

# Solvency II capital requirements

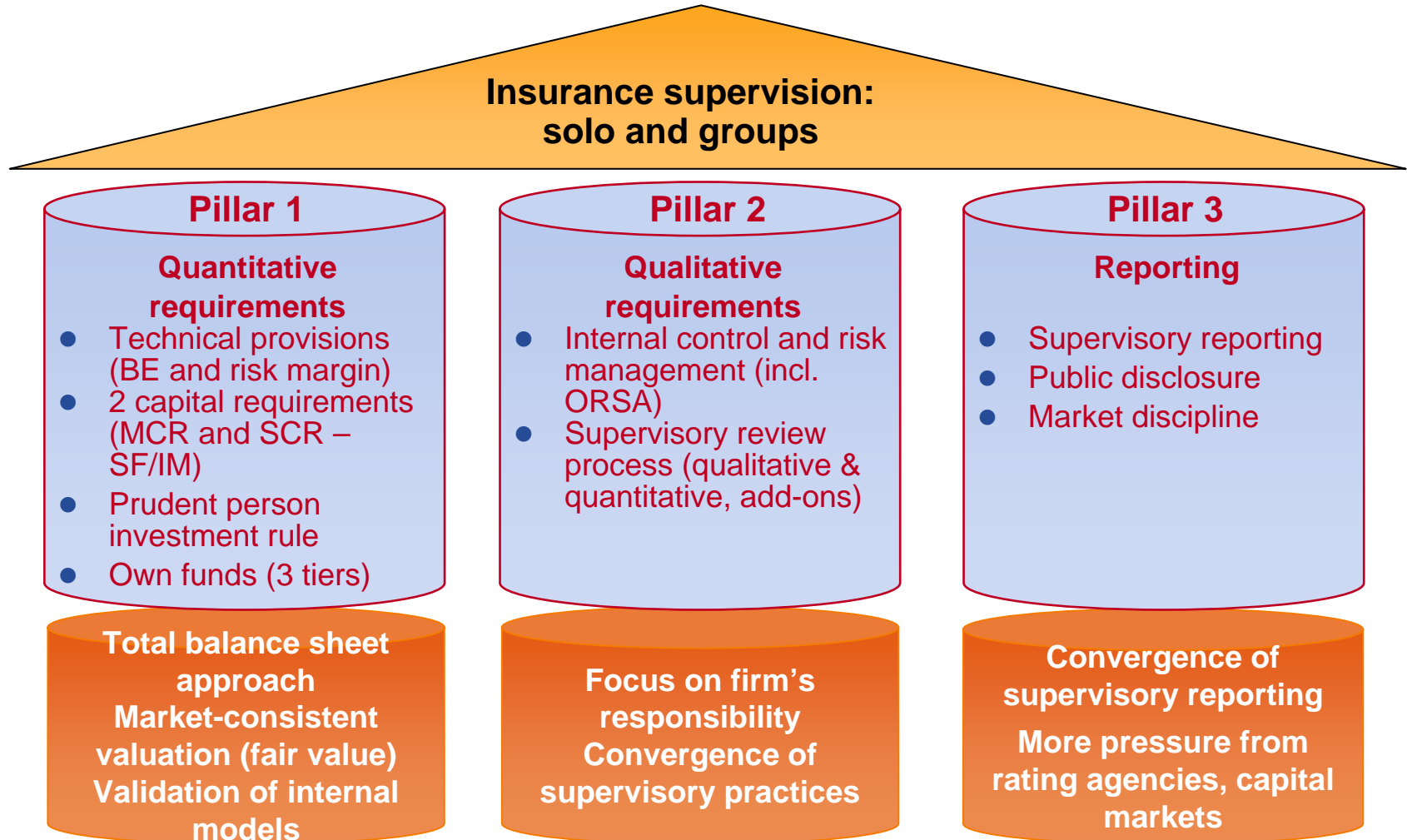
*Peter Braumüller*  
*CEIOPS Vice Chair*

