

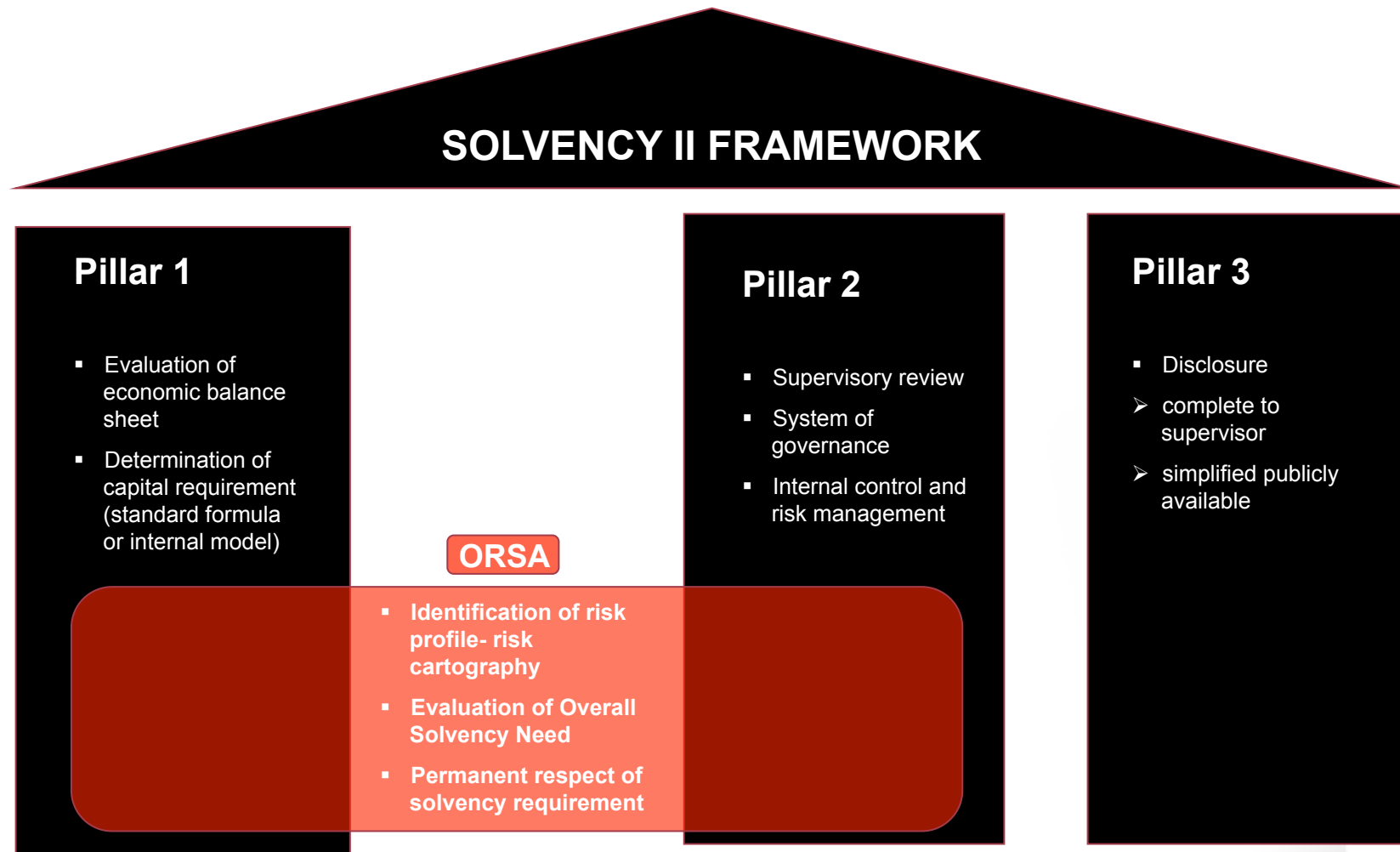
ORSA within Solvency 2 and American regulations

Feedback & Comparative study

AGENDA

- ORSA within Solvency 2 regulation and framework**
- ORSA within National Association of Insurance Commissioners (NAIC) regulation and framework**

The global Solvency II framework will not be in place before 2016, but the European Regulator (EIOPA) calls for a pre-application on Pillar 2 and 3, and on ORSA, in 2014



ORSA is the insurer's own evaluation of all the risks it bears, of its solvency and its capacity to finance its development and to absorb the fluctuations

