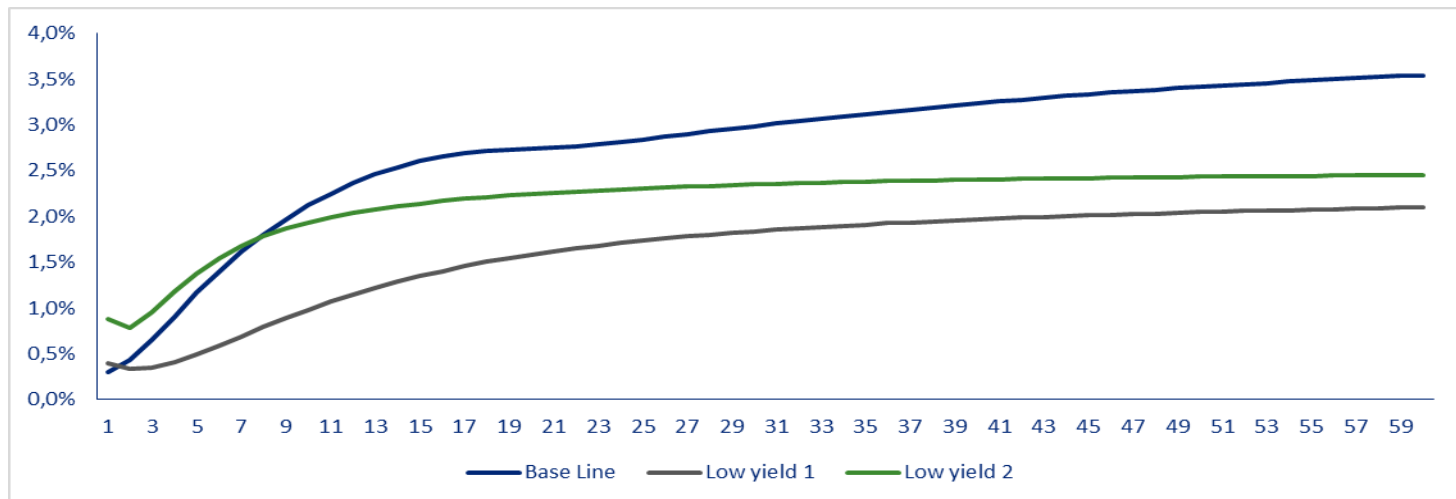
Module 2

Module 2

Low interest rate environment

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. Two scenarios are tested:

- Low yield scenario 1: **Japanese scenario**, this scenario assesses the impact of a long-lasting low yield scenario with low rates for all maturities.
- Low yield scenario 2: **Inverse scenario**, this scenario assesses the impact of an atypical reverse-shocked interest rate curve. Such an atypical instantaneous shift/pivoting should illustrate unanticipated effects on asset & liability values and cash flows



Comparison stress tests

Insurance Stress Tests

Overview of the recent stress tests

EIOPA organized several stress tests the past years. A stress test is one of a range of supervisory tools for assessing the strength of individual institutions and evaluating the stability of the insurance sector.

The shocks applied to the different risk modules are intended to replicate a set of negative conditions. Whilst they might appear to be remote, they are nonetheless statistically possible events. Therefore the scenarios considered by EIOPA in the insurance stress tests can serve as inspiration for insurance companies in the context of the **Own Risk and Solvency Assessment (ORSA)** or the **Forward Looking Assessment of Own Risks (FLAOR)**.

EIOPA Final Report on Public Consultation No. 13/009 on the Proposal for Guidelines on Forward Looking Assessment of Own Risks

5.48. The assessment also needs to consider the changes to the own funds position that might occur in stressed situations. **The undertaking is expected to carry out stress tests and scenario analyses to assess the resilience of the business.**

Therefore we have compared the scenarios tested during the different stress test exercises organized by EIOPA.

Insurance Stress Tests

Overview of the recent stress tests

The table below gives an overview the most important characteristics of the different stress tests:

	Reference Date	Valuation Basis	Stresses applied	Risk aggregation
Stress Test 2011	31 December 2010	QIS5 Technical Specifications	<ul style="list-style-type: none"> • Market risk stresses • Non-life stresses • Life stresses • Inflation scenario 	<ul style="list-style-type: none"> • Market risk stresses occur simultaneously • Market risk and insurance risks are aggregated via a correlation matrix
Low Yield Stress test	31 December 2010	QIS5 Technical Specifications	2 low yield scenarios	<ul style="list-style-type: none"> • N/A
IMF – NBB Stress Test 2012	30 June 2012	Level 2 Draft Implementing Measures (No illiquidity premium or CCP)	<ul style="list-style-type: none"> • Market risk stresses • Non-life stresses 	<ul style="list-style-type: none"> • Market risks are aggregated via a correlation matrix • Market risk and insurance risks are aggregated via a correlation matrix
Stress Test 2014	31 December 2013	Technical Specifications preparatory phase	<ul style="list-style-type: none"> • Life stresses 	<ul style="list-style-type: none"> • Market risk stresses occur simultaneously • Market risks and insurance risks are not aggregated

Insurance Stress Tests

Conclusions stress test 2011

In July 2011 EIOPA published the results of the 2011 Insurance Stress Test*.

