Risk Management in an Insurance Company

Jana Zelinková

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ACTUARIA

Jana Zelinková

WORK EXPERIENCE

UNIQA CZ/SK – *1/9/2021 – 30/6/2023* ***– Chief Transformation Officer***

AXA CZ/SK – *1/3/2019 – 31/8/2021* ***– Chief Risk Officer***

Česká pojišťovna, a.s. – *1/10/2013 – 28/2/2019* ***– Head of Economic Solvency Team***

- Calculation of both internal model and standard model, participation in the (pre)application process of the internal model
- Management of external rating process, model calculation
- Projection of economic solvency ratio, participation in capital management process, supervision of own funds
- Cooperation on ORSA process
- Communication of the results to top management

The team was responsible also for a supervision of the same tasks of individual companies of Generali CEE holding.

Česká pojišťovna, a.s. *– 1/12/2012 - 30/9/2013* ***- Project Manager (Controlling department)***

- Project management with focus on profitability of products utilizing the risk management and actuarial knowledge

Generali PPF Holding B.V. *– 1/7/2008- 30/11/2012 –* ***Senior Risk Manager***

- Covering the investment risk area throughout the holding, ad hoc decisions about material investments, regular setting of investment limits, commenting on investment policies from the risk management perspective
- Calculation of investment risk capital requirements (QISs, internal model being developed at that time)
- Implementation of regular reporting of subsidiaries to GPH and managerial communication
- Communication with Generali Group head office, implementation of Generali standards, fulfilling of reporting requirements

KPMG Czech Republic *- 01/01/2004 – 30/06/2008 –* ***Actuary (position reached - Senior Advisor)***

- Audit support, advisory services (Due-diligences, profitability, actuarial modeling, ….)
- Actuarial conferences, trainings and presentation
- 4 month secondment in London in 2006
- CEE scope – experience from Croatia, Serbia, Slovenia, Romania, Ukraine, …

EDUCATION AND QUALIFICATIONS

1997 - 2003 - Faculty of Mathematics and Physics, Charles University (Prague), specialization Financial Mathematics and Actuarial Science

2008 – 2010 – University of Pittsburgh (Prague) – Executive MBA

Certified actuary (in the Czech Republic) from 2007, member of the Czech Society of Actuaries from 2004

Representing the Czech association in Risk Management Committee of Actuarial Association of Europe from 2018

Representing the Czech association in Nomination pannel of Actuarial Association of Europe from 2021

What are we going to discuss today?

1. **Why?** *(Motivation – why is it good to manage risks?)*
2. **What?** *(Which risks are we managing?)*
3. **How?** *(And how can we do that?)*

ACTUARIA

Why?

Motivation – why is it good to manage risks?

Why is it good to manage risks?

EJ Smith, 1907: "If someone asks me, how I would describe my 40 years of experience at sea, I would describe them as boring. Of course, there are winter storms, fog and similarities. But during my entire experience I cannot remember any havaries. I have only once seen a ship in distress. I have never seen a wreck, neither have I been in distress at sea, nor have I ever been in a dangerous situation, that could have led to a catastrophe."

Capt. Smith maintained that shipbuilding was such a perfect art nowadays that absolute disaster, involving the passengers on a great modern liner, was quite unthinkable. Whatever happened, he contended, there would be time before the vessel sank to save the lives of every person on board. "I will go a bit further," he said. "I will say that I cannot imagine any condition which could cause a ship to founder. I cannot conceive of any vital disaster happening to this vessel. Modern shipbuilding has gone beyond that.„

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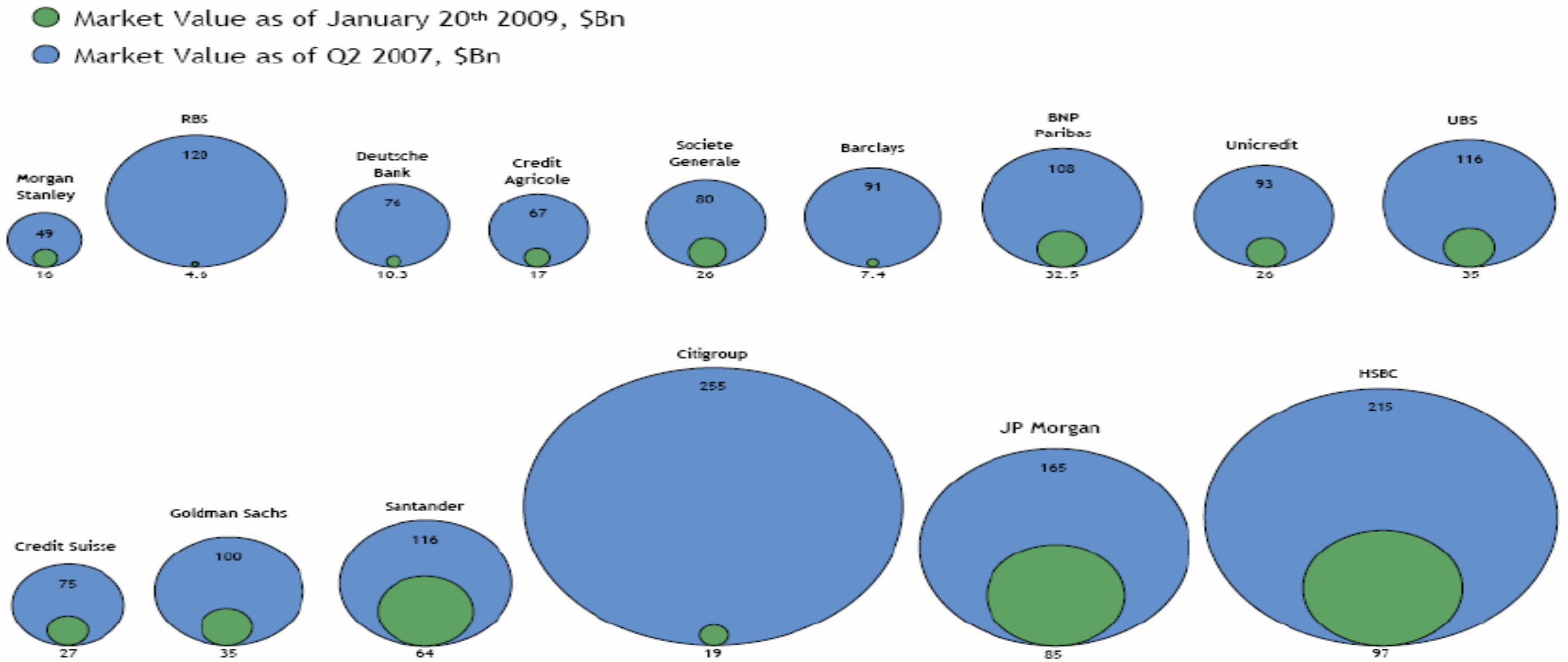
http://www.encyclopedia-titanica.org/disaster-at-last-befalls-capt-smith.html

Financial sector - examples



Is it an internal need or regulatory requirement?

- In Europe esp. Solvency II, but globally all regulatory regimes emphasize and require strong position of risk management in insurance companies
- At the same time, it is also expectation of investors, shareholders and rating agencies

But:

The risk management should bring value added to the insurance company – the company itself should care about good risk management.

What is the task for risk management?

Risk Management System

The principles defining the Group risk management system are provided in the Group Risk Management Policy[4] which is the cornerstone of all risk-related policies and guidelines. The Group Risk Management Policy covers all risks, on a current and forward-looking basis and is implemented in a consistent manner across the Group.

Generali Group's risk management process is defined in the following phases:

Generali Group 2017 Annual Report

Target and strategy of risk management

Allianz SE aims to ensure adequate capitalization at all times for the benefit of both shareholders and policyholders. This includes meeting the Solvency II regulatory capital requirements resulting from the internal model. Furthermore, risk and the cost of capital – reflecting that risk – are important aspects to be taken into account in business decisions.

We closely monitor the capital position and risk concentrations of Allianz SE and apply regular stress tests (standardized and historical stress test scenarios). This allows us to take appropriate measures to ensure our continued capital and solvency strength.

Allianz 2017 Annual Report

50 Risk management

Introduction

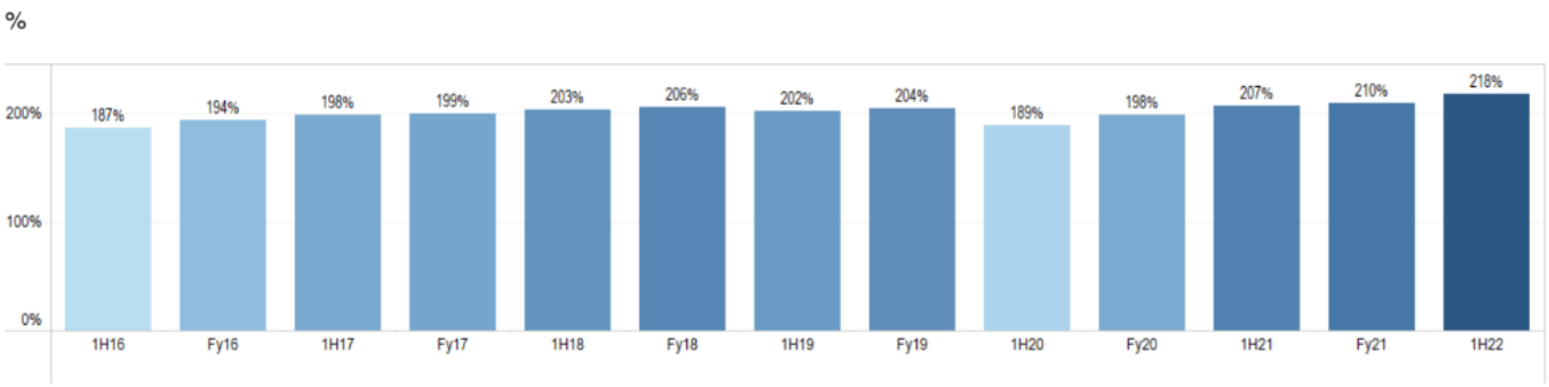
Accepting risk is integral to NN Group's business model across insurance, asset management and banking. NN Group has developed and implemented a risk management structure that is designed to identify, assess, control and monitor the risks associated with its business. By working within this structure, NN Group aims to meet its obligations to policyholders and other customers and stakeholders, manage its capital efficiently and comply with applicable laws and regulations.

NN 2017 Annual Report

Specific measurable goal is usually defined,

European re/insurer solvency ratios continue post-pandemic recovery: JP Morgan

Figure 2: Sector Solvency II development since its introduction (post Solvency I)



Source: J.P. Morgan estimates, Company data.

European re/insurer solvency ratios continue post-pandemic recovery: JP Morgan - Reinsurance News

Solvency ratio

Amount of available capital

Risk / return ratio

RORC, RORAC, ROREC, …

Dividend payment

Satisfied regulator / supervisor

Happy clients

…

What?

Which risks are we managing?

Risk map

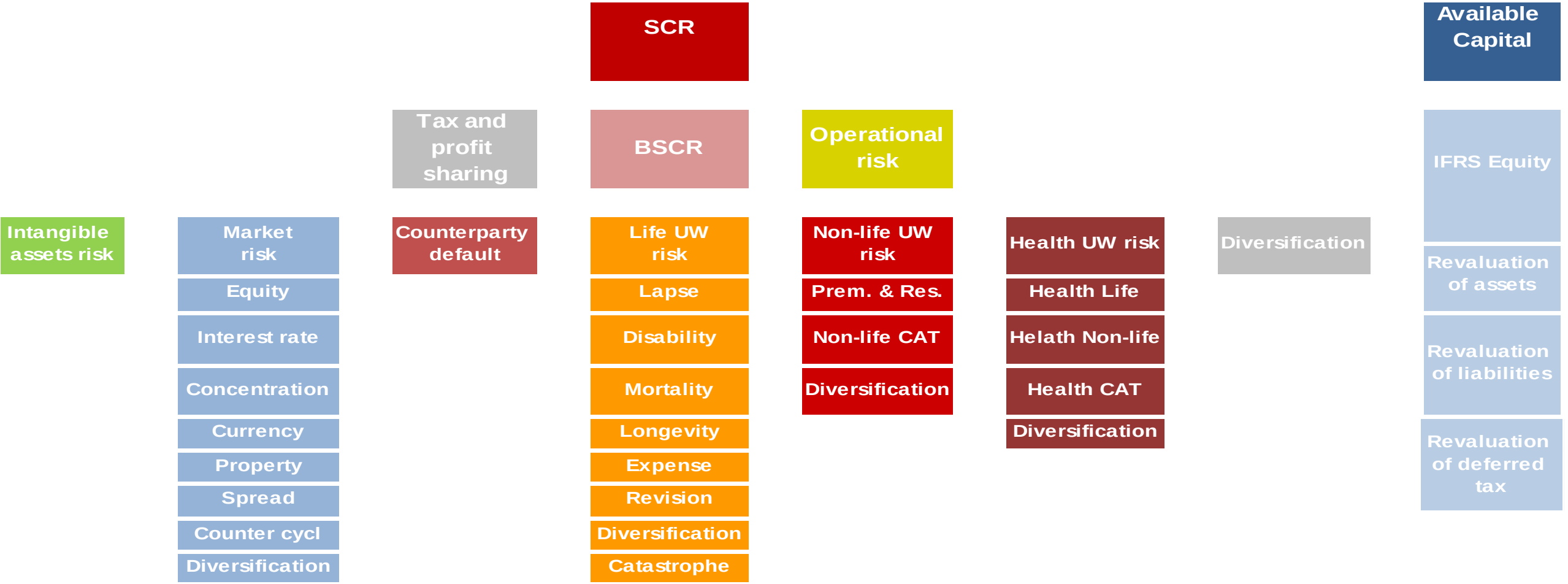
It is important to identify risks relevant for the insurance company.

Risk map is individual for each insurer, it is one of the tools of risk management.

It is important to quantify required capital for each module as well as assessment of their overal aggregation (impact of corelation, diversification, …).

It should be long-term view, but it is not fixed.