ORSA is a key point in Solvency II framework

- ❑ Identify and measure all the internal or external risks the company is exposed to, with a prospective view, classify them to define its own risk profile**
- ❑ Taking into account these risks measures, its business planning, and its own risk appetite, evaluate its Overall Solvency Need and assess the adequacy of its own financial resources**
- ❑ Demonstrate the permanent control of solvency ratios, with an adequate risk control system**
- ❑ Elaborate a special report on ORSA process, at least once a year, but must be reviewed in case of significant change in risk profile. ORSA has to be an important input in strategic management decisions**

Identify and measure all the internal or external risks the company is exposed to, with a prospective view, classify them to define its own risk profile

Risk mapping

- ❑ Identification of risks not taken into account in the standard formula but quantifiable (govies, volatility risk ...)
- ❑ Identification of risks not taken into account in the standard formula and not easily quantifiable (reputation, emerging risks...)
- ❑ For risks taken into account in the design of the standard formula, verification of the adequacy of the proposed quantification
- ❑ Different risk indicators
- ❑ Risk policies and governance

The risk mapping is built with an analysis of the different processes and needs to question and to obtain input from people running these processes

Risk policies formalizes the management of each risk : description, process, indicators, limits, responsibilities

It may be difficult to identify and quantify some risks, but the more difficult is to go from a silo risk management to an multi-risk consistent and integrated one (each one has his own risk metrics, not always at the same mesh ...)

Overall Solvency Needs must have a prospective view and to be consistent with the Strategic Business Plan

Business Plan

It has to take into account the following elements :

1. **Business strategy** : new business prevision, underwriting policy, launches of new products ...
2. **Strategy of development** : internal or external development
3. **Investment policy** : investor's profile, Asset allocation, Asset/ Liability Management policy
4. **Current management actions** : bonuses, guaranteed rates, profit-sharing, reinsurance policy, dividend policy, spending cut ...
5. **Contingent management actions** : future actions the management would implement in case of deviation of the environment and degradation of the company's solvency position

Classical approach

Overall Solvency Needs will be the amount of capital the insurer should maintain in order to reasonably assure the respect of its defined risk appetite during the BP period...

Risk Appetite

Define a set of (few) strategic metrics the company wants to master :

- ❑ The measure
- ❑ The horizon of the measurement
- ❑ The accepted probability of failure and the process in such a case
- ❑ The organization of risk management and reporting to master the metrics

Examples of metrics :

- ❑ Accounting profit : “The probability of the annual accounting profit being less than X millions euros must be less than Y%“
- ❑ Economic value : “The probability of the Market Consistent Embedded Value being less than X millions euros during the next 5 years must be less than Y%“
- ❑ Solvency ratio : “The probability of the solvency ratio being less than X% during the next 5 years must be less than Y%“

The risk appetite must be defined at the highest level in the company. Risk Management Function will have to produce a lot of decision helpers : simulations, sensibility, performance/risk analysis ... is compulsory, either with an internal model, or a standard formula SCR

All the members of the board are not aware of risks and models : pedagogy is a big challenge for Risk Management Function

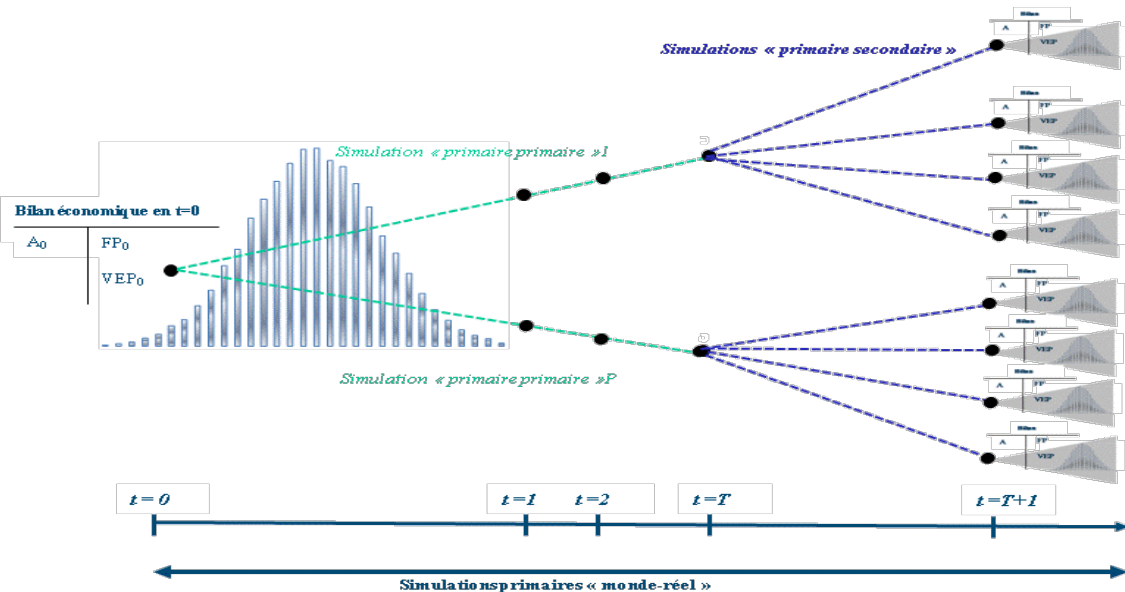
A Company's risk appetite must be as stable as possible from year to year. But human risk appetite depends on the immediate perception of risk and tends to be higher during the higher position in economic cycles

