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Stress tests and their contribution to financial stability

**Understanding the Diversity of Financial Risk
Stress Testing and Capital Requirement**

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Budapest, Hungary, October 13, 2017

- The sources, magnitude and consequences of systemic risk were not sufficiently considered by supervisory authorities and market participants, as their focus was on the soundness of individual financial institutions
- Financial and economic crisis has highlighted
 - the relevance of systemic risk
 - the need for macro-prudential oversight/supervision to complement micro-prudential supervision

- Global financial crisis has prompted an intense debate on role of macro-prudential policy in achieving financial stability
- Broad agreement that macro-prudential policies should tackle systemic risk
- Best practices in macro-prudential policies and choice of instruments for banking sectors relatively well established, but discussions going beyond banking is only at initial stage

Macroprudential Stress Testing

Purpose of macro-prudential stress tests



- Crucial financial stability assessment tool to design and calibrate macro-prudential policy mitigating risks and vulnerabilities
- The most complex and data intense financial stability assessment
- Directly required by ESAs' regulations
 - The authority should, in cooperation with the ESRB, initiate and coordinate Union-wide stress tests to assess the resilience of financial institutions/market participants to adverse market developments and it should ensure that an as consistent as possible methodology is applied at the national level to such tests

- EBA bank stress test
 - 2009, 2010, 2011, 2014, 2016, 2018*
- EIOPA insurance stress test
 - 2011, 2014, 2016
- EIOPA pension stress test
 - 2015, 2017*
- ESMA CCP stress test
 - 2015, 2017*

- The design of exercises depends on
 - Sector specifics
 - Regulatory frameworks
 - Data sample
 - Objectives
 - Public disclosure
 - Expected supervisory follow up
- Impact of objectives on transparency provided – capital exercise and harmonised regulatory framework might imply more transparency
- The disclosure of granular data on an individual basis might promote market discipline and serve as a common ground on which competent authorities base their assessments

- The nature of the business
 - Duration mismatch between assets and liabilities
 - Importance of liabilities' valuations
- Parameters of stress tests exercises
 - Instantaneous financial shocks vs. macroeconomic scenario
 - Dynamic vs. static balance sheet
 - Bottom-up/constrained bottom-up vs. top down components
- EBA banking stress test – static balance sheet, 3 years horizon
- EIOPA insurance and pension stress tests – instantaneous market shocks plus insurance/pension specific shocks and pension long-term scenario
- ESMA CCP stress test – market shocks combined with multiple member default scenarios, exposures correspond to the defaulting members' actual portfolios for three ends of month dates in the scope period

- To provide supervisors, financial institutions and other market participants with a common analytical framework to consistently compare and assess the resilience of EU financial institutions and the EU financial system to adverse market/marcoeconomic /sector specific shocks and to challenge their capital/solvency positions, identify risks and vulnerabilities
- EBA (2016) - no capital threshold defined but input to the Supervisory Review and Evaluation Process
- EIOPA (insurance 2014, pension 2015)- no specific capital target was set up, not designed as a second guess of prudential regime and as such not considered as a pass or fail exercise
- ESMA - no specific thresholds set on loss coverage for individual CCPs

- EBA stress test 2016 - disclosure of granular data on a bank-by-bank level (starting point and stress test results), publication of additional tools to analyse the data and aggregate report
- EIOPA (insurance 2016, 2014, pension 2015)- publication of the aggregated results and some anonymised individual results in terms of distributions
- ESMA CCP stress test 2015 – publication of the aggregated results and some anonymised individual results

EIOPA Insurance Stress Test 2016

Context

- First year of Solvency II – limited scope, only solo companies not groups, focused on most important market risks for long-term insurance business
- Participants calculated the impact of the severe stress scenarios on their balance sheets
- **Not a pass-fail exercise** - the severity of the scenarios went beyond the Solvency II capital requirements
- Strong cooperation between EIOPA and National Supervisory Authorities (NSA's)