Risk map – Standard formula (standard model)



Risk map – Generali group

Risks covered by Partial Internal Model					Non-Pillar I risks
Financial risks	Credit risks	Insurance risks	Rischi sottoscrittivi vita e malattia	Rischi operativi	
Interest rate	Spread widening	Pricing	Mortality	Compliance risk	Liquidity risk
Interest rate volatility	Default	Reserving	Longevity	Financial reporting risk	Strategic risk
Equity		CAT	Morbidity/ Disability	Internal fraud	Reputational risk
Equity volatility			Lapse	External fraud	Contagion risk
Property			Expense	Employment practice	Emerging risk
Currency			Health	Clients & products	
Concentration				Damage to physical assets	
				Business disruption and system failure	
				Execution and process management	

Risk map – Allianz group

Allianz Group: Impact of regulatory and model changes – allocated risk according to the risk profile (total portfolio before non-controlling interests)

€ mn

	Market risk		Credit risk		Underwriting risk		Business risk		Operational risk		Diversification		Total	
As of 31 December	2019[1]	2019[2]	2019[1]	2019[2]	2019[1]	2019[2]	2019[1]	2019[2]	2019[1]	2019[2]	2019[1]	2019[2]	2019[1]	2019[2]
Property-Casualty	5,638	5,632	2,286	2,283	11,542	11,529	692	691	1,604	1,602	(6,266)	(6,259)	15,495	15,478
Life/Health	17,749	17,859	2,711	2,726	437	439	2,839	2,855	1,527	1,536	(4,907)	(4,934)	20,356	20,481
Corporate and Other	1,940	1,955	471	474	127	127	-	-	403	406	(720)	(726)	2,220	2,237
Total Group	**25,327**	**25,446**	**5,467**	**5,484**	**12,105**	**12,095**	**3,530**	**3,546**	**3,534**	**3,545**	**(11,893)**	**(11,918)**	**38,071**	**38,196**
												Tax	(5,481)	(5,434)
												Capital add-on	1,042	1,506
												Third country equivalent	3,218	3,218
												Sectoral requirement	2,038	2,038
												Total Group	**38,888**	**39,525**

1_2019 risk profile figures adjusted based on the 2020 model changes impact.
2_2019 risk profile figures as reported previously.

Zdroj: Výroční zpráva Allianz Group 2020

BUSINESS RISK

Business risks include cost risks and policyholder behavior risks. They are mostly driven by the Life/Health business and to a lesser extent by the Property-Casualty business. Cost risks are associated with the risk that expenses incurred in administering policies are higher than expected or that new business volume decreases to a level that does not allow Allianz to absorb its fixed costs. Business risk is measured relative to baseline plans.

Are we able to identify the risks?

EJ Smith, 1907: "If someone asks me, how I would describe my 40 years of experience at sea, I would describe them as boring. Of course, there are winter storms, fog and similarities. But during my entire experience I cannot remember any havaries. I have only once seen a ship in distress. I have never seen a wreck, neither have I been in distress at sea, nor have I ever been in a dangerous situation, that could have led to a catastrophe."

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Main Trends in Insurance Risks, Identification of New Risks (Emerging Risks)

Demography, political risks

- Individual coverage, aging, cross-dependencies, …
- Concentration of wealth, migration, impact of local conflicts, terrorism, …

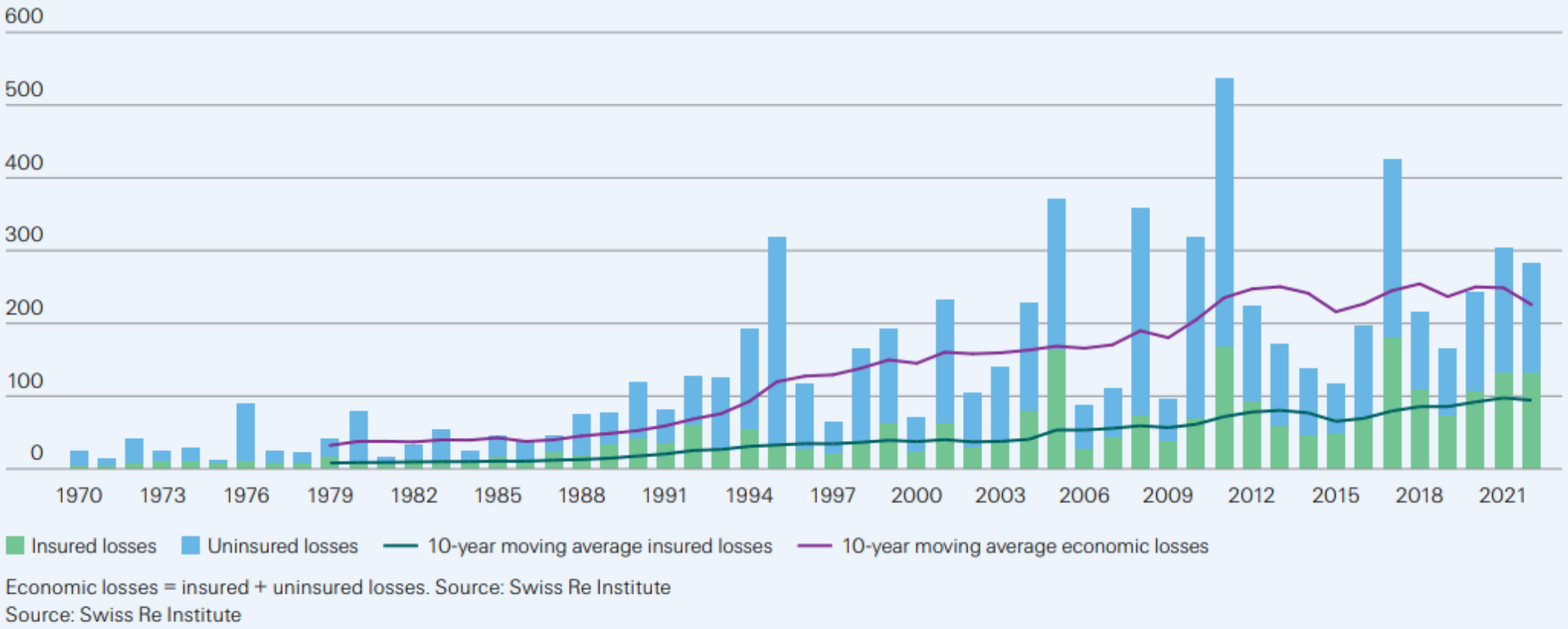
Climate changes

- Variability, still not everything can be predicted even if models are improving
- Man-made as well as natural factors, unambiguous assessment of scientists, difficulty of assessing all the impacts, …

Insured vs uninsured losses, 1970 – 2022, in USD billion at 2022 prices

Figure 23

Insured vs uninsured losses, 1970 – 2022, in USD billion at 2022 prices



Economic losses = insured + uninsured losses. Source: Swiss Re Institute

Source: Swiss Re Institute

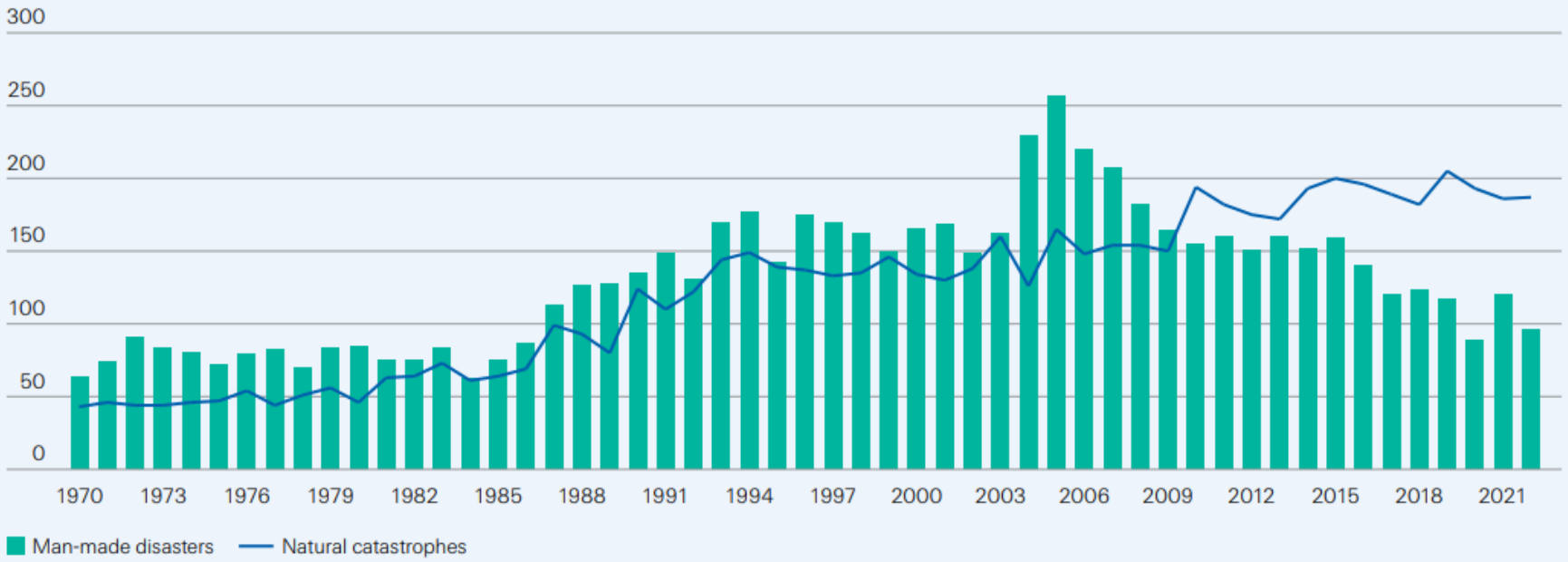
Number of catastrophic events, 1970-2022

Number of catastrophic events: 285

Based on *sigma* criteria, there were 285 catastrophes worldwide in 2022, down from 306 in 2021. There were 187 natural catastrophes, up from the 186 in 2021, and 98 man-made disasters (down from 120 in 2021).

Figure 19

Number of catastrophic events, 1970–2022



Source: Swiss Re Institute

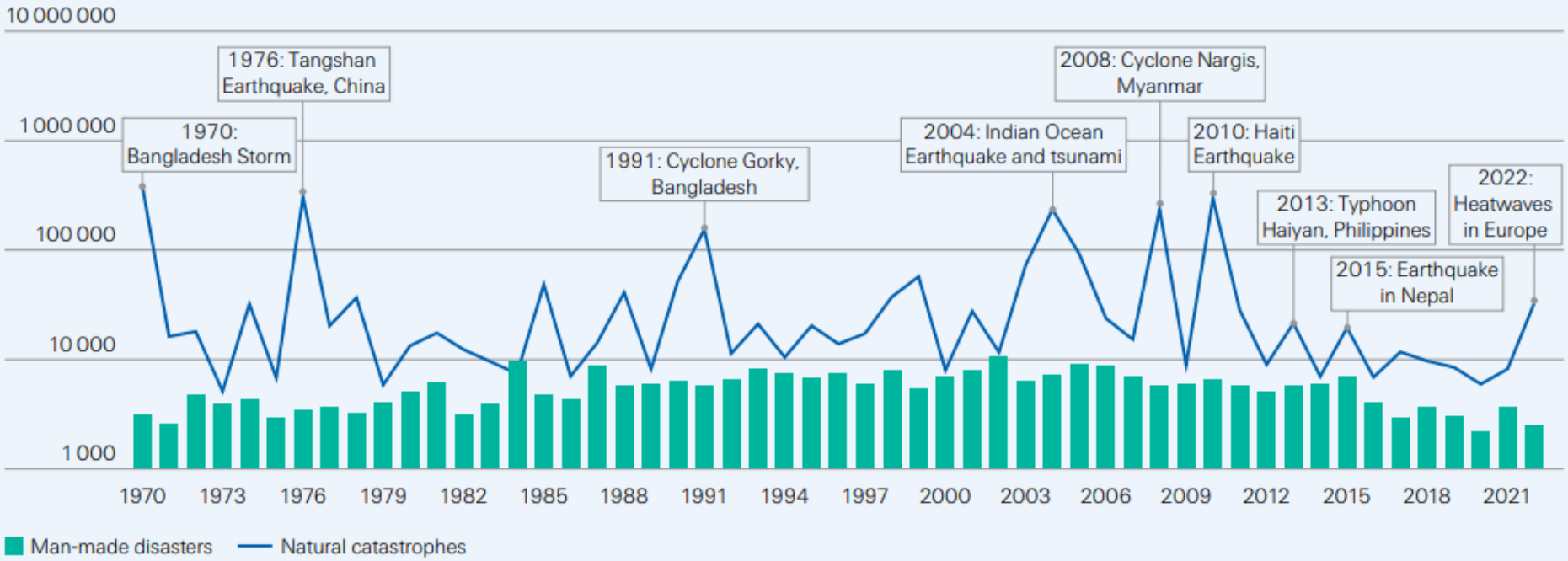
Catastrophic risk - Number of Victims

Number of victims: more than 35 000

Worldwide, 35 157 people are believed to have died or gone missing in disaster events in 2022. Natural catastrophes claimed over 32 600 victims, and man-made disasters over 2500.

Figure 20

Number of victims, 1970–2022



Note: Scale is logarithmic: the number of victims increases tenfold per band. Source: Swiss Re Institute

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Rapid development in technologies

- Faster innovations bring risks (cyber risk, hacking, loss of data, …)
- Complexity of the technologies and therefore related risks
- AI, nanotechnologies, biotechnologies, data science, autonomous vehicles, robots

New Risks Covered by Existing Products

Issued by Willis Towers Watson

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Higher corelation of risks

- The dependencies among risks are fast growing
- E.g. – epidemies, information technologies

Pandemic Risk – Case Study

So…?

- Long overdue a pandemic

  1918: "Spanish Flu" (strain H1N1) – killed 40-50 million people

  1957: "Asian Flu" (strain H2N2) – killed 1 million people

  1968: "Hong Kong Flu" (strain H3N2) – killed 1 million people

  H5N1 has similar characteristics to H1N1

So what's going to happen then?

- Previous pandemics show between 25%-35% of people will suffer a clinical illness of some severity. 0.375% - 2.5% of these will die.

- In UK, this means between 56,000 - 520,000 people will die (based on population of 59.6m)

Pandemic Risk – Case Study

Managing People Related Impacts

- Accounting for people
- Communications with staff
- Corporate vs individual responsibilities
- Psychological impacts
- Large-scale absence from work

Organisational Resilience

- Exploiting technology
  - Split-site
  - Transfer of operations
  - Remote working
- Business as usual or regularly tested
- Supply chain dependencies may be a weak link

Pandemic Risk – Case Study

Life and PHI claims…

Claims going up => claims processing going up

+ Headcount going down

= A backlog of claims to be processed

Model developed to estimate the size of the backlog.

More obviously…

- Shock in mortality/CI rates
- Do the CI plans cover for pandemics?