On the opposite, there is some time a huge gap between performance expectations and risk appetite during the bottom of economic cycles

Overall Solvency Needs will be the amount of capital the insurer should maintain in order to reasonably assure the respect of its defined risk appetite during the BP period...

Probability measurement

In life insurance (especially in France) Participating Feature Contracts impose a risk neutral stochastic approach to valuate the Best Estimate, and the participating feature option is path dependent
 The rigorous approach to measure the probability of breaking the limits should be very burdensome



- From 0 to T :
- simulate n « real world » economic scenarios
 - at each node compute , generate Y « risk neutral » scenarios and compute the solvency ratio
 - measure the numbers of scenarios where the limit is broken

The use of a limited set of contrasted multi risk-factors scenarios, calibrated to constitute an envelop of possible future situations, should be more adapted. It supposes to use a projection tool able to project a deterministic period with New Business, then a stochastic risk neutral one in Solvency 2 run off hypothesis



Such an approach is also much easier to explain to the members of the board

Overall Solvency Needs will be prospective and take into account various scenarios and stress tests...

Stress Tests

CP ORSA : Where appropriate, national competent authorities should ensure that the undertaking subjects the identified material risks to a sufficiently wide range of stress tests or scenario analyses in order to provide an adequate basis for the assessment of the overall solvency needs

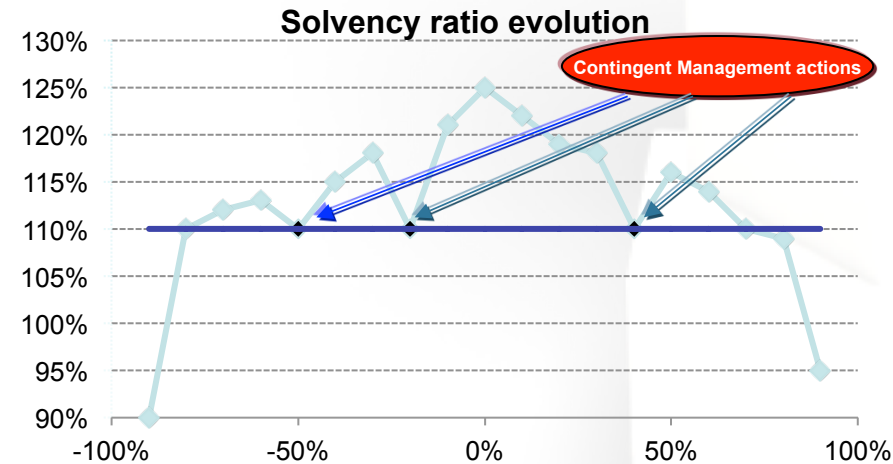
The scenario defined as the central scenario in the undertaking's Business Plan, even when it yields solvency ratios much higher than 100%, is insufficient to demonstrate that the company holds enough capital to finance its activity. It is also necessary to test alternative scenarios

The key factors

- Cover the entirety of material risks (including cross-effects)
- Perform a reasonable number of stress tests

Methods of calibration of stress tests

- Expert's judgements
- Calibration on historical data
- The choice of levels of stress 'relative' or 'absolute'
- The stress of trends
- Financial stress
- ...