Objectives

- Assess insurers' vulnerabilities and resilience to two severe market developments
 - a prolonged low yield environment ("**low-for-long**") - entrenched secular stagnation driving down yields at all maturities for a long period of time
 - a "**double-hit**" scenario - sudden increase in risk *premia* combined with the low yield environment
 - To examine potential financial stability risks in situations of stress
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Market coverage

- **236** companies from 30 EU/EEA countries
- Average **market coverage of 77%** of relevant business (life technical provisions excluding health and unit linked) - medium- and small-sized undertakings were included
- Companies in sample hold 6.3 trillion euro in assets, almost 60% of total assets held by EU/EEA insurers
- Overall technical provisions for the sample is 5.2 trillion euro

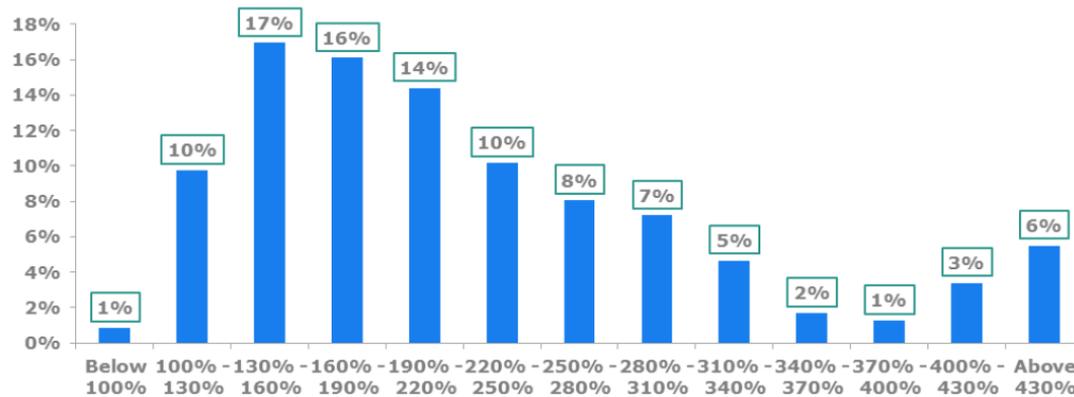
Baseline situation

- On an aggregated level undertakings were adequately capitalised from a Solvency II perspective - overall **Solvency Capital Requirement (SCR) ratio of 196%**
 - Only **2 undertakings** (0.02% of the total assets in the sample) reported an SCR ratio **below 100%**
 - The overall **SCR ratio falls to 136%** (**32** undertakings below 100% representing 26% of the total assets) **if all Long-Term-Guarantee (LTG) and transitional measures are excluded**
 - The **quality of own funds was generally high** with **Tier 1** unrestricted own-funds accounting for **90%** of the total
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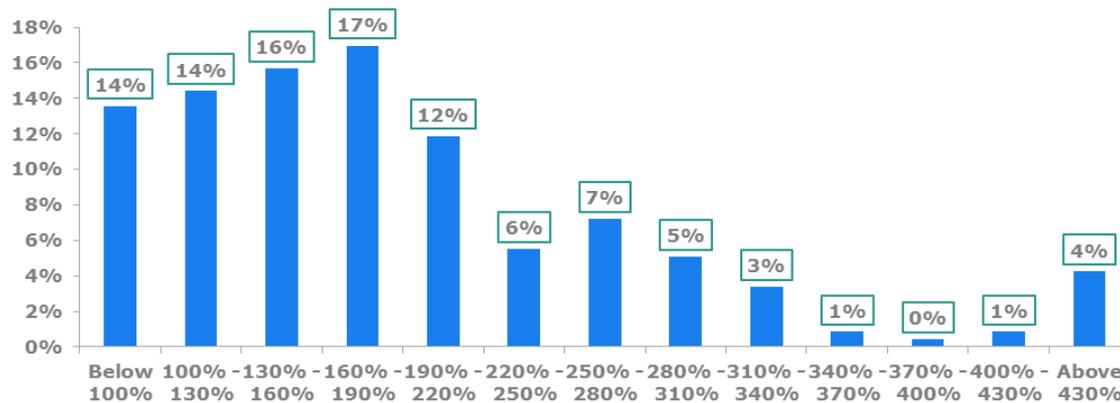
Baseline: SCR Ratios