Scenario 2	**Clinical Attack Rate**	**50.00%**
	Mortality Rate	**2.50%**

Scenario 2 Time to clear backlog: 108 weeks

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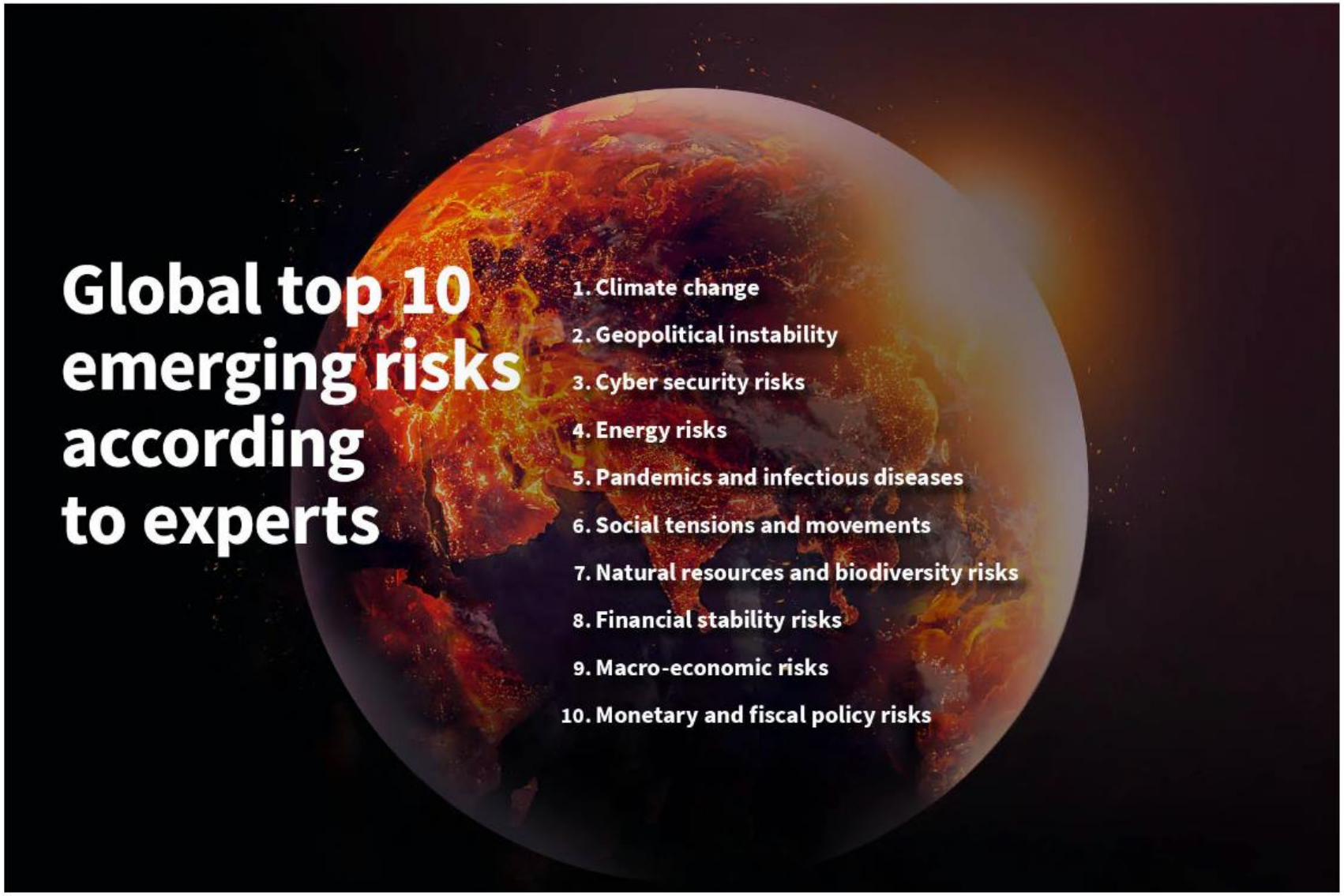
Reputation risk, medical risks, new financial risks, pollution, political risk, regulatory risks, …


Global top 10 emerging risks according to experts
1. Climate change
2. Geopolitical instability
3. Cyber security risks
4. Energy risks
5. Pandemics and infectious diseases
6. Social tensions and movements
7. Natural resources and biodiversity risks
8. Financial stability risks
9. Macro-economic risks
10. Monetary and fiscal policy risks

How?

And how can we do that?

Risk Management

Risk identification, description, measurement

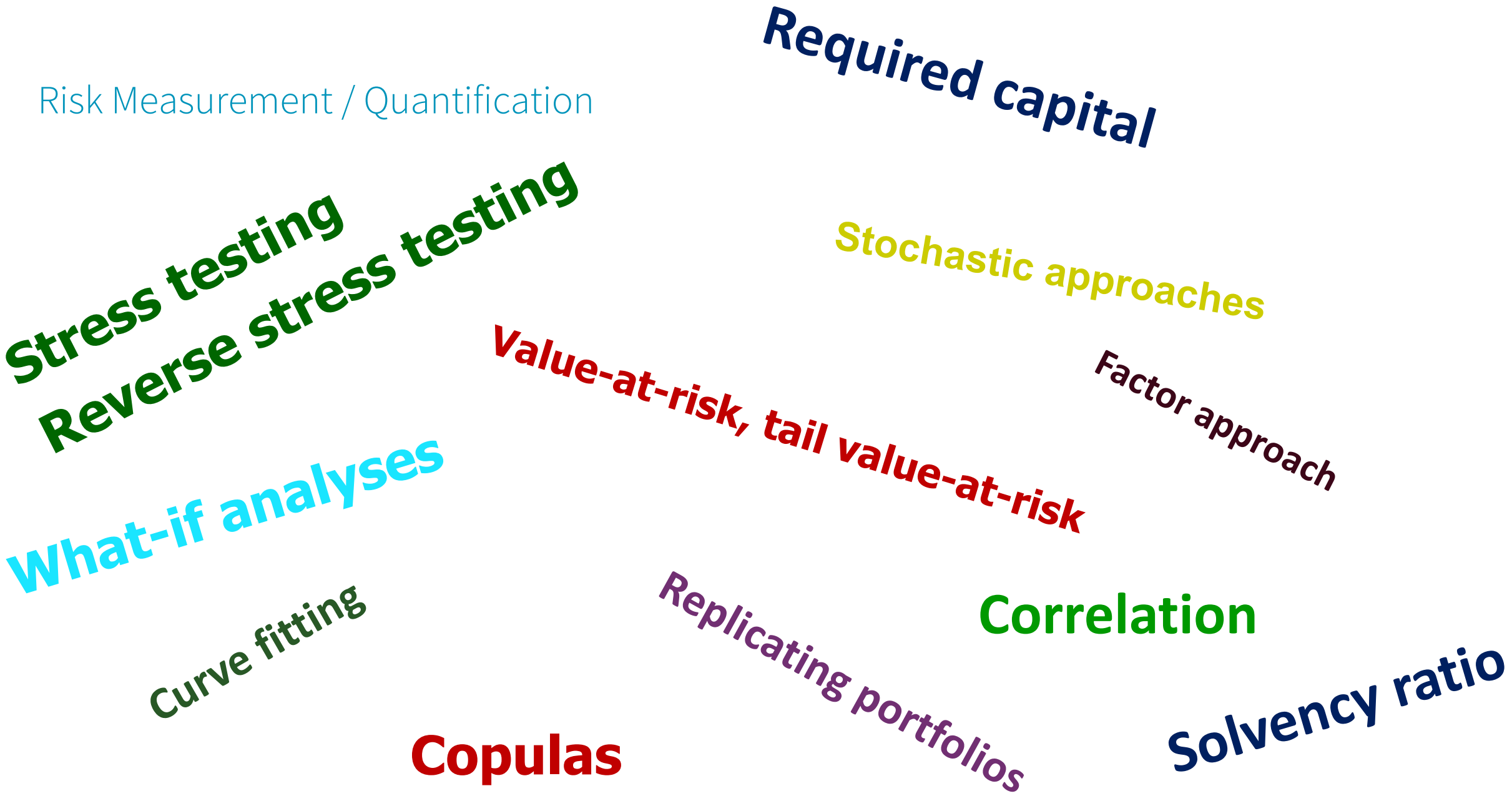
Methods for lowering the risks (risk mitigation)

Definition of risk appetite

Risk monitoring and prediction

Communication, impact in the insurance company

Risk Measurement / Quantification



Disclosure	AZ	Aviva	AXA	Generali	ING	ZIG	Hannover Re	Munich Re	Swiss Re
Economic Solvency Ratio (AC/RC)	✓	✓	✓	✓	✗[a]	✓	✓	✓	✓
Required capital by risk	✓	✗	✓	✓	✓	✓	✓	✓	✓
Required capital by operating unit	✓	✗	✓	✓	✓	✓	✗	✓	✓
Impact of diversification	✓	✗	✗	✓	✓	✗	✓	✓	✓
Starting Point	MCEV	ICA/SII	MCEV	MCEV	Direct	Direct	MCEV	Direct	Direct
Risk Measure	VaR	VaR	VaR	VaR	VaR	VaR[c]	VaR	VaR	Tail VaR[d]
Confidence Level (%)	99.5 (e)	99.5	99.5	99.95 (f)	99.5	99.95	99.97	99.5 (g)	99.0
Reconciliation EV/IFRS to AC	✗	✓	✗	✓	✗	✓	✓	✓	✓
Other Reconciliations	✗	✗	✗	✗	✗	SST to EC	✗	✗	✗
Sensitivity Tests	✓	✗	✓	✗	✓	✓	✗	✓	✓
Projected EC	✗	✗	✗	✗	✗	✗	✗	✗	✗
Frequency	Quarter-ly	Half-yearly	Half-yearly	Half-yearly	Yearly	Half-yearly	Yearly	Yearly	Yearly

Measurement of Risks – Factor Approach

- ✓ Typical for solvency I, but
- ✓ Even in Solvency II still appears
  - ✓ Standard model/standard formula
  - ✓ in internal models for some modules can appear, for example for operational risks
- ✓ Easy and simple (careful about the calibration)
- ✓ It is necessary to be aware of the limitations of this approach

Measurement of Risks – Factor Approach

Operational risk module

The capital requirement for the operational risk module shall be equal to the following:

$$SCR_{Operational} = \min\left(0.3 \cdot BSCR; Op\right) + 0.25 \cdot Exp_{ul}$$

where:

(a) *BSCR* denotes the Basic Solvency Capital Requirement;

(b) *Op* denotes the basic capital requirement for operational risk charge;

(c) Exp_{ul} denotes the amount of expenses incurred during the previous 12 months in respect of life insurance contracts where the investment risk is borne by policy holders.

The basic capital requirement for operational risk shall be determined as follows:

$$Op = \max\left(Op_{premiums}; Op_{provisions}\right)$$

where:

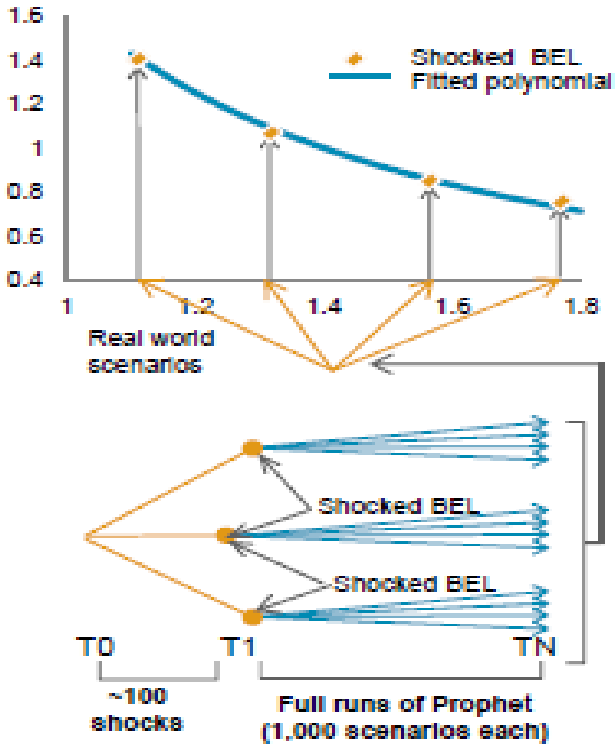
(a) $Op_{premiums}$ denotes the capital requirement for operational risks based on earned premiums;

(b) $Op_{povisionss}$ denotes the capital requirement for operational risks based on technical provisions.

Measurement of Risks – Stochastic Approaches

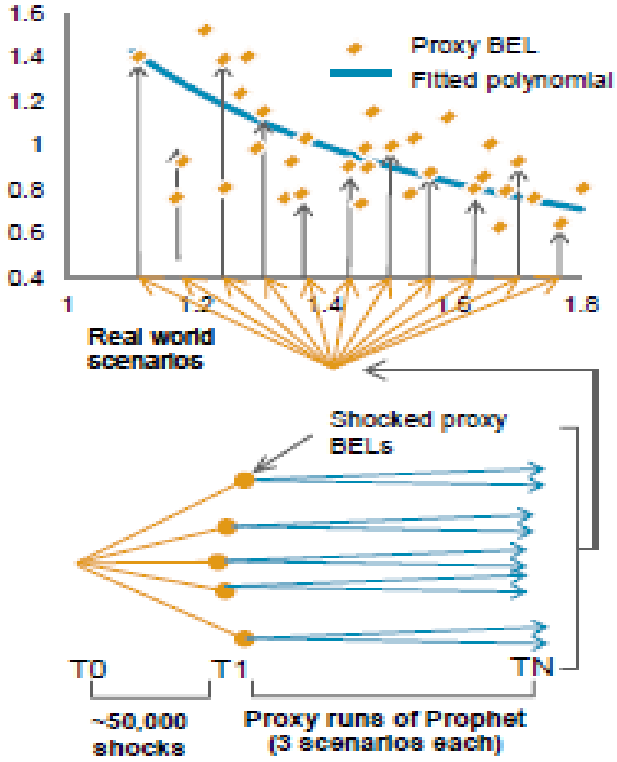
A. Curve fitting (similar to UPRAC)

Determine small number of 1-year-our shocks (e.g. 100 shocks) and run Prophet on each of the shocks to calculate shocked BEL. Then fit a curve to the shocked BELs and use this curve as the in the Monte-Carlo simulation.