Overall Solvency Needs will be the amount of capital the insurer should maintain in order to reasonably assure the respect of its defined risk appetite during the BP period...

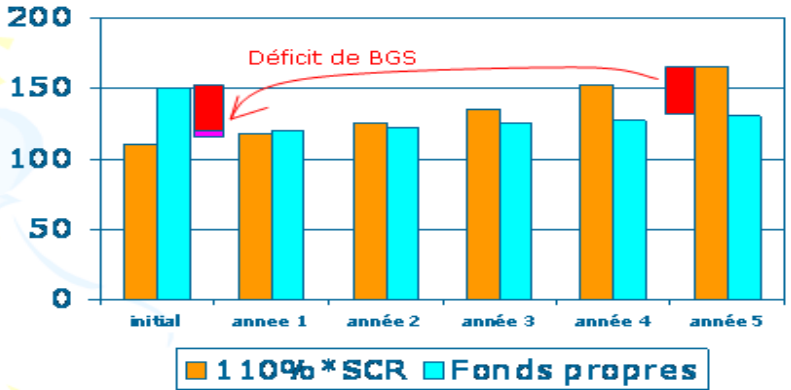
Overall Solvency Needs

- ❑ Takes into account the forward-looking dimension and the constraints which come from the risk appetite even in situation of stress
- ❑ Takes into account the capital needed because of the risks considered significant for the company and which are not or badly taken into account in the SCR, as well as the volatility of their measure
- ❑ Must be consistent with the risk appetite of the company
- ❑ Allows the use of future contingent management actions

Overall Solvency Needs will be the amount of capital the insurer should maintain in order to reasonably assure the respect of its defined risk appetite on solvency ratio in each multi risk factor stress scenario

Example for a risk appetite aims to maintain a 110% coverage of SCR

Etape 1 : Situations stressées

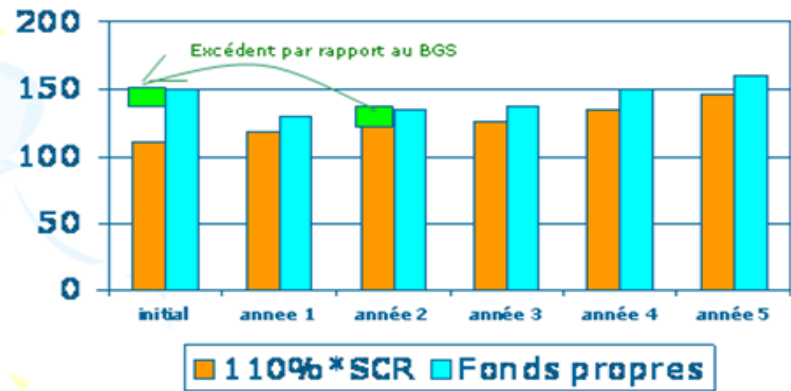


When the limit is broken in one scenario, Overall Solvency Needs will be higher than available own funds

If the available own funds are less than the Overall Solvency Needs, the management will have to use different tools to reduce the gap, for example future certain or contingent management actions :

- derisking (stop loss on market risk, reinsurance..)
- arbitrages between line of business, between market risk and underwriting risk...
- increase of own funds (adapt dividend policy, issue subordinated securities, raise capital...)

Etape 2 : Situations stressées Après ajustements



This approach is absolutely new at the level where the decisions have to be made and needs a performance/risk arbitrage between risk factors



Compliance, on a continuous basis, with the capital requirements :

Proxies

Constraint

- ❑ Requires the ability to rapidly estimate the deformation of solvency ratios.
- ❑ It is an estimate and not a full-blown calculation

In case of path dependency, proxies are often preferable in order to lower the calculation times

Possible proxies

- ❑ Reduce the number of necessary simulations : Optimization of the SdS approach : L. Devineau and S. Loisel [2009]
- ❑ Use closed formulas : Replicating Portfolios, LSMC, Curve Fitting

Main drawback

- ❑ The parametric approaches are particularly sensitive to changes in the structure of assets
- ❑ Particular attention should therefore be paid to the level of the validity of the form in the case of a change in the strategic allocation
- ❑ Especially in life insurance, these proxies are very sensitive to the asset allocation. The actuary must define a validity domain by integrating also a few sensitivities to this parameter. Furthermore, even with a stable asset allocation, measuring a financial risk by a stock market index factor may introduce a bias compared with actual market performance of the assets : a clear performance of the portfolio on a given asset class may impose a recalibration of the model