Distribution of the SCR ratio



Distribution of the SCR ratio excl. LTG and transitionals



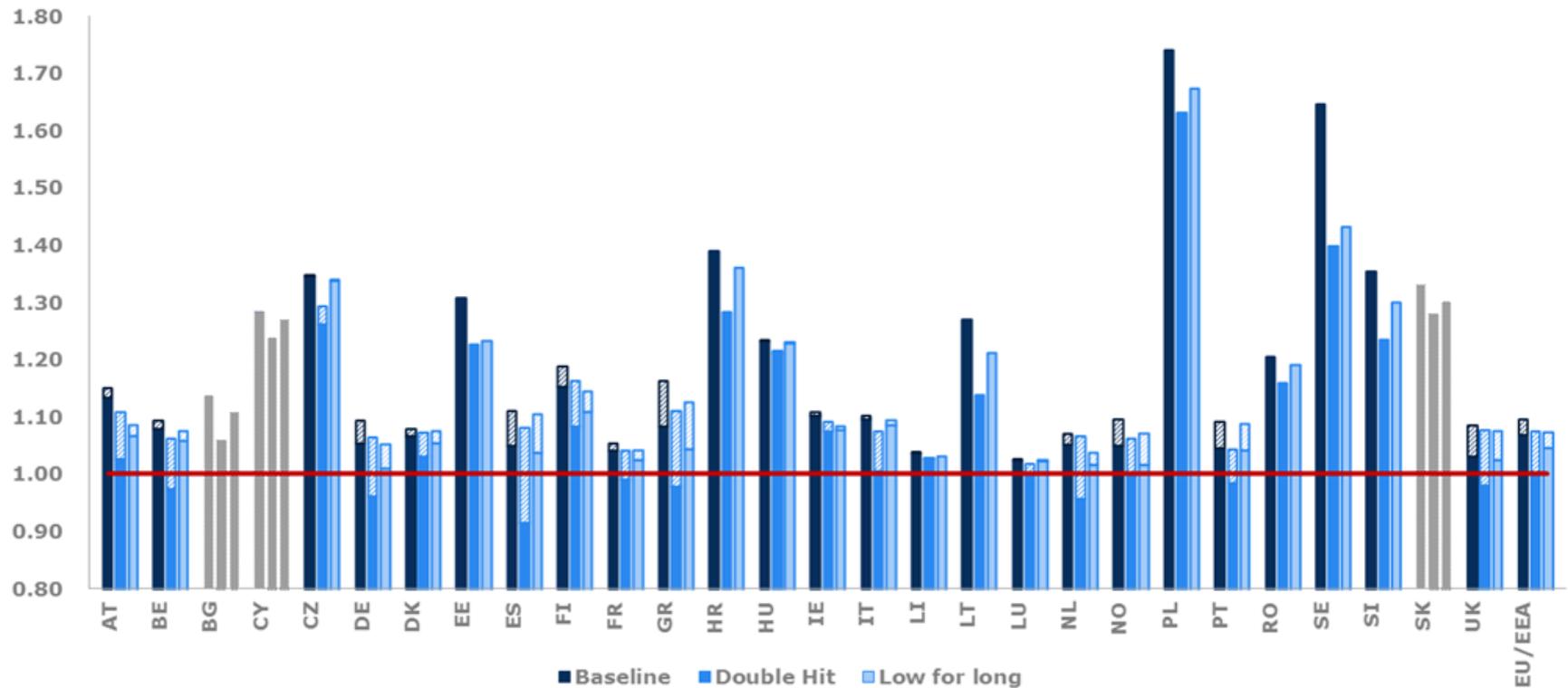
Main stress test results



	"Double hit"		"Low for long"	
	EUR bn.	%	EUR bn.	%
Change in assets	- 608.5	-9.7%	282.4	4.5%
Change in liabilities	- 449.5	-7.8%	381.5	6.7%
Change in excess of assets over liabilities	- 159.0	-28.9%	-99.1	-18.0%