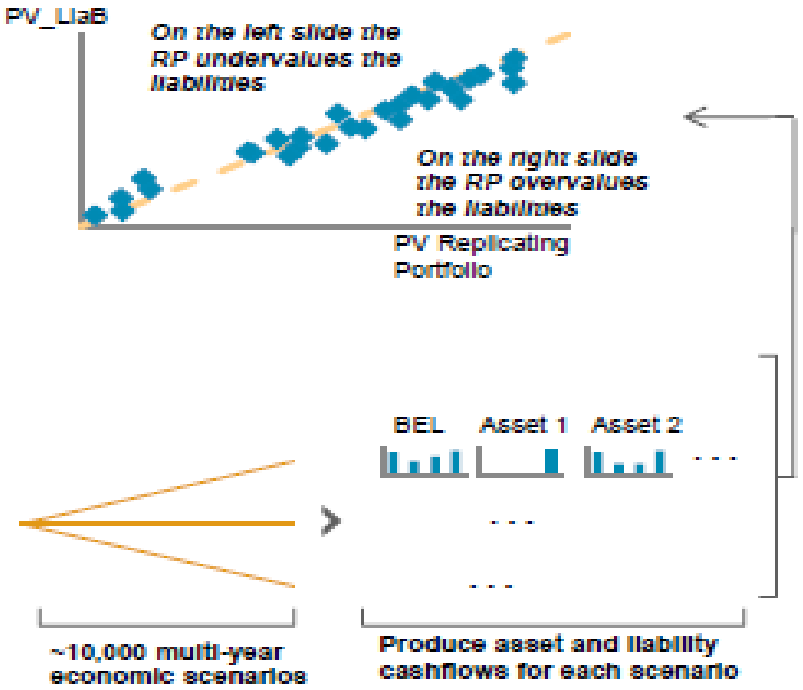
B. Least Squares Monte-Carlo (LSMC)

Generate large set of 1-year out shocks (e.g. 50,000) and perform small Prophet runs (2-3 risk neutral projections) on each of these scenarios to estimate shocked BEL. Then fit a curve to the point cloud and use this curve in the Monte-Carlo simulation



C. Replicating portfolios

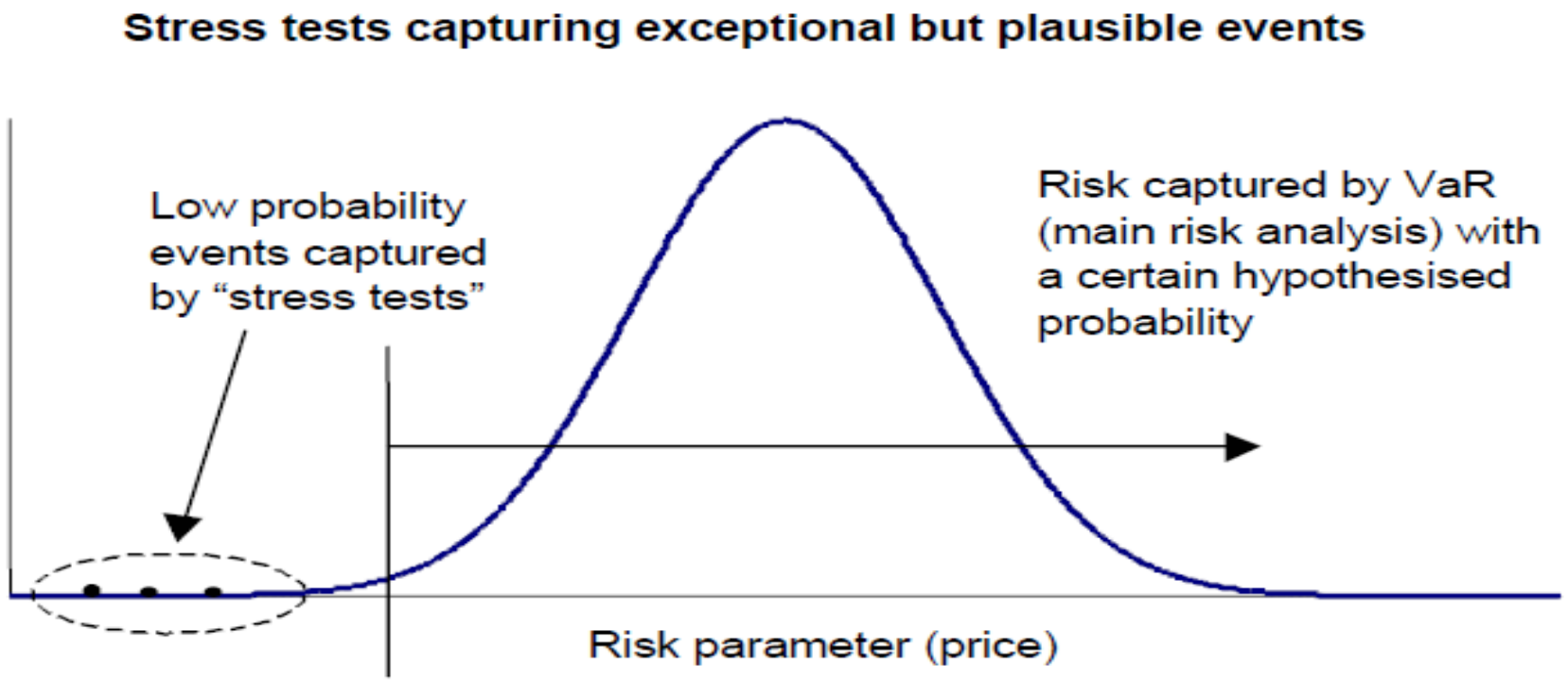
Produce large set of multi-year economic scenarios. Then run asset valuation models and Prophet to calculate cashflows of assets and liabilities in each scenario. Then calculate their PV and run linear regression to determine asset portfolio that matches liability PVs best.



Measurement of Risks – value-at-risk, tail value-at-risk (VaR, TVaR)

- ✓ Typical for investment risks, common in banking
- ✓ It is important how the time horizon is set up:
  - In banking usually days
  - In insurance usually one year horizon
- ✓ Determination of quantile

Stress testing vs Value at Risk approach



Measurement of Risks – Stress Testing

Applied both on assets as well as liabilities

Sensitivity tests (Sensitivities)

- Mandatory e.g. in IFRS (accounting standards) – it needs to be disclosed also sensitivities of the capital to interest rate shifts, equity/index process, FX, akcií/indexů, …

Stress tests

- Regulatory requirement as well as internally defined
- Focus on investment risk (common for banks, but analogically applied on insurers)
- Insurance specific stresses – e.g. lapse mass stress in the standard model

Reverzní stress testy

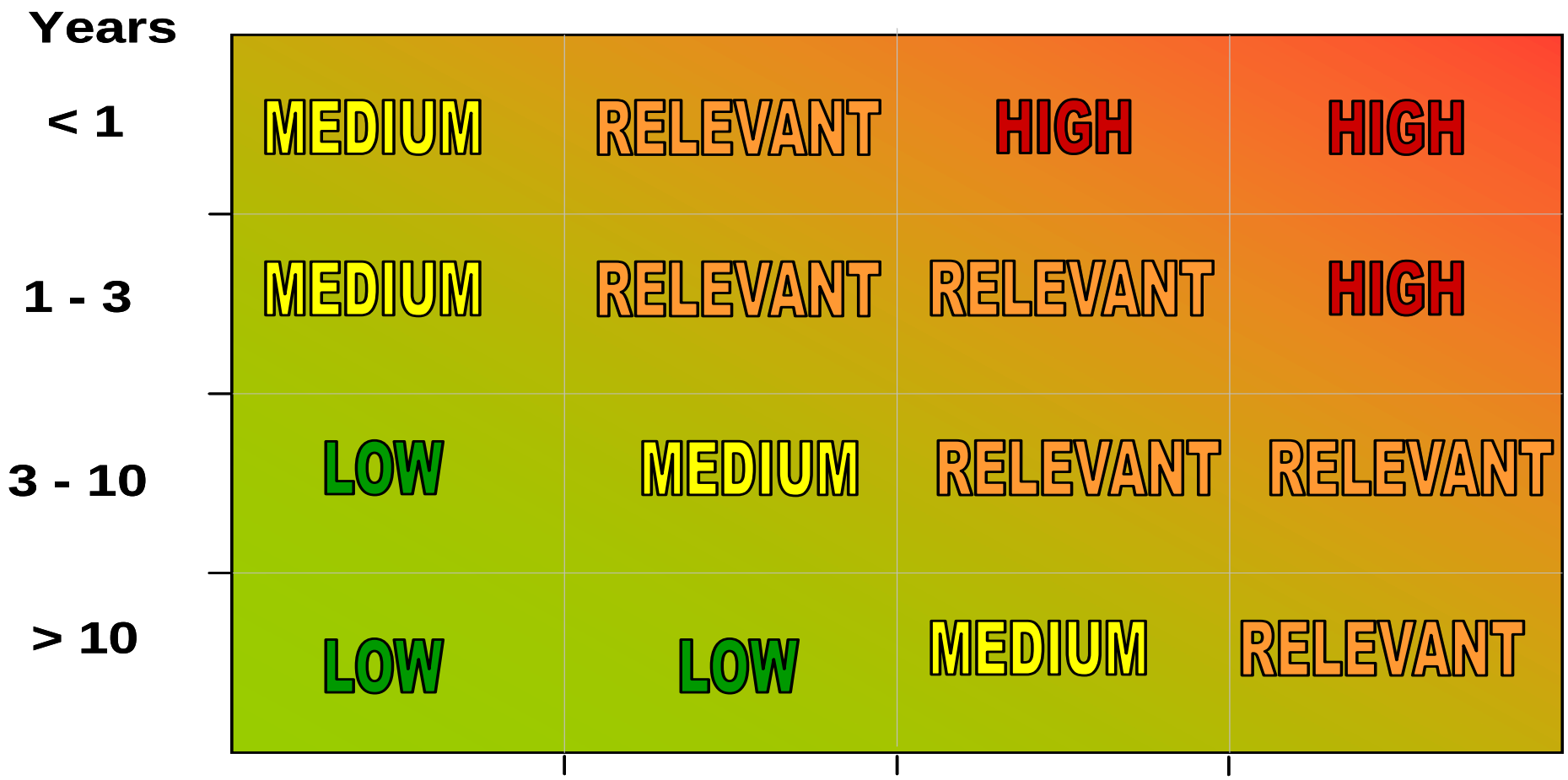
What-if analyses

- Credit risk – rating worsening for selected/all counterparties, higher credit spreads, …
- Catastrophic risks
- Operational risks

Marginal Risk

Marginální statistika pro jednu událost vyjadřuje míru jejího příspěvku k celkovému riziku portfolia. Marginální riziko je rovno rozdílu hodnoty daného parametru rizika pro celé portfolio a pro portfolio bez dané události.

Managing of Risks - „Heat maps“



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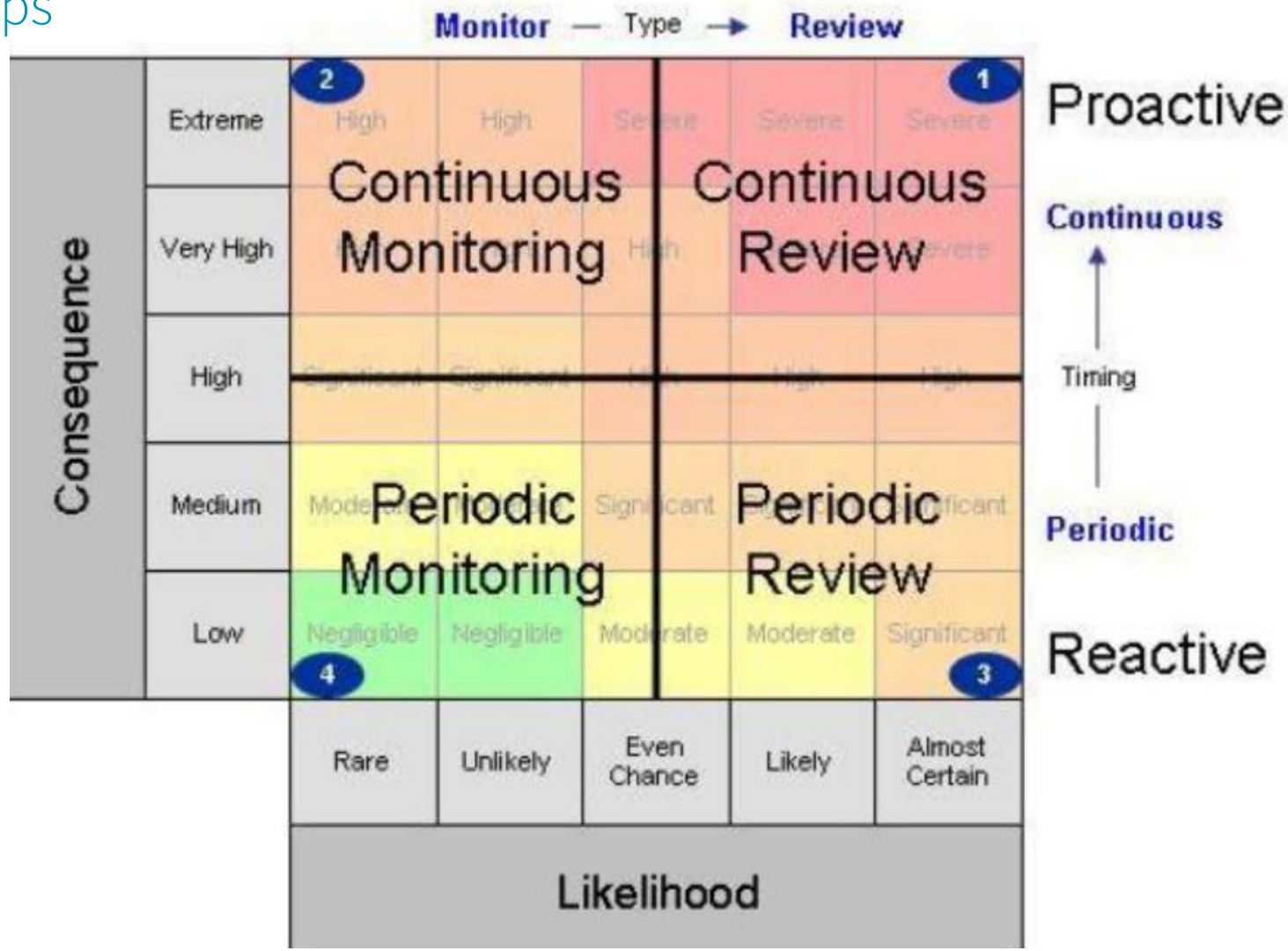


Risk Map (Risk Heat Map) | E-SPIN Group (e-spincorp.com)

Different approaches lead to different results

Internal model

?