These proxies can also be used to measure the limits on Overall Solvency Needs consumption

Compliance, on a continuous basis, with the capital requirements :

Proxies

	SdS Accelerator	LSMC	Curve fitting	Replicating Portfolio
Principle	<ul style="list-style-type: none"> Build a norm for selecting the paths associated with the extreme quantiles 	<ul style="list-style-type: none"> Use least-squares fitting to estimate the conditional expected (net present value of margins) 	<ul style="list-style-type: none"> Find the curve that best fits the data points of the BOF 	<ul style="list-style-type: none"> Build a portfolio of standard financial instruments which matches the cash flows (Oschlin 2008)
Benefits	<ul style="list-style-type: none"> Gain in computation time Highlights the risk situations for the company 	<ul style="list-style-type: none"> Gain in computation time Once calibrated, easy to use model Provides a concise overview of major risks and their impact in terms of convexity 	<ul style="list-style-type: none"> Gain in computation time Once calibrated, easy to use model Provides a concise overview of major risks and their impact in terms of convexity 	<ul style="list-style-type: none"> Gain in computation time Once calibrated, easy to use model Provides a financial translation of the optionality's contract
Disadvantages	<ul style="list-style-type: none"> Saving processing time limited when adding risk factors The construction of the standard is not easy : (including sensibility to cross risk for exemple) 	<ul style="list-style-type: none"> Selection of regressors High costs of implementation Stability problem in time 	<ul style="list-style-type: none"> Selection of regressors High costs of implementation Stability problem in time 	<ul style="list-style-type: none"> Expert judgment in the choice of assets High costs of implementation Stability problem in time

Risk management policy / Risk budgets

The undertaking must set several written policies

In particular, a written policy concerning Risk Management should be available

- ❑ **Although it is not directly linked to the ORSA, the Risk Management policy should be very close to the ORSA process : it is anticipated that the ORSA process should be one of the main risk management tools set up within the entity**

- ❑ **The Risk Management policy should have a wider scope than the ORSA report and in particular :**
 - describe the action plans set up in order to react to several specific situations
 - describe the KPIs and KRIs set up in the undertaking
 - a minimum deals with the following themes: the risk management, internal control / compliance, compensation, outsourcing (as applicable), Internal Audit

- ❑ **The definition of Risk Budgets should also be a very useful tool in order to provide a link between the ORSA process and the daily life of the undertaking :**
 - through the ORSA, the undertaking estimates its Overall Solvency Needs
 - this estimation also enables the undertaking to identify possible surplus in its Own Funds, which could be used to take more risks (in accordance with the Risk Appetite)
 - these surplus should be allocated between the main risk takers : definition of Risk Budgets for the risk takers
 - various capital allocation techniques can be used

ORSA Report : example

- 1. Global presentation of the company/group and of the markets where it operates (financial, insurance)**
- 2. Governance**
 - global executive governance
 - risk governance / controls
- 3. Risk analysis**
 - main events of the year, eventual breaks of limits
 - risk mapping, taking into account not quantifiable risks and potential , assessment of adequation of pillar 1
 - measurement adequacy
 - risk ranking
 - ongoing and periodic controls
- 4. Risk Appetite : metrics / limits**
- 5. Forward looking assessment**
 - Methodology / projection framework (central scenario, stressed scenarios, main assumptions, evolutions from N-1 to N)
 - models (governance, limits), proxies, data management (data quality process..etc.), internal or external review
 - future management actions (current and contingent)
- 6. Overall Solvency Needs**
 - detailed results by scenario/ metric/ Business Unit or Entity / type of business
 - diversification effects, but also correlation and crossed effects
 - sensibility analysis and marginal analysis by risk factor on worst scenarios and analysis of management possible responses in such a case
 - assessment of Overall Solvency Needs and analysis of capital management adequacy
 - comparison with N-1 analysis
 - allocation of Overall Solvency Needs by risk factor / line of business / entity
 - limits of the approach : robustness, validity zone of proxies, description of circumstances when the process must be updated
- 7. On going compliance regarding SCR and Technical Provisions : monitoring during the year (limits, risk budgets, dashboards, written policies update...)**
- 8. Sign off of the Administrative Management or Supervisory Body, list of Internal Functions addressees of the report**

ORSA should become a major input for Board's decision-making framework

Administrative Management or Supervisory Body has to play a major role in ORSA

- steering of the process
- challenging the results
- endorsing the ORSA report and assuming the risk of breaking the SCR

ORSA results must be taken into account for strategic decisions

- strategic Business Plan / Asset Allocation
- capital Management / Dividend Policy
- product development and design
- acquisition of business

ORSA process has to be performed at least annual but must be performed again (non-regular ORSA) in case of any material change in the risk profile

- major change in asset allocation
- major new activity / product
- major risk occurrence ...