The results of this stress test indicate that overall the **European insurance market is well prepared** for potential future shocks as tested in this exercise. However, data showed that approximately 10% (13) of the participating groups and companies do not meet the MCR under the adverse scenario. 8% (10) fail to meet the MCR in the inflation scenario.

At the aggregate level, EIOPA identifies the **main drivers** of the results as being adverse developments in **equity prices, interest rates and sovereign debt markets**. On the liability side, non-life risks are more critical, triggered by increased claims inflation and natural disasters.

The results reported are for 58 groups and 71 companies due to aggregation of the results of companies within groups. This represents approximately **60% of the overall European insurance market** and is above EIOPA's aim to include at least 50% of the insurance market of each country as measured by gross premium income.

* EIOPA, Press Release: EIOPA announced today the results of its second European insurance stress test, 4 July 2011

Insurance Stress Tests

Conclusions stress test 2012

For Belgium, the stress test covered the six largest insurers (Ageas, AXA Belgium, Belfius Insurance, Ethias, KBC, and Vivium Group (including P&V)), comprising more than 70 percent of the insurance sector. The tests were carried out using data as of end-June 2012 (with the exception of one insurer, which used end-September 2012 data due to its significant transformation in the interim period).

The IMF published* the most important conclusions of the 2012 Insurance stress test:

- Insurers' **capital levels are sufficient under the current regulatory regime** but the sector appears vulnerable to downside risks from market shocks, especially after the transition to a risk-based solvency framework
- Most firms are likely to experience a **significant decline in solvency ratios** when measured using the more **risk sensitive valuation method**
- The solvency position of insurers is significantly impacted by **sovereign risk**
- **Neither nonlife catastrophe risk nor equity risk was material** for the financial soundness of insurers

* Belgium: Technical Note on Stress Testing the Banking and Insurance Sectors, IMF Country Report No. 13/137, May 2013

Market risk stresses

Market Risk Stresses

Comparison of the stresses applied

The table on the next slides gives an overview of the stresses applied on the equity prices and credit spreads.

The shocks applied under the different stress tests differ a lot, however the different percentages should be interpreted with caution:

- The market risk stresses of the 2012 stress test are sensitivity tests which are aggregated with the other market risks afterwards, taking into account diversification gains, while the market risk stresses of 2011 and 2014 occur all at the same time (no diversification gains)
- The objective and the confidence interval of the different stress tests may have been different