Standard model

Pillar I

Rating model

Pillar II

Ekonomic vs regulatory view

Management of Risks

Risk identification, description, measurement

Methods for lowering the risks (risk mitigation)

Definition of risk appetite

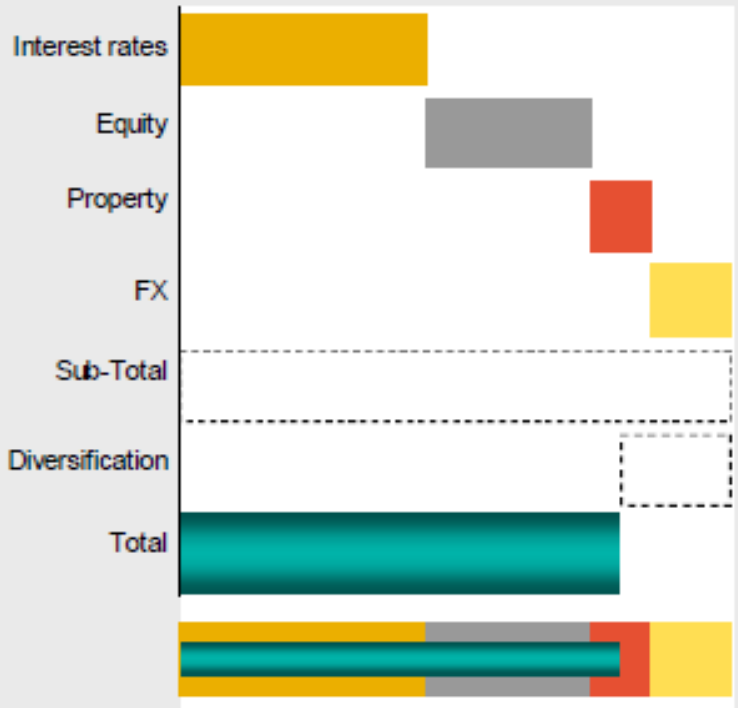
Risk monitoring and prediction

Communication, impact in the insurance company

Lowering of the accepted risk

- ALM - Asset Liability Management
  - Focus esp. on investment risks (interest, currency, market)
  - Investment products need to be considered
  - During the calculation, both assets and liabilities need to be considered and consistent assumptions need to be used
  - The availability of financial instruments to match long term insurance liabilities is limited

Investments: Optimising diversification to reduce volatility and capital



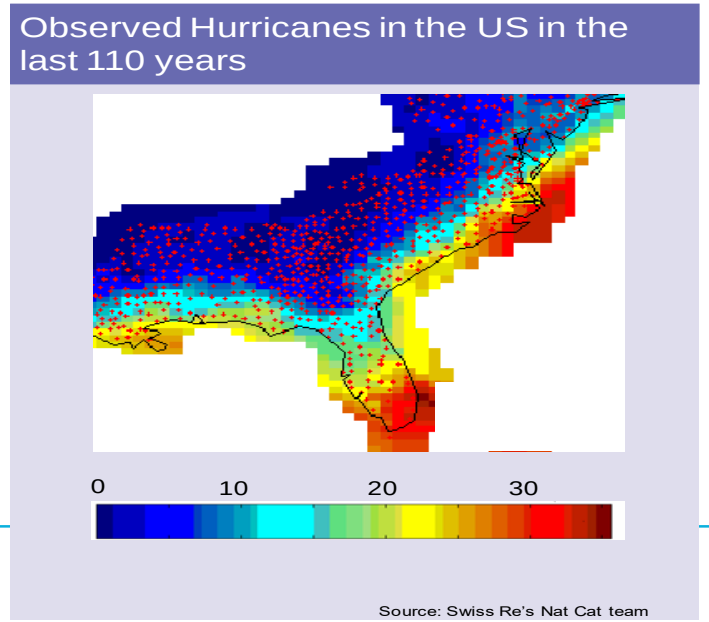
Overall required market risk capital after diversification

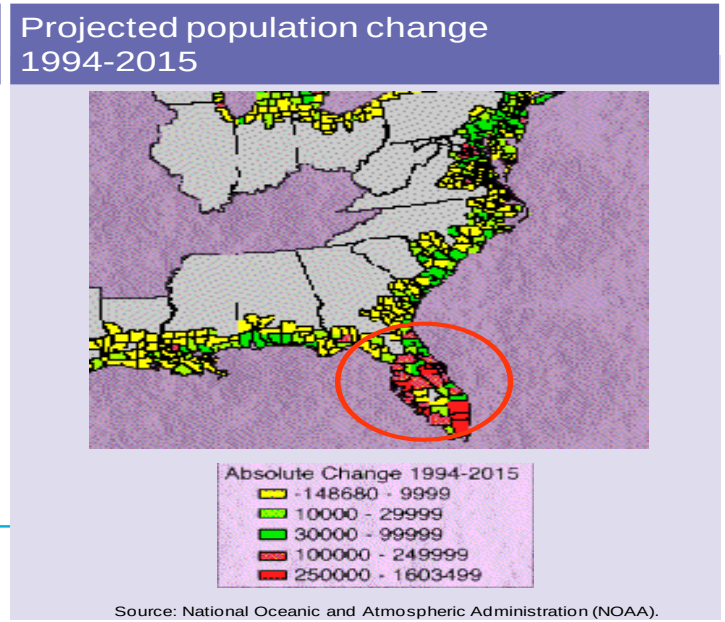
ILLUSTRATIVE

Lowering of the accepted risk

- Diversification
  - Geographically – monitor and diversify underwritten risks in one region/country – use potential within the own insurance group, with the reinsurer
  - Among risks themselves – insuring risks negatively correlated, typical for life insurance (annuities vs life risk policies)

Increasing concentration of property in the area exposed to NAT CAT





Lowering of the accepted risk

Selling of the risks

- Reinsurance of the underwriting risks (coinsurance, third party reinsurance, captive reinsurance)
- Financial market tools (catastrophic bonds, mortality derivatives, …) – still limited market
- Investment risks – derivatives reducing credit, FX, interest rate risks

Be careful on risk changing its character – e.g. by reinsuring underwriting risks with a reinsurer, credit risk of that reinsurer is born. Similarly when contracting a derivative.

Lowering of the accepted risk

Active internal risk management – relevant definition of internal processes

- Underwriting limits
- Proper reflection of risks in pricing
- Investment limits for asset managers (for individual risks as well as portfolio as a whole)
- Very efficient for operational risks – process automatization, internal controls, lessons learned from mistakes, …

Exceeding of internal limits – examples

Credit limit is exceeded for one counterparty

- → Immediate selling of the financial instruments
- → Temporary exception
- → Lowering of another exposure so the overall capital requirement is the same (on an acceptable level)
- → Limit change

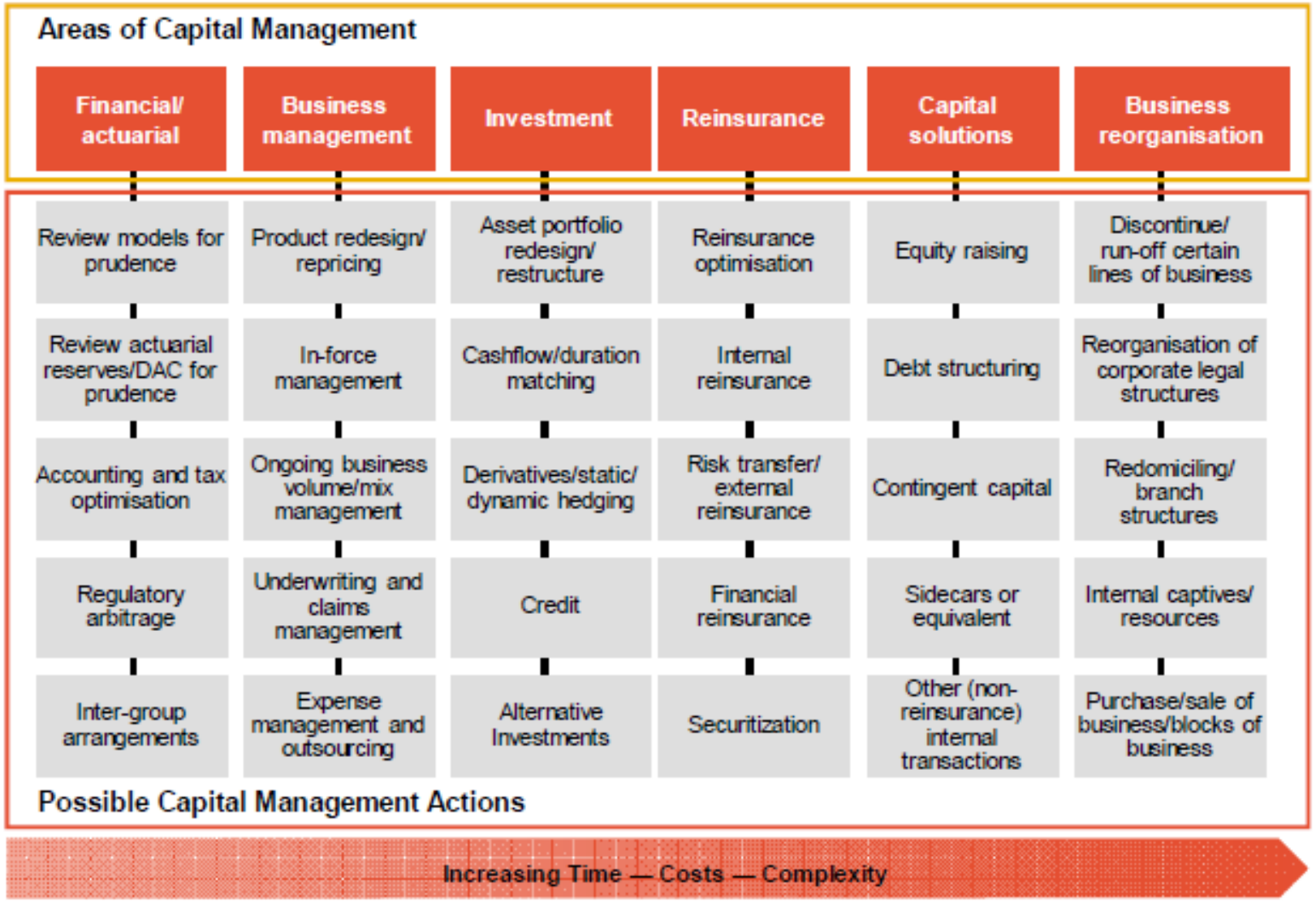
Life underwriting risk is growing and getting close to my risk appetite

- → Problem in underwriting, „antiselection“, attracting more risky segment of clients
- → Demographic trend
- → Inaccurate modelling of the risk
- → Wrong pricing, or pricing assumptions

Independent second opinion (by risk management)

- Product development – accepted risks, pricing
- Technical provisions
- Reinsurance program
- Cooperation with new counterparties (sales as well as outsourcing)
- Models used – parameters, assumptions, methodology

Capital management toolbox



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Hedgeable / Non-hedgeable risk – can we lower all risks?

…. No, we can not and therefore it is good to know about all relevant risks and decide, how we are going to react

Management of Risks

Risk identification, description, measurement

Methods for lowering the risks (risk mitigation)

Definition of risk appetite

Risk monitoring and prediction

Communication, impact in the insurance company

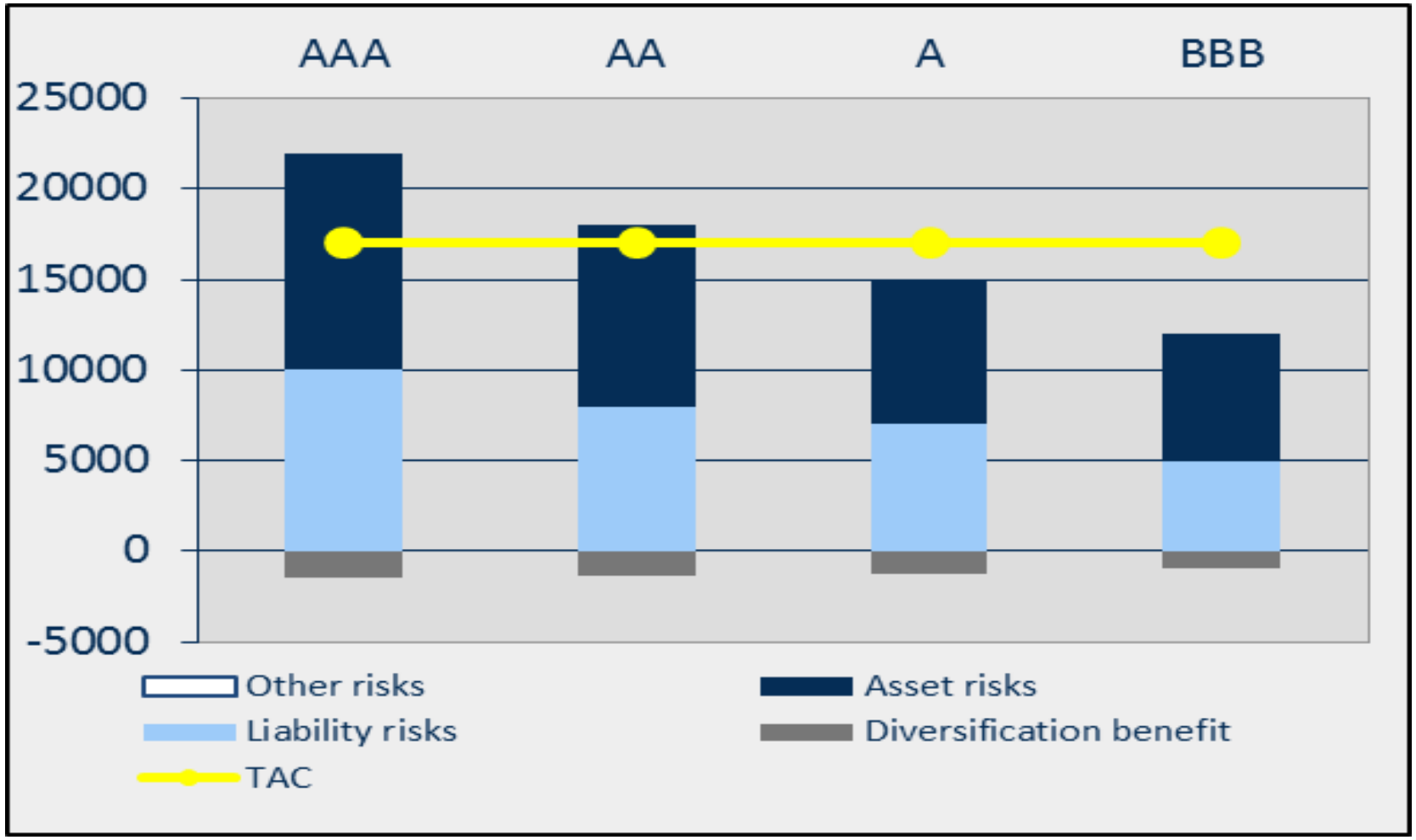
Risk Appetite vs Risk Tolerance

Risk appetite = Amount and type of risk that an organization is prepared to pursue, retain or take = desired risk profile(s)

Risk tolerance = Largest amounts in individual types of risks which an organization can afford to take = acceptable most adverse risk profile(s)

- Definition for individual risks as well as for the overal capital of the company
  - → Limiting of the accepted risk at the point of accepting it – underwriting, asset manager, …
  - → Limiting of the accepted risk at more aggregated levels
- The granularity depends on Company decision – can be for individual products, portfolios, divisions, regions, …
- Time horizon – regular measurement and revision
- Escalation process for breaches needs to be defined

Risk Appetite Derived from Company's Rating



Risk Statement

Risk strategy and risk appetite: **Our risk strategy defines our risk appetite consistent with our business strategy.** It ensures that rewards are appropriate based on the risks taken and capital required, and that the delegated authorities are in line with our overall risk-bearing capacity and strategy.
(Allianz Annual report)

We have formulated three key risk appetite statements for the areas of strategic challenges, a strong balance sheet and sound business performance. These are further detailed in nine sub-statements that are used for internal steering. We work systematically, aim for completeness and document what we do. Each risk analysis performed is shared with the responsible management.
(NN Annual report)

In defining the level of risk, it is willing to take, the Group defines its own risk strategy within the Group Risk Appetite Framework (RAF) while complementing the overall business strategy. **The Group RAF defines the level of risk the Group is willing to take and ensures risk embedding into key business processes, to grant all risks are properly managed.** Soft and hard limits´thresholds set within the RAF aim to limit excessive risk taking and to maintain the solvency position at the desired level. Monitoring and escalation processes are clearly defined to adequately manage any risk tolerance breaches.
Generali Annual report