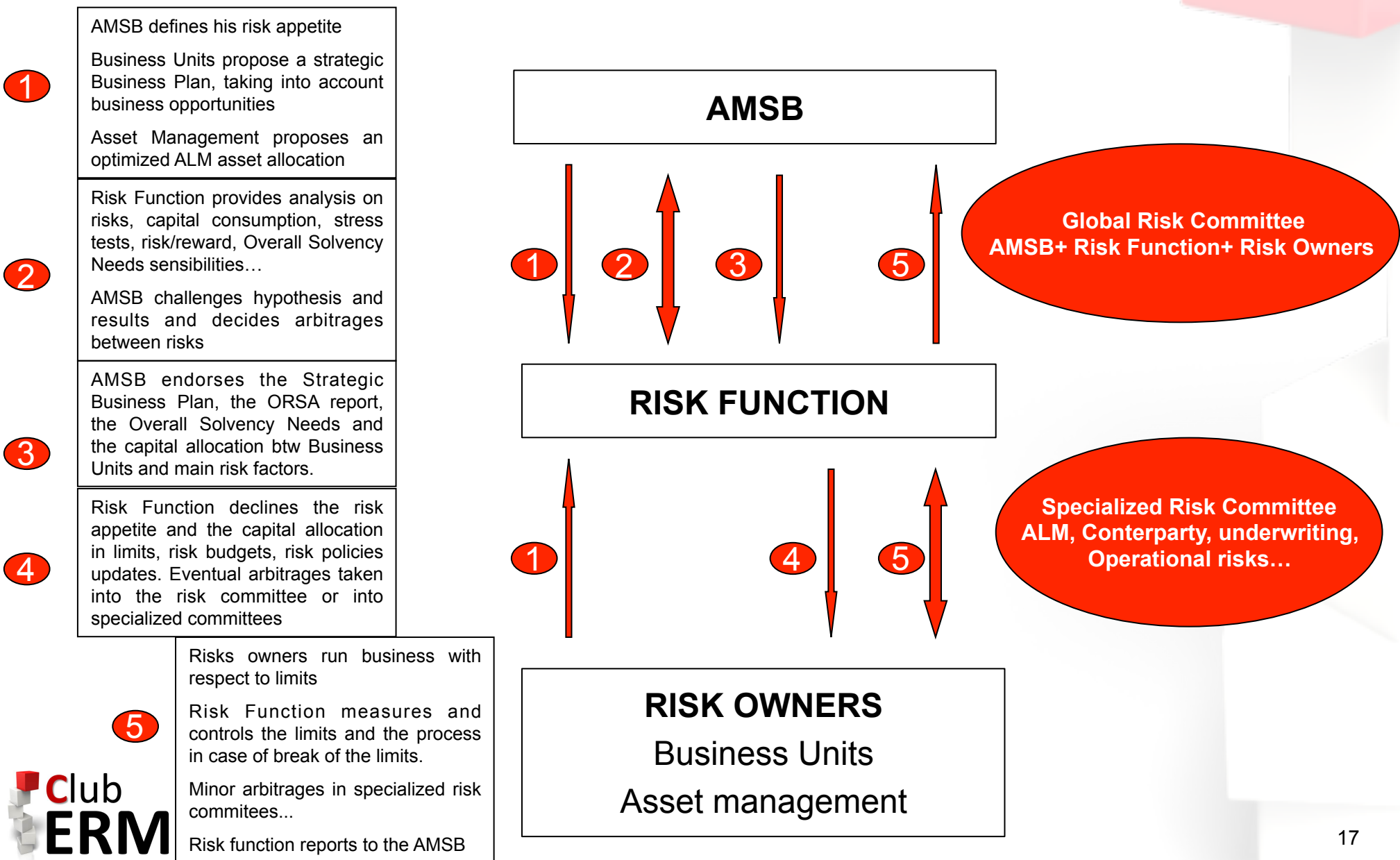
ORSA policy should define the cases where a non-regular ORSA will have to be performed