AoL pre and post-stress

AoL ratio pre and post stress (shaded area shows the effect of the LTG and transitional measures)



Losses of excess of Assets over Liabilities

Losses of excess of assets over liabilities

Number of undertakings and % of sample

Losses	"Double hit"		"Low for long"	
> 1/3	104	44%	38	16%
> 1/2	42	18%	16	7%
All	5	2%	3	1%

...excluding LTG and transitionals

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Losses of excess of assets over liabilities

Number of undertakings and % of sample

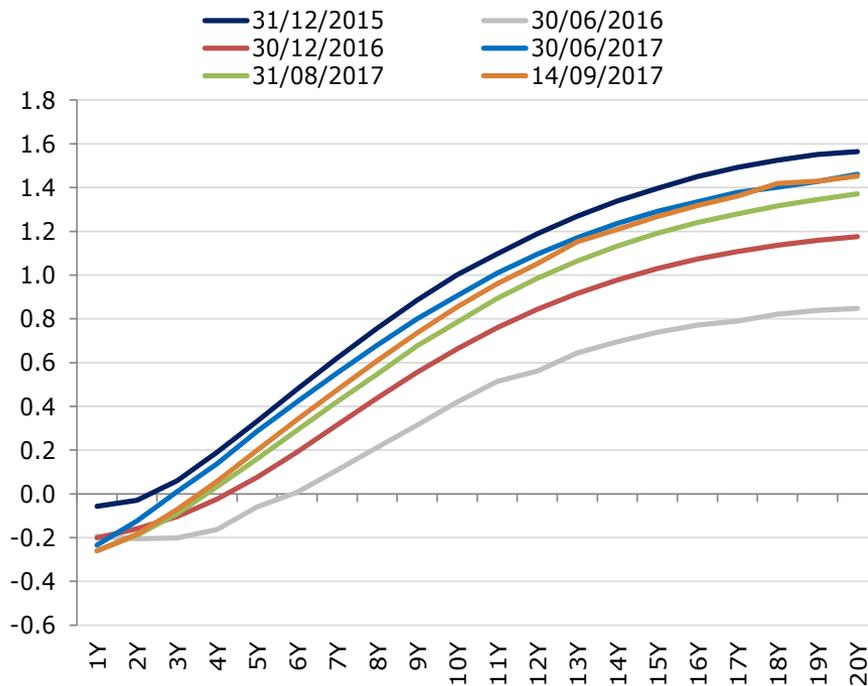
Losses	Double hit		Low for long	
> 1/3	162	69%	59	25%
> 1/2	127	54%	35	15%
All	72	31%	14	6%