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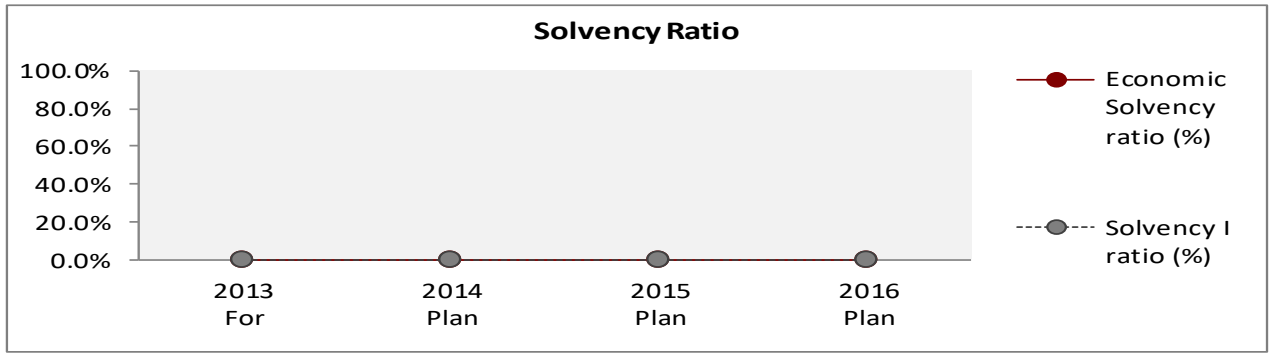
Projection of Risk Capital and Solvency Ratio

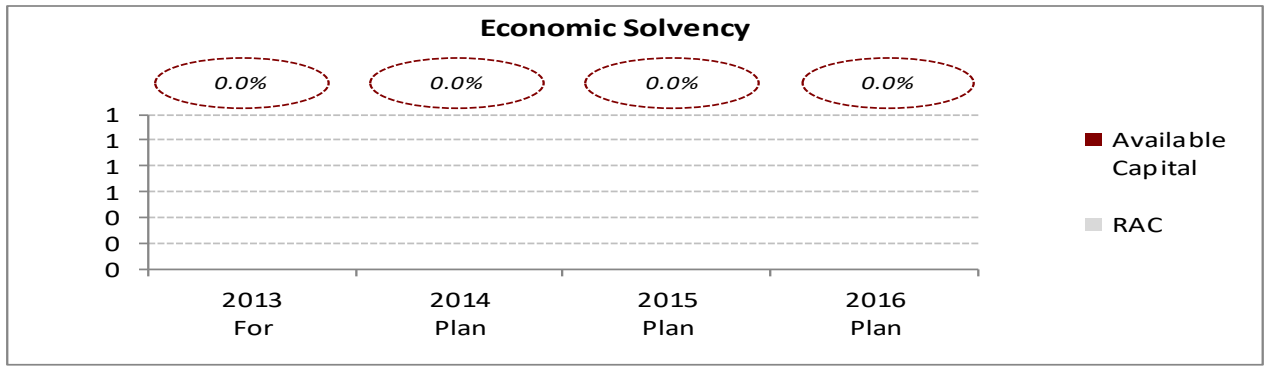
- Usually 3 years
- Linked to a business plan

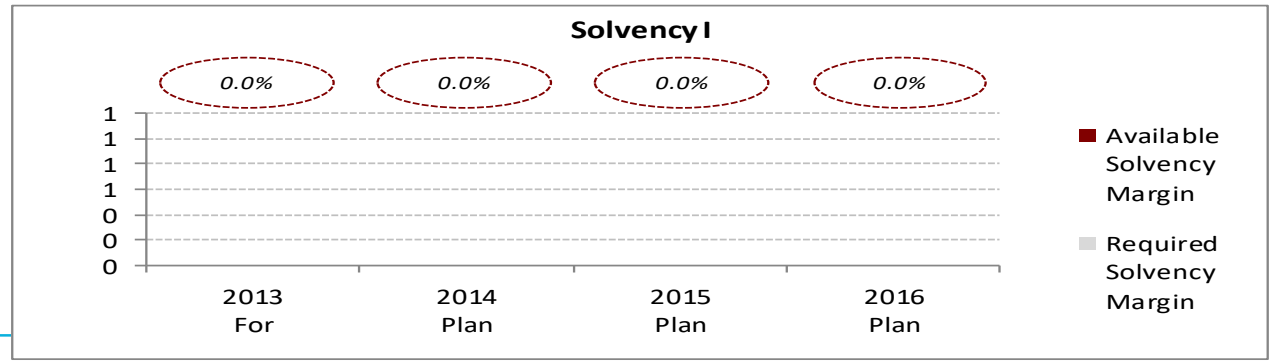
- Prediction of solvency ratio (required capital) as information / target for top management
  - Granularity?
  - Volatility of the calculation?
  - Sensitivity to key assumptions

- Simplified estimates in the periods between more detailed calculations

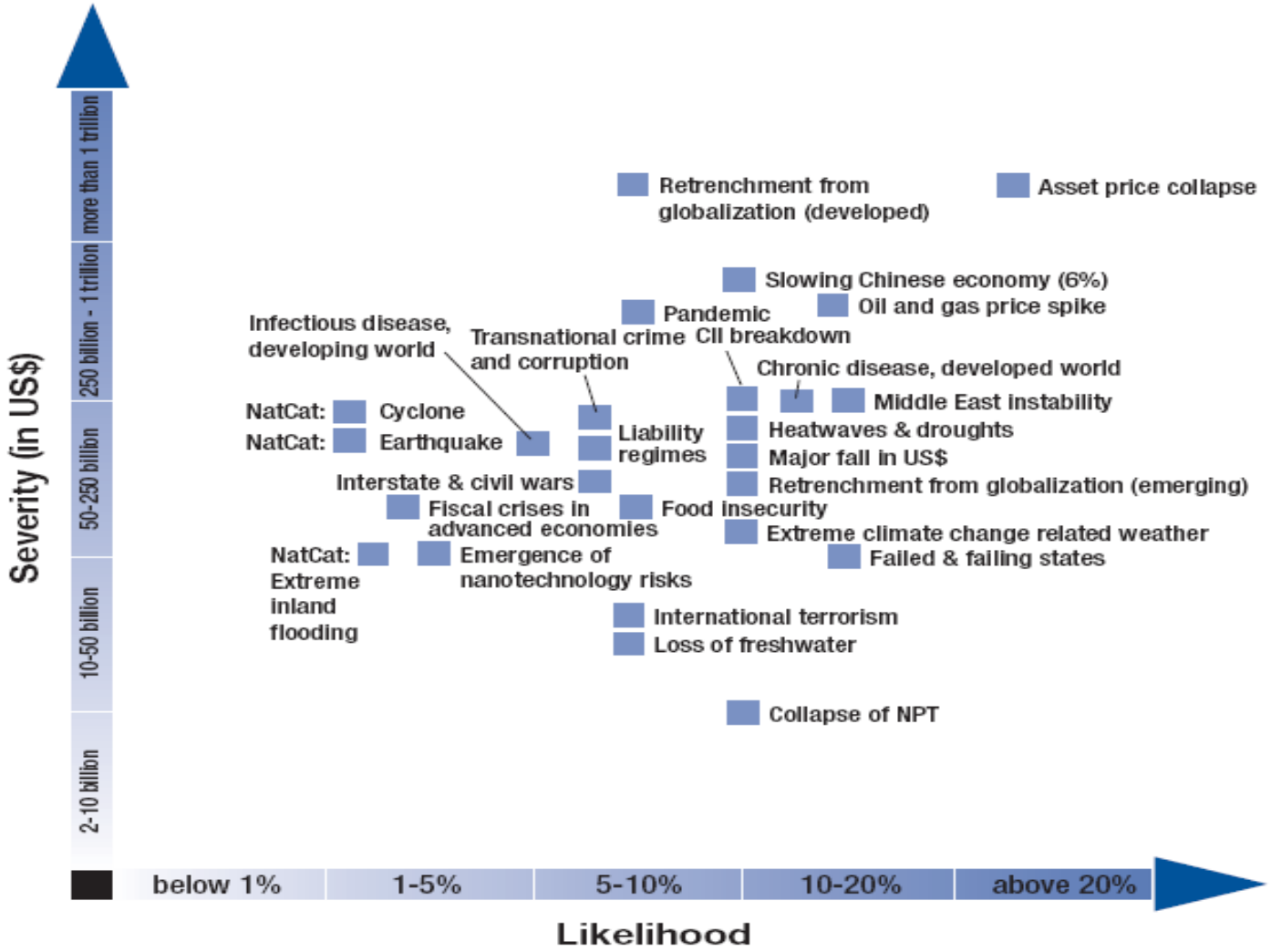
€ Mln 1st. Company	2013 For	2014 Plan	2015 Plan	2016 Plan	CAGR 13-16
Available Capital (after Dividend)					**n.a.**
of which PVFP Life /Reserve Adequacy P&C					n.a.
of which Subordinated Debt					n.a.
of which Dividend					n.a.
Risk Adjusted Capital detail:					
Equity					n.a.
Property					n.a.
Interest Rate - PC1 movement					n.a.
Interest Rate - PC2 movement					n.a.
Interest Rate - PC3 movement					n.a.
Implied Volatility risk - Equity					n.a.
Implied Volatility risk - Interest Rate					n.a.
Credit					n.a.
Concentration					n.a.
Currency					n.a.
Life UW - Mortality CAT					n.a.
Life UW - Mortality Trend/Uncertainty					n.a.
Life UW - Longevity					n.a.
Life UW - Morbidity / Disability					n.a.
Life UW - Lapse					n.a.
Life UW - Expenses					n.a.
Non Life UW - Pricing (no CAT)					n.a.
Non Life UW - CAT					n.a.
Non Life UW - Reserve					n.a.
Operational					n.a.
Diversification benefit (value)					n.a.
Non Linearity & Non Additivity adjustment					n.a.
Tax absorption after recoverability assessment					n.a.
Risk Adjusted Capital (RAC)					**n.a.**
Economic Solvency ratio (%)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	**n.a.**
Available Solvency Margin after dividend					n.a.
Required Solvency Margin					n.a.
Solvency I ratio (%)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	**n.a.**







Managing of Risks - „Heat maps“



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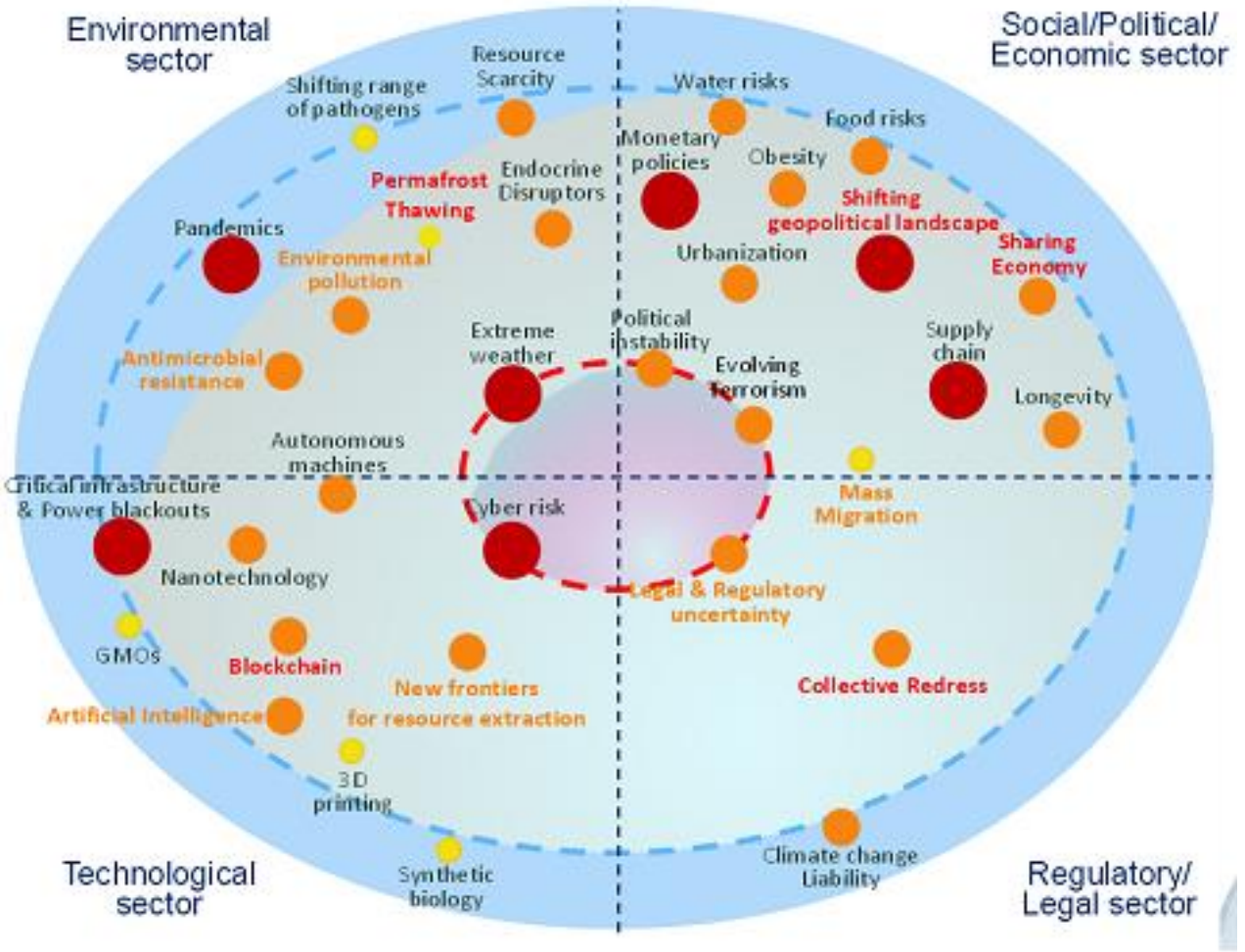
World Economic Forum
Global Risks 2008

Managing of Risks - Risk Radar

The CRO Forum Emerging Risks Initiative (ERI) was launched in 2005 to raise awareness of major emerging risks relevant to society and the (re)insurance industry. The Emerging Risks Initiative consists of ten members representing Allianz, AXA, Hannover Re, Lloyd's, Munich Re, RSA, Prudential, SCOR, Swiss Re and Zurich Insurance Group.