In case of a two-tier board system, with a General Executive Manager and a Board of Administrators, the term « AMSB » will have to be clarified in each country and the responsibilities attributed

This may cause problems with local rules of governance

The composition of some boards, especially for some little insurers, may be a challenge for the board's role in this process

Description of the process : Example



AGENDA

- ❑ **ORSA within Solvency 2 regulation and framework**
- ❑ **ORSA within National Association of Insurance Commissioners (NAIC) regulation and framework**

US ORSA

- ❑ **Was introduced as a part of an ongoing Solvency Modernization Initiative**
 - Movement towards principles based reserves for Life Insurance

- ❑ **Also motivated by US regulators desire to be in compliance with IAIS Insurance Core Principles**

- ❑ **Originated in the UK in the middle of last decade when all insurers were required to file an ICAP with the FSA**
 - Has been incorporate into Pillar 2 of Solvency II
 - Is now a part of the Insurance Core Principles of the IAIS (ICP 16)
 - Adopted by the NAIC to be effective in 2015

NAIC Guidance Manual (March 2012)

Three sections of ORSA Report

1. Description of Risk Management Framework
2. Assessment of Risk Exposures
3. Prospective Solvency Assessment

ORSA used in developing supervisory plan

RMORSA

Model Law (September 2012)

- To be effective by 2015
- Requires Risk Management Framework
- Requires ORSA process
- Requires ORSA report – that must be shown to board
- Smaller insurers exempt BUT, commissioner can ask of any insurer

Implementation

- No ORSA law in effect in the U.S
- Expected effective date : 01/01/2015
- CA, IA, NH, VT have active bills

Reported end of February

NAIC (US) ORSA

❑ Own Risk and Solvency Assessment (ORSA)

- An opinion on the adequacy of the adequacy of the ERM system and the Capital of the firm
- Made by the management
- required that board receives a copy
- Based upon their own assessment of company FUTURE plans and risks and capacity to bare risks
- Capacity to bear risk is a combination of
 - funds available and
 - Risk management systems

NAIC ERM standard

Five elements

- 1. Identify and Prioritize risks**
- 2. Risk Culture and Governance**
- 3. Risk Appetite, Tolerance and Limits**
- 4. Risk Control Process**
- 5. Risk Reporting and Communicating**

Risk Assessment

- ❑ **Quantitative or Qualitative Assessments**
- ❑ **Normal and Stressed Environment**
- ❑ **Stochastic Model or Stress Tests**
 - Documented Validation of Stochastic Model
 - Regulator may help to define stress scenarios

What goes into an ORSA Report

- 1. Review of the processes for systematic identification, analysis, evaluation and treatment of risks leading to a description of risk profile, risk register, heat map and/or risk control self assessment**
- 2. Evaluation with respect to the main product lines, the overall underwriting policy applied to this product**
- 3. Evaluation of the risk mitigation techniques**
- 4. Evaluation of operational risks**
- 5. Evaluation of risks not covered by local regulatory capital regime**
- 6. Evaluation of the assumptions of the risk assessment systems**
- 7. An analysis of the statistical methods used**
- 8. Evaluation of the valuation of assets, risk concentrations and off-the-balance sheet risks**

Description of Approach to Capital Adequacy Determination

Required for US ORSA report

- Definition of Solvency
- Accounting basis
- Business Included / Excluded
- Time Horizon
- Method for quantification
- Risk Capital Metric
- Defined Adequacy Standard
- Approach to Aggregation of Risks

When to do an ORSA?

Minimum schedule required by regulator

- ❑ **For US – Only annually**
- ❑ **From IAIS ORSA (ICP 16) when there is any sort of major change – actual or likely :**
 - Start up of new lines of business
 - Major changes in risk tolerance limits and / or reinsurance arrangements
 - Aggressive acquisition strategy to win new markets shares
 - Acquisition of other insurers and / or portfolios
 - Aggressive strategy to improve risk profile of existing portfolios
 - Major changes to premium levels (increase or decrease)
 - Disposal of existing portfolios
 - Major changes to capital distribution (e.g. payment of dividend / bonus or repurchase of own shares) or injection of new capital
 - Major changes in asset-mix
 - Major external changes in risk factors like insurance risks or markets risks
 - Major changes in business conditions as competition, legislation and legal practice