- The revealed vulnerabilities deserve a **supervisory response**
 - In order to ensure coordinated supervisory actions, EIOPA issued Recommendations to the NSA's
 - Ensure that undertakings align their internal risk management processes to the external risks faced
 - Review and assess undertakings' models regarding the behaviour of management and policyholders
 - Review the clauses of the guarantees, their typologies, and the optionalities they carry to assess if the valuation of the technical provisions can be considered proportionate and prudent
 - Request a reduction in the maximum guarantees or in unsustainable profit participations offered
 - Request a cancellation or deferral of dividend distribution when the viability of the business model is at risk
 - Ensure that the vulnerabilities identified at solo level are appropriately recognised and dealt with at the group level
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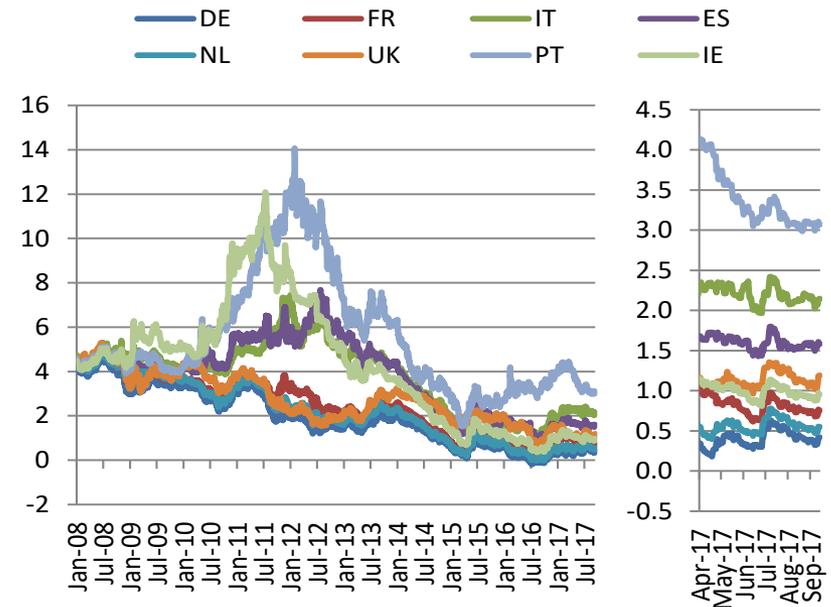
The macroeconomic environment and its implications