*CNSF's International Seminar*  
*México, 28/11/2008*

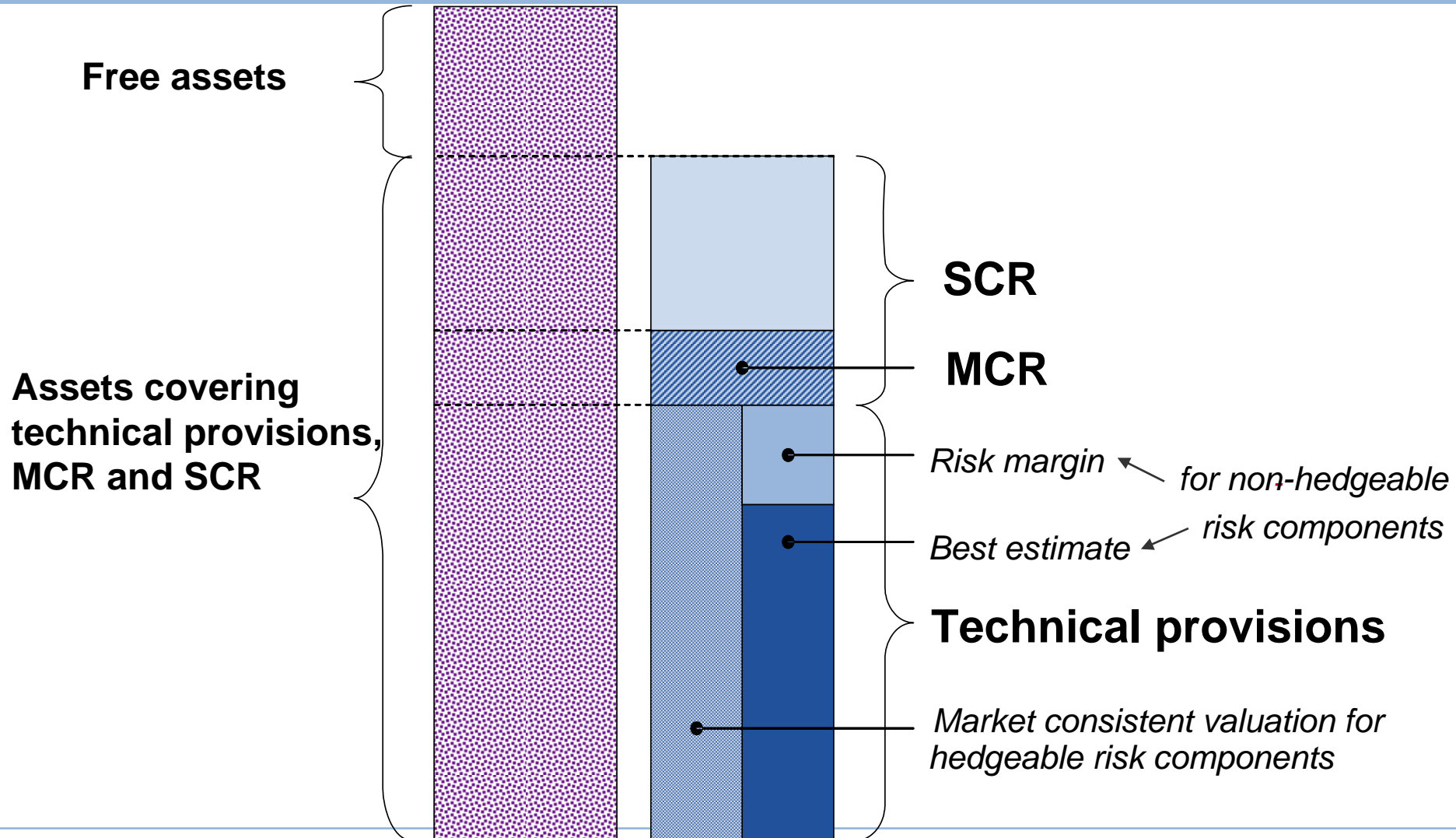
# Outline of the presentation

- Capital requirements in the broader picture
- Definition of the SCR
  - SCR standard formula calculation
  - SCR internal model calculation
- Risk mitigation
- MCR
- Dynamics of capital requirements