Market Risk Stresses

Comparison of the stresses applied

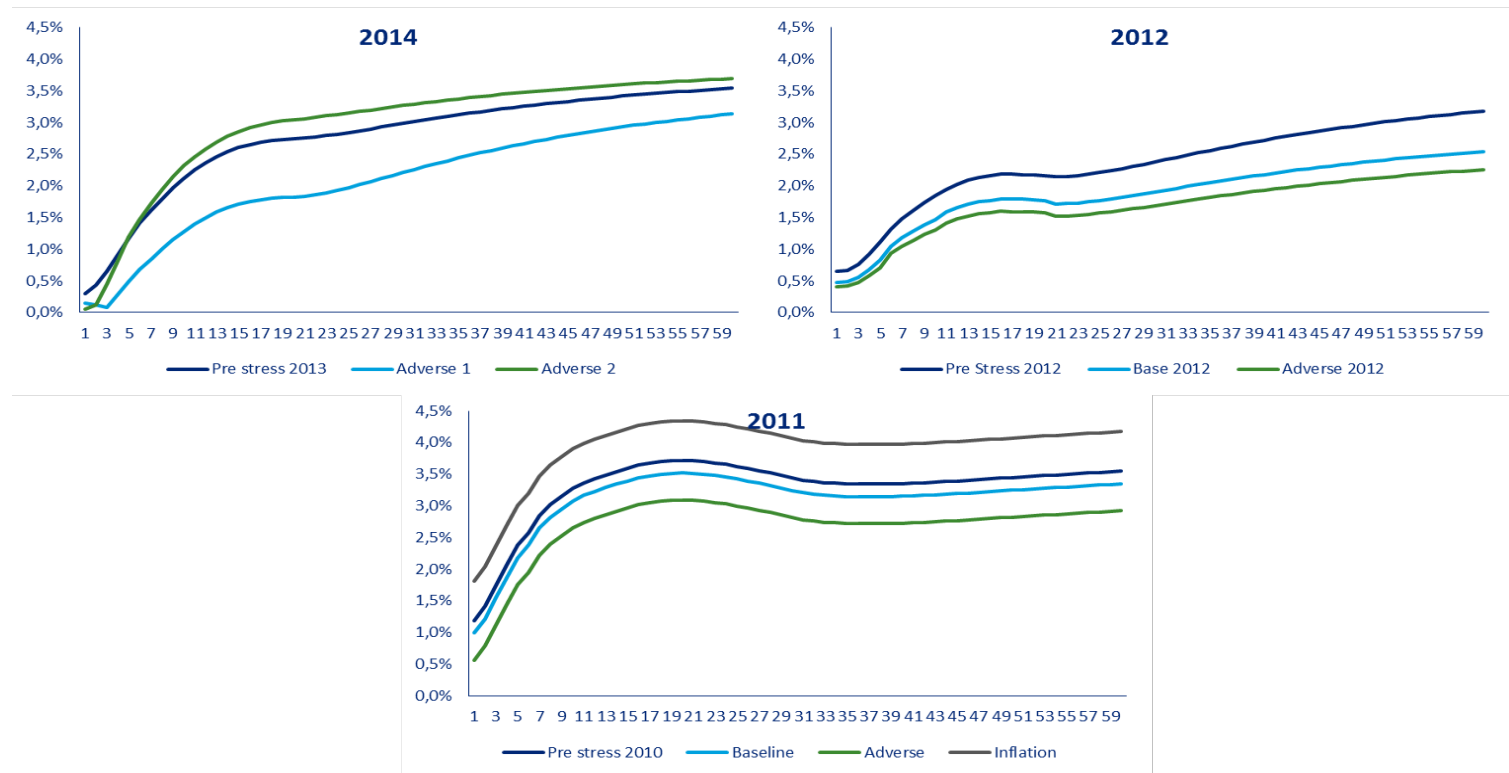
The table below gives an overview of the interest rate stresses applied during the different stress tests.

Corporate Bond stresses							Equity Stresses						
Financials spread shock	2014		2012		2011		MSCI Europe	2014		2012		2011	
	Adverse 1	Adverse 2	Base	Adverse	Base	Adverse		Adverse 1	Adverse 2	Base	Adverse	Base	Adverse
AAA	0,24%	0,86%	0,30%	0,50%	0,10%	0,30%	-41,00%	-21,00%	-16,00%	-23,70%	-7,50%	-15,00%	
AA	0,35%	1,50%	0,40%	0,70%	0,20%	0,40%	Residential property	-17,10%	-15,70%	N/A	N/A	-3,80%	-11,60%
A	1,01%	2,06%	0,50%	1,00%	0,30%	0,60%	Commercial property	-49,00%	-18,00%	N/A	N/A	-12,50%	-25,00%
BBB	3,16%	2,62%	1,00%	2,50%	0,40%	0,90%							
BB	3,65%	2,92%	2,50%	5,30%	0,90%	1,70%							
B and lower	4,20%	3,15%	5,00%	6,10%	1,50%	3,00%							
Unrated	4,55%	3,28%	1,10%	2,80%	0,60%	1,10%							
Financials covered spread shock							Sovereign Bond Stresses						
	2014		2012		2011		Sovereign spread shock	2014		2012		2011	
	Adverse 1	Adverse 2	Base	Adverse	Base	Adverse		Adverse 1	Adverse 2	Base	Adverse	Base	Adverse
AAA	0,08%	0,32%	0,30%	0,40%	0,10%	0,30%	Austria	41	46	34	52	24	
AA	0,38%	0,63%	0,40%	0,50%	0,20%	0,40%	Belgium	96	55	47	72	78	
							Finland	18	35	31	48	10,5	
							France	44	38	32	48	48	
							Germany	0	0	0	0	0	
							Greece	594	251	525	801	255	
							Ireland	217	149	104	156	258	
							Italy	195	90	72	108	136,5	
							Netherlands	17	37	21	33	22,5	
							Portugal	282	86	142	247	246	
							Slovakia	45	114	52	83	33	
							Slovenia	200	142	124	182	39	
							Spain	148	65	74	109	165	
							Switzerland	44	60	41	61	0	
							United Kingdom	36	61	34	51	28,5	

Market Risk Stresses

Comparison of the stresses applied

The graph below shows the interest rate curves under the different stress tests:



The interest rate stresses applied in the different stress tests are very different, in 2011 parallel shocks were applied to the base curve, while different stresses were both the level and the shape of the curves were stressed in 2012 and 2014.