Low yield environment

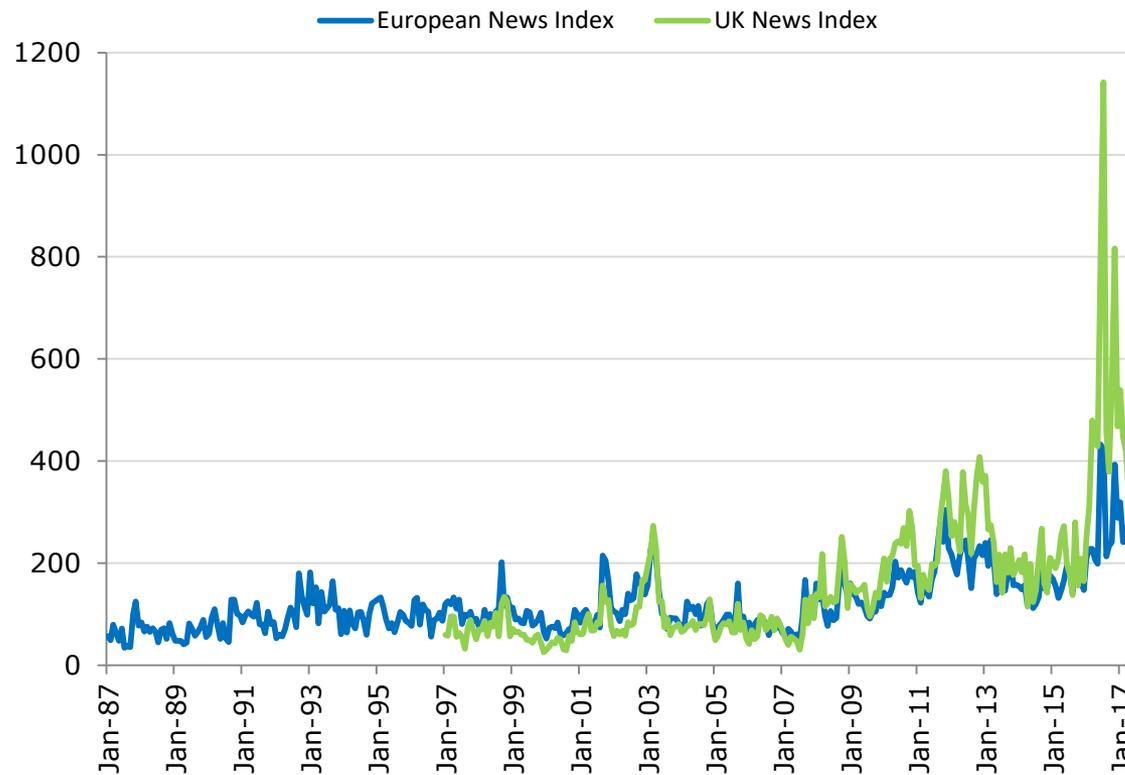
EUR Swap Curve



10 year sovereign bond yields



European and UK policy uncertainty indices



EU financial system could be potentially negatively affected by

- Re-pricing of risk premia in global financial markets
 - asset price drop, tightening of financial conditions
- Prolonged low yield environment, weaknesses in balance sheets of banks, insurers and pension funds
- Debt sustainability challenges in sovereign, corporate and household sectors
- Specific risks – natural catastrophes, longevity, cyber risk

- Empirical analysis based on the sample composed of 84 listed financial institution (banks, insurers) and covering the period between 2006-2015 using dynamic panel analysis (Blundell-Bond system GMM estimator) was conducted
- The results suggests that 1 pp decrease in short-term interest rates leads to decrease in equity prices of life insurers by 18 %, while banks by 8 %, and non-life insurers by 3 %

- Profitability impacts capital/solvency ratios
- A model providing estimates of the future firms' profitability could be a useful tool for policy makers and supervisors
- Instrument to assess the sensitivity of the business to financial trends and macroeconomic changes
- Macroeconomic indicators effect firms profitability that could be measured by return on assets (ROA)
- One of the main challenges for firms remains maintaining profitability in the last years

EIOPA insurance profitability model (ROA)