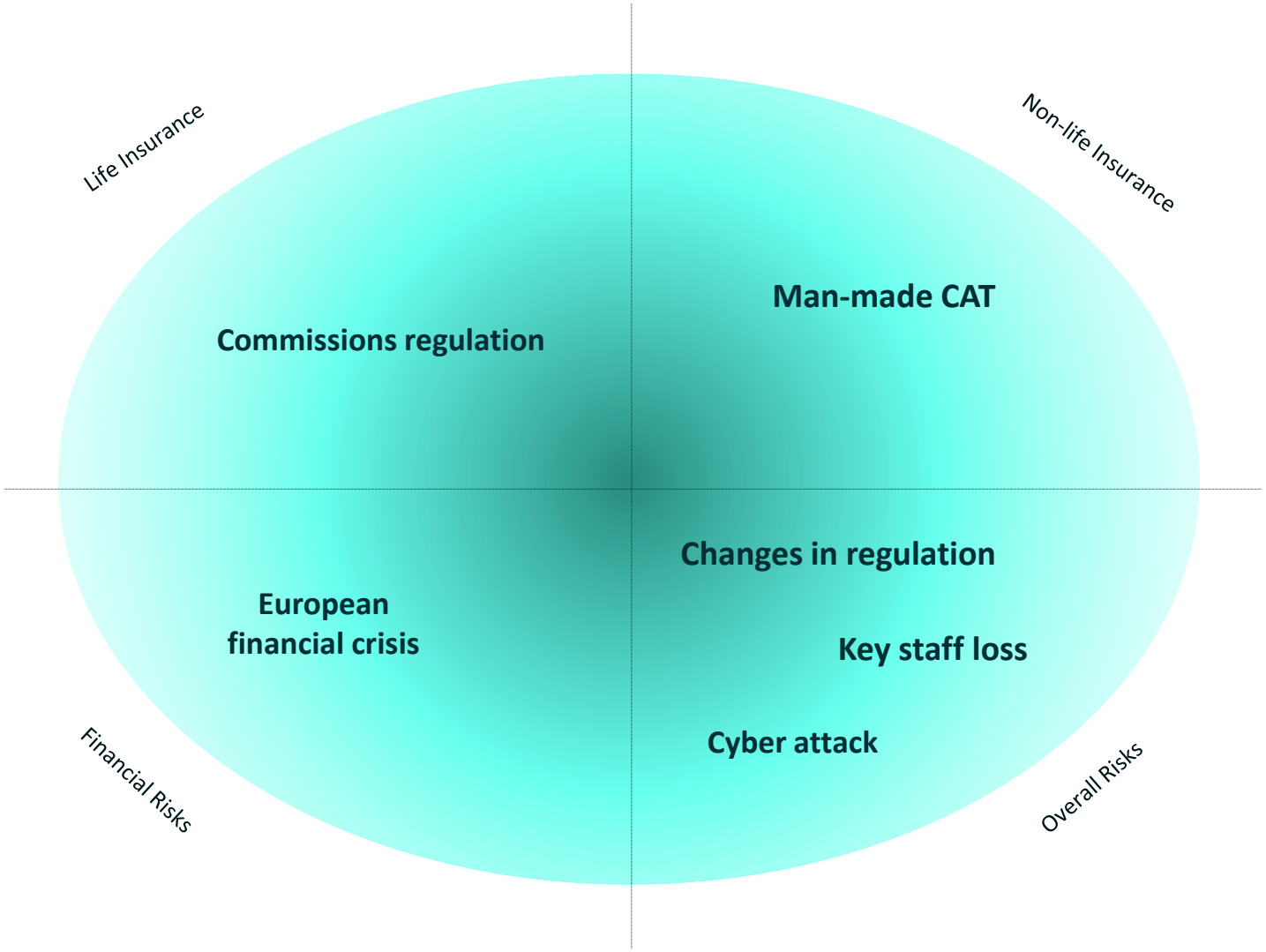
According to the Risk Radar update - October 2016, the new emerging risks entries since May 2016 are the following:



https://www.agcs.allianz.com/insights/white-papers-and-case-studies/emerging-risks-initiative-risk-radar-update-2016/

Managing of Risks - Risk Radar

- Good tool e.g. for Main risk self assessment (MRSA)
- Able to capture also shifts in time (comparison with previous period)
- More dimensions (distance from the centre, size of font, color, …)
- Good basis for a discussion



Management of Risks

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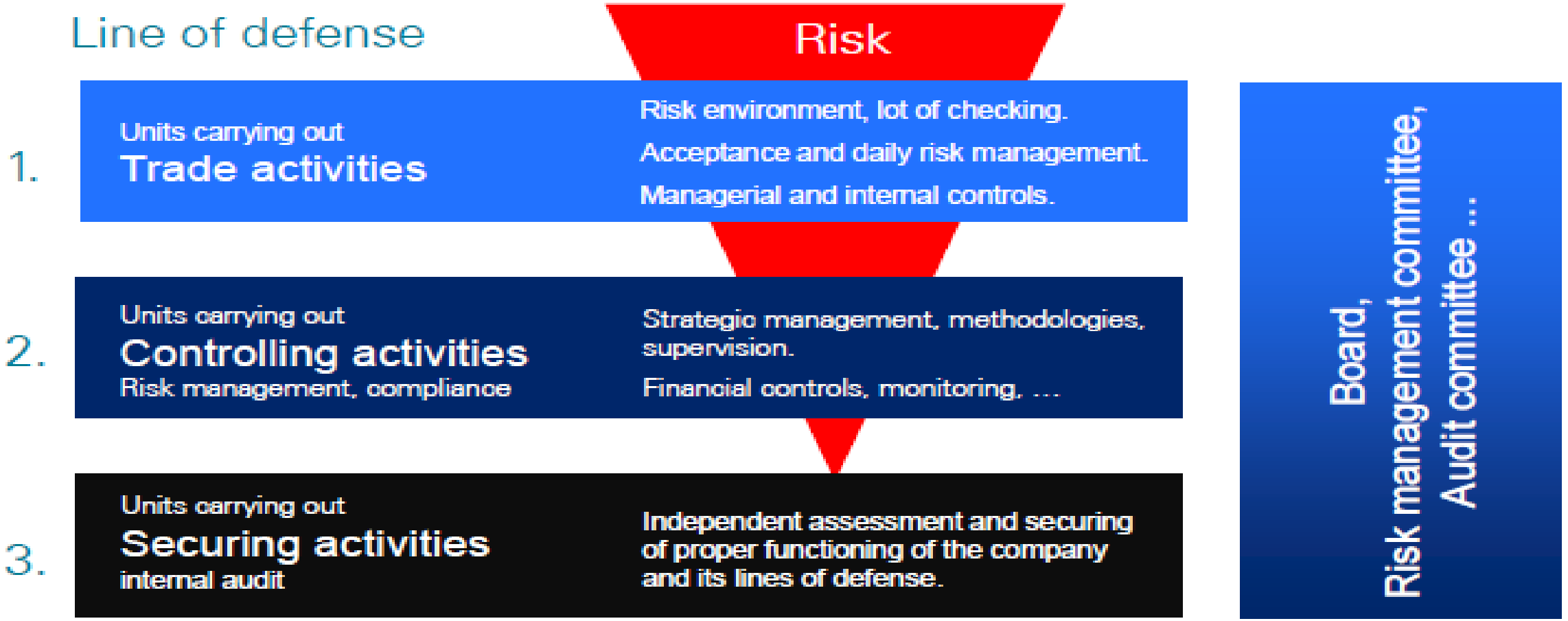
Communication, impact in the insurance company – risk culture

„Risk Culture“

- Management of risks is a matter for the whole company, it is not just the risk management department (incl. e.g. risk based KPIs). It is about active work with risks, not just passive monitoring.
- Risk appetite needs to be applied already in the first line of defence, should be understandable and easily applicable
- Top management should find out information coming from risk management as useful and relevant and seek for them, i.e. it is task of the risk management department to provide such information

Line of defense



Solvency II Requirements

Insurance and reinsurance undertakings shall have in place an effective **internal control system**.

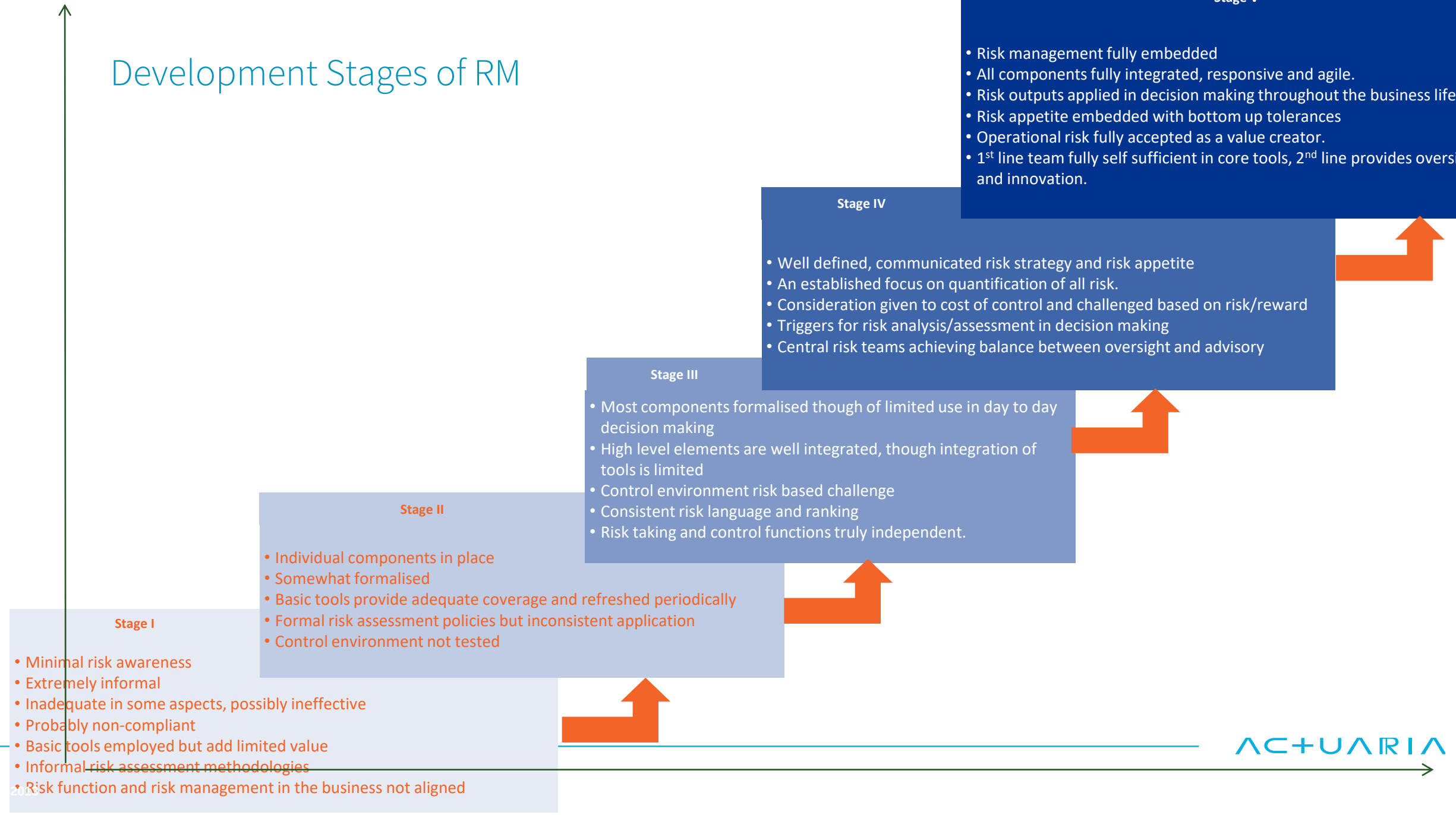
(Řídící a kontrolní systém pojišťovny - ŘKS)

- AMSB (Administrative, Management and Supervisory Body)
- committees – their tasks and responsibilities
- key functions

As part of its risk-management system every insurance undertaking and reinsurance undertaking shall conduct its **own risk and solvency assessment (ORSA)**.

Insurance and reinsurance undertakings shall have in place an **effective risk-management system comprising strategies, processes and reporting procedures necessary to identify, measure, monitor, manage and report, on a continuous basis the risks, at an individual and at an aggregated level, to which they are or could be exposed, and their interdependencies**. That risk-management system shall be **effective and well integrated into the organisational structure and in the decision making processes** of the insurance or reinsurance undertaking with proper consideration of the persons who effectively run the undertaking or have other key functions.

Development Stages of RM



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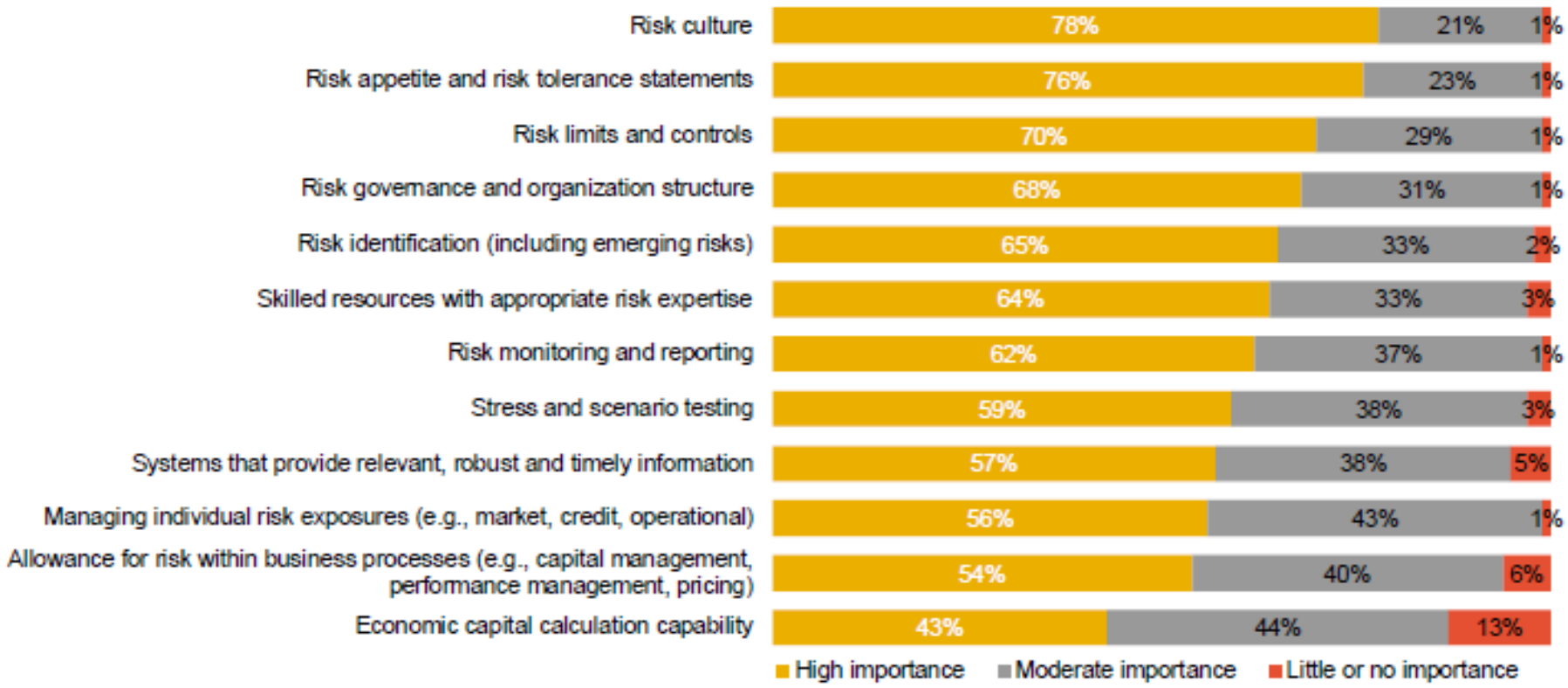
Our research shows insurers understand the role risk culture plays in contributing to ERM

How important is each of the following aspects in your ultimate/end-state vision for your ERM programme?