# Introduction: importance of capital requirements



# Total balance sheet approach under SII



# Definition of the SCR

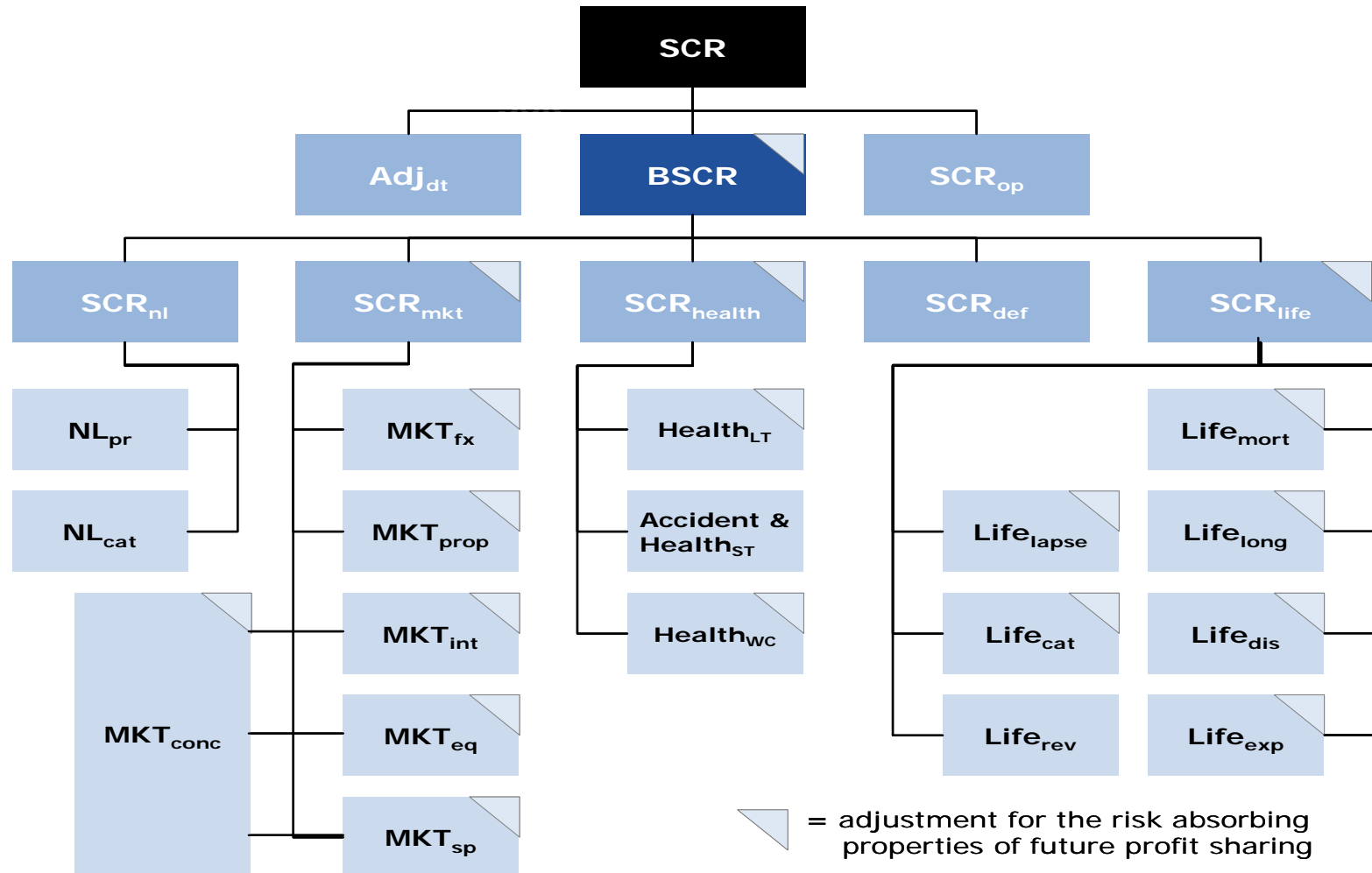
The SCR should deliver a level of capital that

- enables an insurance undertaking to absorb significant unforeseen losses
- over a specified time horizon and
- gives reasonable assurance to policyholders that payments will be made as they fall due.

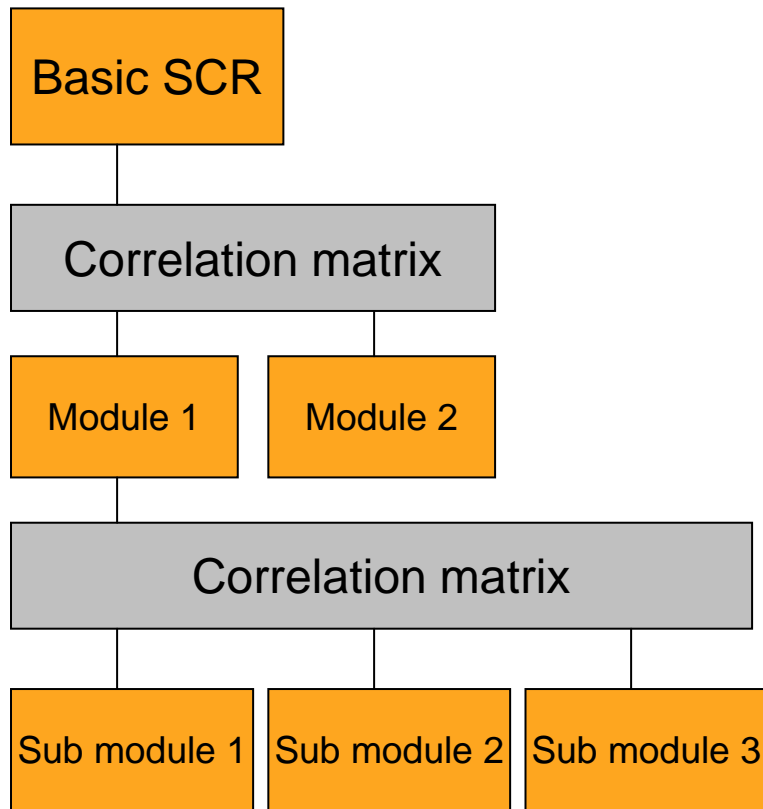
# Definition of the SCR

- Risk = change in the basic own funds
- Event to be averted = “ruin” = negative basic own funds
- Risk measure = Value-at-Risk, confidence level of 99.5 % = “1 in 200 event”
- Time horizon: 1 year
- The SCR takes account of:
  - All quantifiable risks (underwriting, market, credit, operational)
  - All potential losses over 1 year (i.a. changes in the value of assets and liabilities)
  - Net impact of possible risk mitigation techniques (reinsurance, securitisation, etc.)