US ORSA Model Law

- ❑ **Exemption for Companies with less than \$500M of premiums**
- ❑ **Unless a member of group with more than \$1B of premiums**

Differences between US and EU ORSA

NAIC ORSA

- Group or Legal entity required
- Does not need to conform to RBC definition of solvency
- Structure of ORSA report prescribed – content not
- No more than annually
- All Large Insurers and groups; upon request for smaller

Solvency II ORSA

- Group and Legal entity
- Must conform to SII Solvency definition of solvency (1/200)
- Neither content nor structure prescribed
- Annually and upon major change in risk profile
- All insurers

ORSA Pilot Project – 2012 Feedback from Regulators

- 1. Comparative view of up to three years of financial data provided in the report**
- 2. Mapping of legal entities to business units described in the Report**
- 3. Glossary of terms and acronyms that are not defined in the body of the Report**
- 4. Detail on what the risk limits actually are to support the assertion that the Company has risk limits**
- 5. Perform combined stress scenarios in addition to single stress scenarios**
- 6. When using tables and graphs, provide an explanation of the table or graph for better understanding**
- 7. Provide an explanation of how capital models are calculated and discuss the group capital analysis performed by the insurer/group**
- 8. If the insurer/group is international, the ORSA should include overall group capital**

ORSA Pilot Project – 2012 Feedback from Regulators

- 9. List of risk owners (i.e. department accountable for the risk)**
- 10. Explanation of how compensation and incentives are tied to risk management**
- 11. Include Heat Maps**
- 12. When using multiple capital models, create a graphical illustration to compare the different model results**
- 13. If the ORSA references other documents, make those documents available upon request**
- 14. Provide more stress testing on liquidity, especially for life insurance business, rather than a single focus on capital**
- 15. Provide an executive summary for large, complex ORSA reports**
- 16. Discuss emerging risks in the prospective risk section of the ORSA**
- 17. Identify risks associated with intercompany dependencies**

Risk Capital Determination Methods

- 1. Standard factors**
- 2. USP Models**
- 3. Stress tests**
- 4. Simplified stochastic**
- 5. Partial internal models**
- 6. Full internal models**
- 7. Multi-year models with Management Actions**

New York State Circular Letter 2012

- ❑ **Requires all New York domiciled insurers to have an ERM function**
 - headed by an appropriately experienced individual
 - with the requisite authority and
 - access to the board of directors and senior management
 - adequately resourced and
 - has competent personnel who are able to
 - provide the insurer's board of directors and management with ongoing assessments of the insurer's risk profile

- ❑ **And goes on to delineate the ERM function as in ICP 8**

AM Best ERM Criteria & SRQ

❑ 2008 published ERM Rating criteria

❑ 2010 requested all companies answer 2 pages of ERM related questions

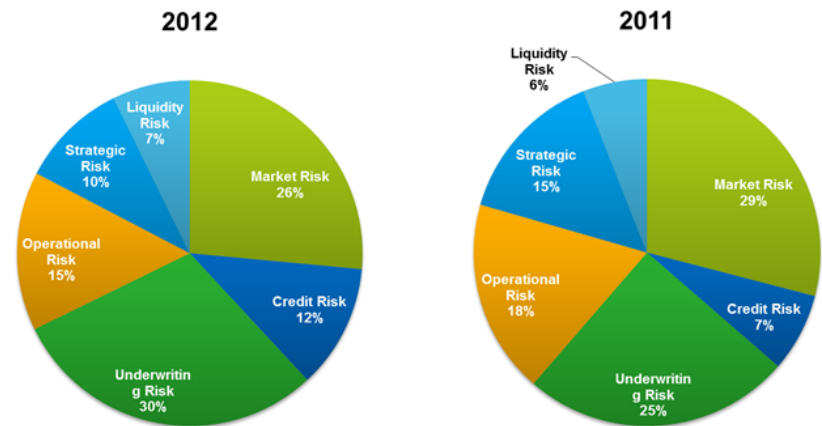
- Risk Culture – Staff
- Risk Identification/Measurement/Monitoring
- Economic Capital
- Specific Risk Question
 - Inflation for Non-Life Insurers

Largest Potential Threat to Financial Strength Identified by Management



Willis Re MANAGING EXTREMES

Average Risk Profile



Source: Willis Re 2013 Survey

Thank you for your attention