Insurance risk stresses

Insurance risk stresses

Comparison of the insurance risk stresses

The table below gives an overview of the insurance risk stresses applied during the different stress tests:

Non-life stresses						
	2014		2012		2011	
	Adverse 1	Adverse 2	Base	Adverse	Base	Adverse
NatCat / ManCat	Largest 1/100 nat cat exposure	Largest 1/200 nat cat exposure	Largest 1/40 nat cat exposure		Largest 1/200 nat cat exposure with only 70% recovery from reinsurer	
Claims reserve deficiency	1% higher claims inflation	3% higher claims inflation	N/A		2% higher claims inflation	
Catastrophic scenarios	5 specific catastrophic scenarios		N/A		N/A	

Life stresses						
	2014		2012		2011	
	Adverse 1	Adverse 2	Base	Adverse	Base	Adverse
Longevity	10%	18%	N/A		23%	
Mortality	0,6 additional death	2 additional death	N/A		1,5 additional death, restrictions on recovery rates on reinsurance	
Mass lapse	20,00%	35,00%	30,00%		N/A	

The tables above show that the insurance stresses applied during the different stress tests are very different.

Low yield stress test

Low yield stress

Stress test 2011 and 2014

Insurance companies can be particularly exposed to the risk of a long **lasting period of low interest rates**, as has been experienced for instance in Japan since the 1990s.

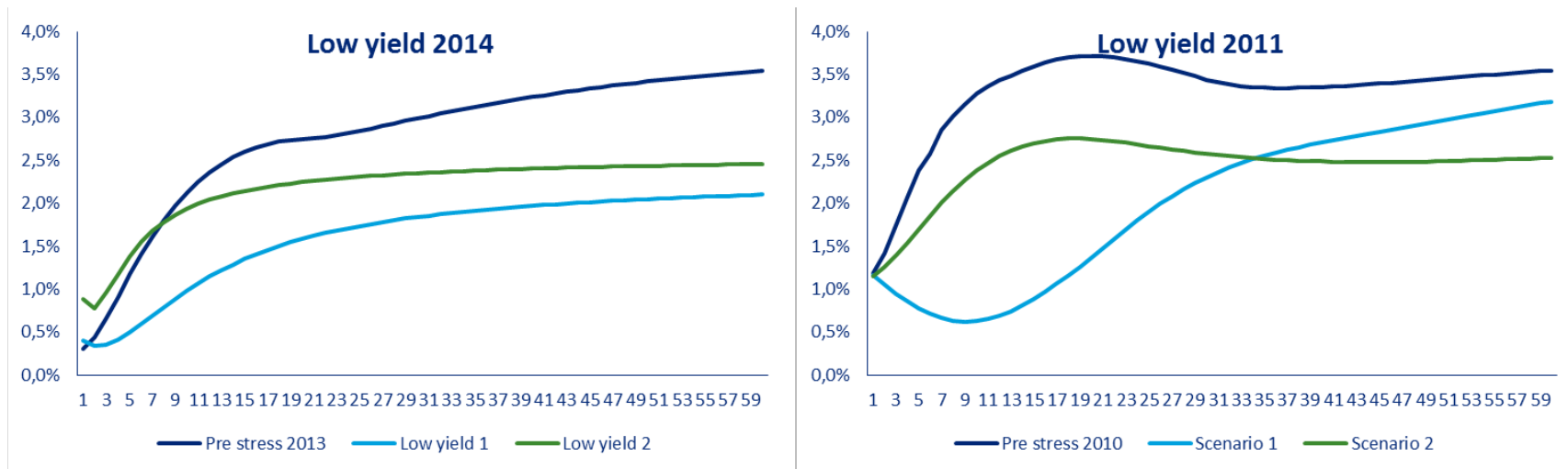
Such a scenario is not only driven by the instantaneous shock of a downward movement of the yield curve, but also by a pronounced flattening and a **persistence of such a situation**. This could lead to material reinvestment problems and influence the ability of participating groups and undertakings to finance, for example, performance guarantees given for specific pools of insurance contracts. This, in turn, could negatively impact the capital position of insurers who are exposed to these risks.

The insurance stress test of 2011 and 2014 contain some specific scenarios to test the impact of low yields on the financial resilience of insurance companies.

The following slide gives an overview of the scenarios tested.

Low yield stress

Stress test 2011 and 2014



Low yield 2011:

- Scenario 1: A downward movement in the level of interest rates in accordance with an unconditional forward rate of 4.2%, and a pronounced u-shaped flattening of the curve in the shorter part of the maturity spectrum
- A downward movement in the yield curve to a level and shape similar to the Euro curve observed in recent years in August 2010

Low yield 2014:

- Low yield 1 is the Japanese interest curve of December 2011
- Low yield 2 assesses the impact of an atypical reverse-shocked interest rate curve

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