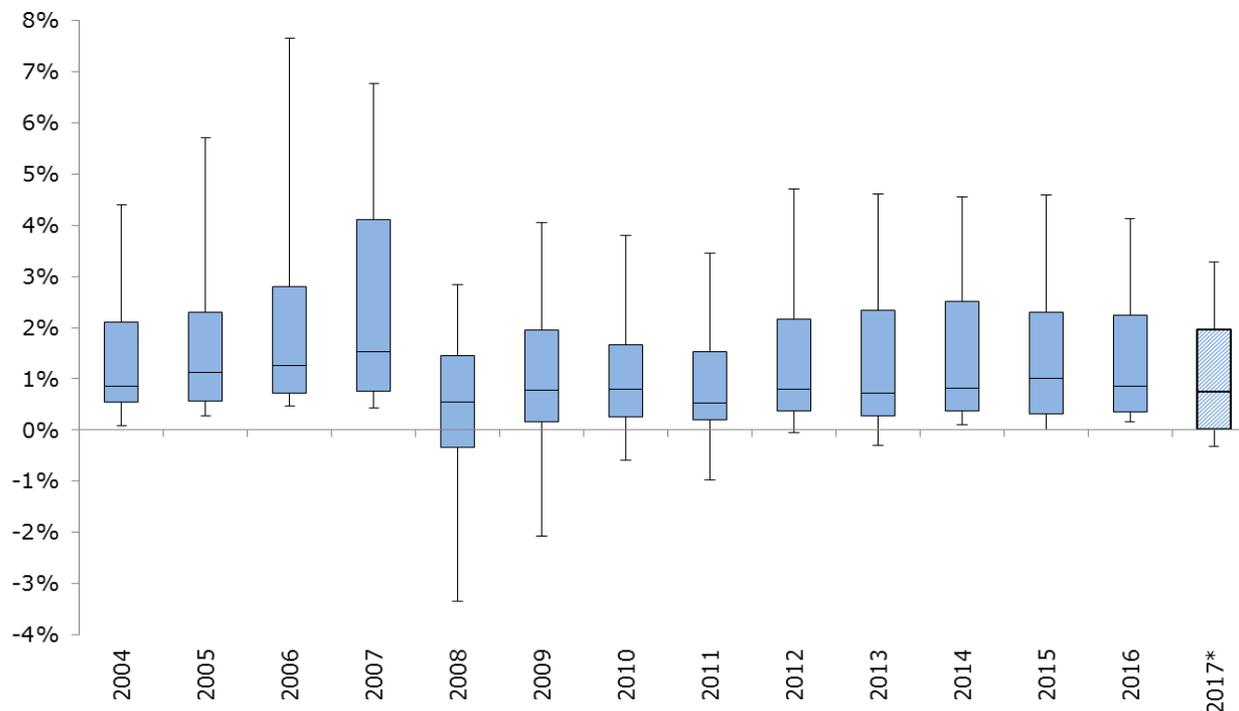


- The panel dataset comprises observations of 67 listed European insurers over years 2004-2016
 - Insurers in the sample covers about 70% of the total assets held by European insurers
 - The results suggest that a decrease in interest rate by 1 pp causes insurers' drop in ROA around 0.1 pp
 - Additionally, GDP has a positive impact and operating expenses and inflation have a negative, statistically significant impact on insurers' profitability
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EIOPA insurance profitability model estimate



- The current data and projections reveal a relatively stable picture of the European insurance market in terms of ROA, with a median value of around 1%



Source: EIOPA calculations based on Bloomberg and Eurostat data for 2004-2016

* EIOPA own forecast

Sources of systemic risks in the insurance sector

- A possible systemic implications of insurance sectors on the financial systems or real economies
- The analysis of cases of actual insurance company failures worldwide shows a broad range of possible causes for failure
 - expansion into new areas and non-core activities
 - too high a tolerance for investment risk
 - stressed assets in combination with surrender outflows
 - interest rate risk and a difficult macroeconomic environment
 - under-reserving and under-pricing, unforeseen claims and catastrophes, management and governance issues, etc.

- In place since January 2016, the main objective is to protect insurance policyholders and beneficiaries
- Insurance and reinsurance contracts need to be fulfilled even under adverse circumstances, for example in a financial crisis or when a natural catastrophe occurs
- The Solvency II Directive introduced significant changes and specific requirements
- The quantitative requirements include in particular market-consistent valuation of assets and liabilities, economic determination of own funds, and risk-based capital requirements

- Within a very difficult macroeconomic environment, with historically low interest rates, the application of a more demanding risk-based solvency regime was carried out smoothly as a result of timely preparation and appropriate transitional periods
- Transitional measures form an integral part of Solvency II and are intended to limit the procyclicality and to facilitate the entry into the new regime by giving companies the time needed to adapt to the new solvency requirements

- Solvency II also brings significant improvements in the data available on the insurance sector which is a fundamental element to upgrade companies' risk management and supervisors' risk assessment
- The access to better and more granular data on assets, liabilities and own funds of insurers, allows for improved risk-based supervision and financial stability analysis

Concluding remarks

- Stress test as the most complex financial stability assessment tool helps to identify and assess the key risks and vulnerabilities
- Further research to build up analytical toolkit for financial stability purposes is needed
- More cooperation between policy makers, supervisors, the industry and academia, especially beyond banking is essential
- The development of new tools and methodologies will benefit from broad discussion and presentation of new applied research to a wider audience

Thematic articles published in EIOPA Financial Stability Reports



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 - Héam, JC. (2015): "How to Measure Interconnectedness?", Financial Stability Report, EIOPA, pp. 46-57, December.
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 - Christophersen, C., Zschiesche, J. (2015): "Macroprudential Objectives and Instruments for Insurance – An Initial Discussion", Financial Stability Report, EIOPA, pp. 71-89, May.
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 - Jakubik, P., Zafeiris, D. (2015): "Impact of Mergers and Acquisitions on European Insurers: Evidence from Equity Markets", Financial Stability Report, EIOPA, June.
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 - Borel-Mathurin, F., Loisel, S., Segers, J. (2017): "Re-evaluation of the capital charge in insurance after a large shock: empirical and theoretical views", Financial Stability Report, EIOPA, June.
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Thank you for your attention!

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