Eighth Biennial Global Enterprise Risk Management Survey 2015

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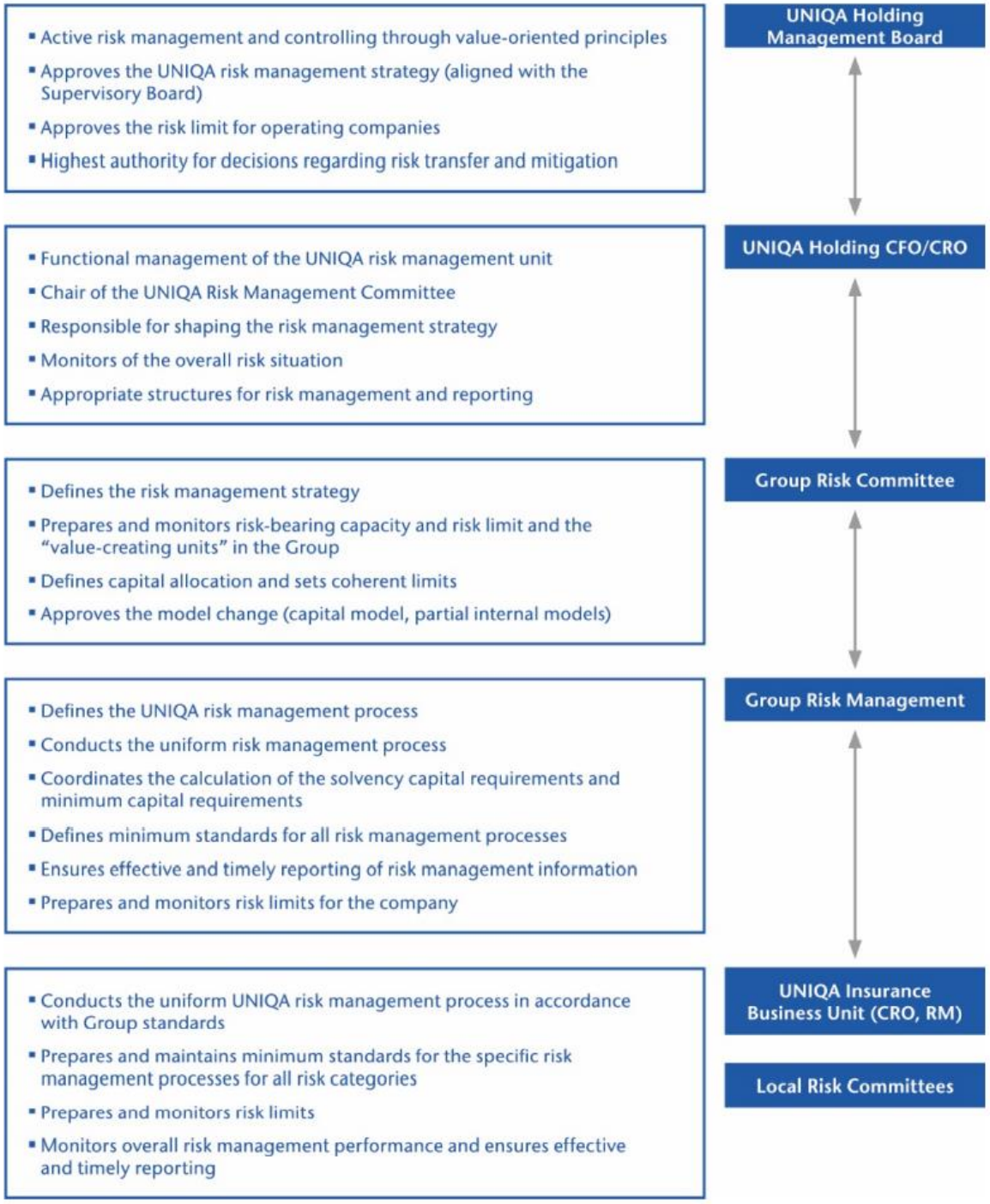
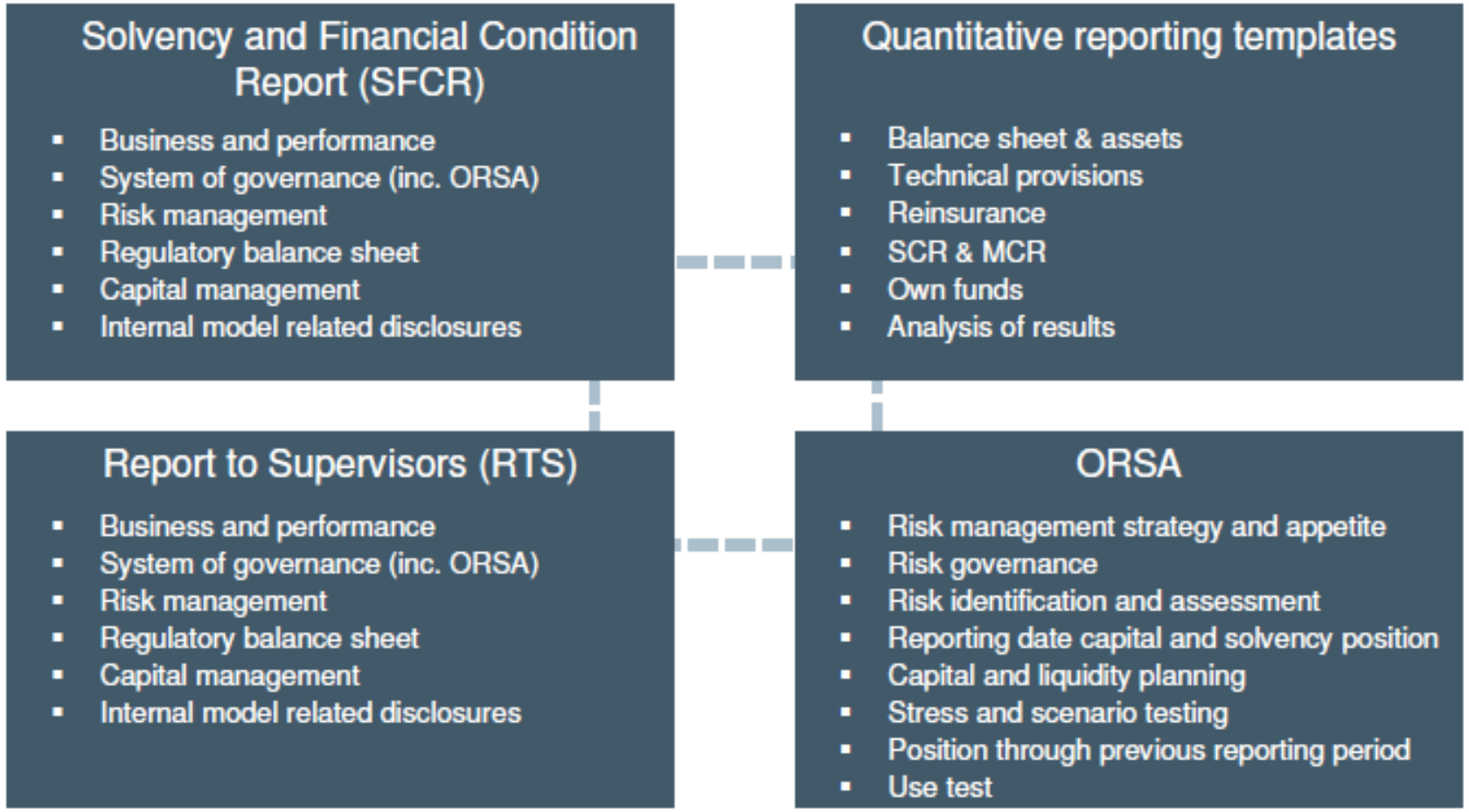


Uniqa_GB21_DE_2021-04-06_EN_Komplett.pdf (uniqagroup.com)

Internal & External Communication

- Annual report and its disclosures



https://www.actuaries.org.uk/documents/actuarys-role-orsa

1. and 2. Towers Perrin analysis of CP 58, 3. Based on FSA presentation on informal industry consultation on QTR (Apr 2010), 4. GIRO working party template

Kde se dozvědět víc?

Regulation – „Solvency II“
Česká asociace pojišťoven - LEGISLATIVA EU (cap.cz)
EUR-Lex - 32009L0138 - EN - EUR-Lex (europa.eu)

IAA Risk book
http://www.actuaries.org/index.cfm?lang=EN&DSP=PUBLICATIONS&ACT=RISKBOOK

Swiss Re Sigma
http://institute.swissre.com/research/overview/sigma/

Reports of supervisors and EIOPA
e.g. https://www.cnb.cz/cs/financni_stabilita/zpravy_fs/
https://www.cnb.cz/cs/financni_stabilita/zatezove_testy/

Profesní pracovní skupiny
- Česká společnost aktuárů
- Česká asociace pojišťoven
- European Association of Actuaries

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Why should we manage risks?

EJ Smith, 1907: "If someone asks me, how I would describe my 40 years of experience at sea, I would describe them as boring. Of course, there are winter storms, fog and similarities. But during my entire experience I cannot remember any havaries. I have only once seen a ship in distress. I have never seen a wreck, neither have I been in distress at sea, nor have I ever been in a dangerous situation, that could have led to a catastrophe."

Capt. Smith maintained that shipbuilding was such a perfect art nowadays that absolute disaster, involving the passengers on a great modern liner, was quite unthinkable. Whatever happened, he contended, there would be time before the vessel sank to save the lives of every person on board. "I will go a bit further," he said. **"I will say that I cannot imagine any condition which could cause a ship to founder. I cannot conceive of any vital disaster happening to this vessel. Modern shipbuilding has gone beyond that.„**

April 14, 1912 the SS Titanic sank after the collision with an iceberg. The accident demanded 1500 lives including that of captain EJ Smith.

http://www.encyclopedia-titanica.org/disaster-at-last-befalls-capt-smith.html

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Děkuji Vám za pozornost.

Jana ZELINKOVÁ

jana@zelinkovi.com

Regulace – Systemic risks

On 18 July 2013, the Financial Stability Board (FSB) published a press release endorsing the assessment methodology and policy measures published by the International Association of Insurance Supervisors (IAIS) discussed below, and naming the *firts nine globally systemically important insurers* - **G-SIIs**. The list will be published each November, starting in 2014 and initially comprises:

Allianz SE;
American International Group, Inc.;
Assicurazioni Generali S.p.A.;
Aviva plc;
Axa S.A.;
MetLife, Inc.;
Ping An Insurance (Group) Company of China, Ltd.;
Prudential Financial, Inc.; and
Prudential plc.

Regulace – Systemic risks

Enhanced supervision

These measures entail the development of Systemic Risk Management Plans, enhanced liquidity planning and management and the granting of direct powers over holding companies to group-wide supervisors. There is also a reasonably detailed discussion of:

- the nature of traditional insurance versus non-traditional insurance and non-insurance (NTNI) activities; and
- effective separation of NTNI business.

Effective recovery and resolution

The IAIS's proposals for the effective resolution of G-SIIs are based on the FSB's ***Key Attributes of Effective Resolution Regimes for Financial Institutions*** but takes account of the specificities of insurance. This entails the establishment of Crisis Management Groups, ***the development of recovery and resolution plans (RRPs)***, the conduct of resolvability assessments, and the adoption of institution-specific cross-border cooperation agreements.

Higher Loss Absorbency (HLA)

G-SIIs will be required to have HLA capacity. ***This may only be met by "highest quality capital", being permanent capital that is fully available to cover losses of the insurer at all times on a going-concern and a wind-up basis.*** In applying this requirement a distinction may be made based upon whether a firm's NTNI activities have been effectively separated from traditional insurance business. HLA may be targeted at the entities where systemically important actives are located and also take account of whether group supervisors have authority over any non-regulated financial subsidiaries.

A jak to vidí pojišťovna?

- Regulátor vidí systemic risk, z perspektivy pojišťovny mohu vidět riziko přeregulace
- Political risk
- Reputational risk (misselling, špatná interpretace produktů, …)

EIOPA's Supervisory Assessment of the SFCRs

eiopa

Main challenges:

- Expectations around the SFCR:
  - Comparability of the information disclosed has been one of the main concerns, in particular from analysists;
  - EIOPA also identifies comparability as one of the main added-value of the SFCR but considering the SFCR as a whole.
- Consideration of the proportionality/materiality principle;
- Causes of generalised gaps: sensitivity of information or poor practice?
- Right balance between regulatory/supervisory approach and allow market discipline to work.

Externí komunikace

- Reporty EIOPA

Table 2: MCR and SCR ratios by country. Weighted average and interquartile distribution. 2016 Q3

	SCR Ratio				MCR Ratio			
		Percentiles				Percentiles		
	Weighted average	25th	50th	75th	Weighted average	25th	50th	75th
AUSTRIA	243%	170%	220%	277%	758%	471%	618%	880%
BELGIUM	165%	125%	159%	243%	340%	284%	399%	593%
BULGARIA	175%	120%	172%	264%	335%	111%	187%	301%
CROATIA	238%	187%	245%	326%	693%	234%	495%	749%
CYPRUS	268%	125%	155%	237%	737%	192%	318%	648%
CZECH REPUBLIC	220%	158%	204%	275%	627%	193%	334%	689%
DENMARK	296%	204%	269%	386%	733%	374%	565%	933%
ESTONIA	192%	137%	206%	241%	538%	285%	534%	617%
FINLAND	195%	172%	288%	323%	658%	523%	908%	1214%
FRANCE	212%	155%	212%	329%	512%	359%	587%	935%
GERMANY	272%	172%	242%	398%	722%	439%	605%	1016%
GREECE	131%	124%	142%	190%	328%	213%	322%	375%
HUNGARY	215%	150%	217%	273%	522%	245%	452%	567%
IRELAND	165%	139%	190%	301%	451%	373%	523%	744%
ITALY	216%	132%	168%	225%	520%	282%	378%	480%
LATVIA	229%	129%	152%	229%	472%	133%	293%	353%
LIECHTENSTEIN	253%	152%	220%	351%	710%	322%	471%	692%
LITHUANIA	207%	136%	202%	225%	507%	268%	352%	495%
LUXEMBOURG	231%	154%	223%	311%	642%	336%	527%	837%
MALTA	379%	152%	216%	261%	898%	292%	401%	653%
NETHERLANDS	183%	157%	191%	290%	449%	367%	481%	762%
NORWAY	210%	156%	188%	236%	517%	348%	419%	653%
POLAND	262%	151%	228%	314%	815%	254%	432%	978%
PORTUGAL	138%	120%	154%	223%	389%	192%	341%	501%
ROMANIA	170%	128%	158%	205%	365%	148%	217%	393%
SLOVAKIA	226%	177%	214%	280%	577%	395%	487%	667%
SLOVENIA	247%	172%	208%	295%	705%	422%	645%	706%
SPAIN	225%	180%	246%	337%	556%	377%	587%	836%
SWEDEN	258%	171%	214%	271%	895%	378%	606%	861%
UNITED KINGDOM	145%	137%	162%	228%	438%	376%	522%	723%
TOTAL	211%	150%	206%	297%	562%	332%	506%	775%

Source: EIOPA [Solo/Quarterly/Published 20170628/Data extracted 20170614]. The weighted average represents the aggregate own funds (sum of all undertakings) divided by aggregate SCR or MRC