# Modular structure of the SCR



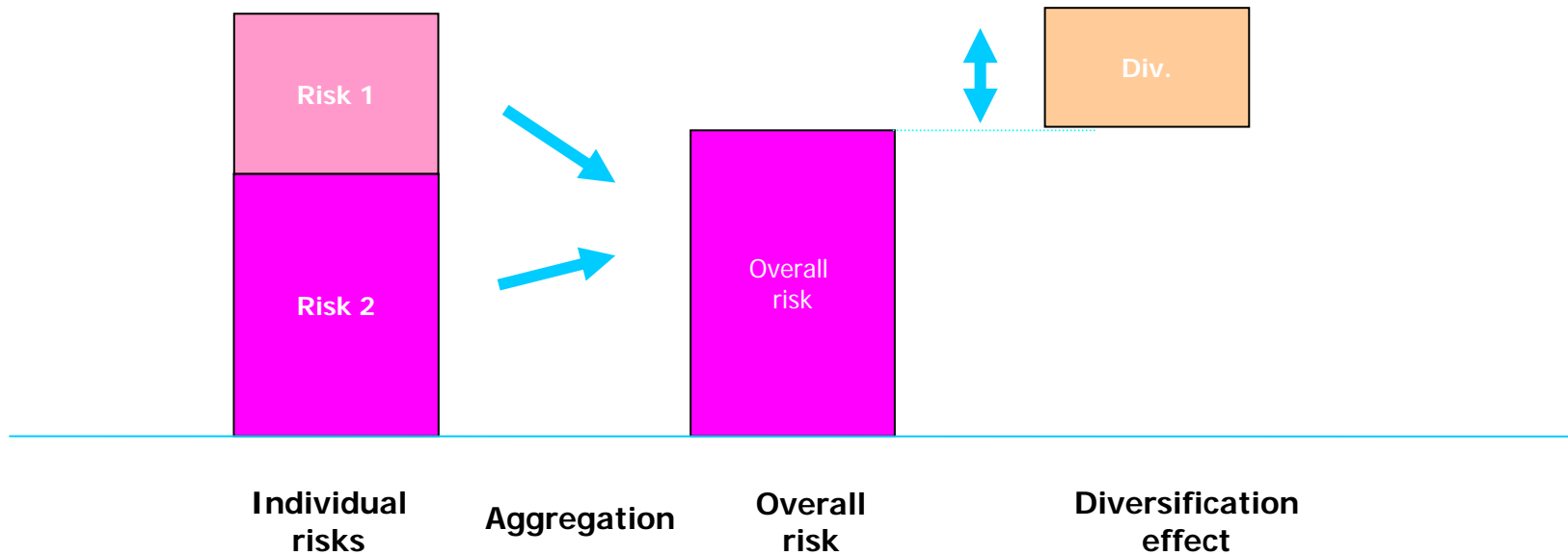
# Correlation between the risk modules



<i>CorrSCR</i>	$SCR_{mkt}$	$SCR_{def}$	$SCR_{life}$	$SCR_{health}$	$SCR_{nl}$
$SCR_{mkt}$	1				
$SCR_{def}$	0.25	1			
$SCR_{life}$	0.25	0.25	1		
$SCR_{health}$	0.25	0.25	0.25	1	
$SCR_{nl}$	0.25	0.5	0	0.25	1

Levels of integration of individual risk modules by pre-defined correlation matrices

# Basis of SCR calculation: diversification effects



# Factor based or scenario based capital requirements

- **Scenario analysis:** Simulation of an alternative set of parameters within a model in order to establish the impact on the outcome.
  - Historical scenarios
  - Hypothetical scenarios
  - One-off events (e.g. simulation of strategic decisions)
  - Stress test: type of scenario analysis where the change in parameters is considered to be significant or even extreme
- **Factor based:** application of coefficients to earned premiums, technical provisions,...

# Definition of the capital charge

Common starting point:

**Net asset value = assets - liabilities**

under market-consistent valuation of assets and liabilities

## Eg. Equity risk

Shock:

Fall of 32% (global)

Fall of 45% (emerging markets)

(correlation of 75%  
between the two sectors)

## Eg. Longevity risk

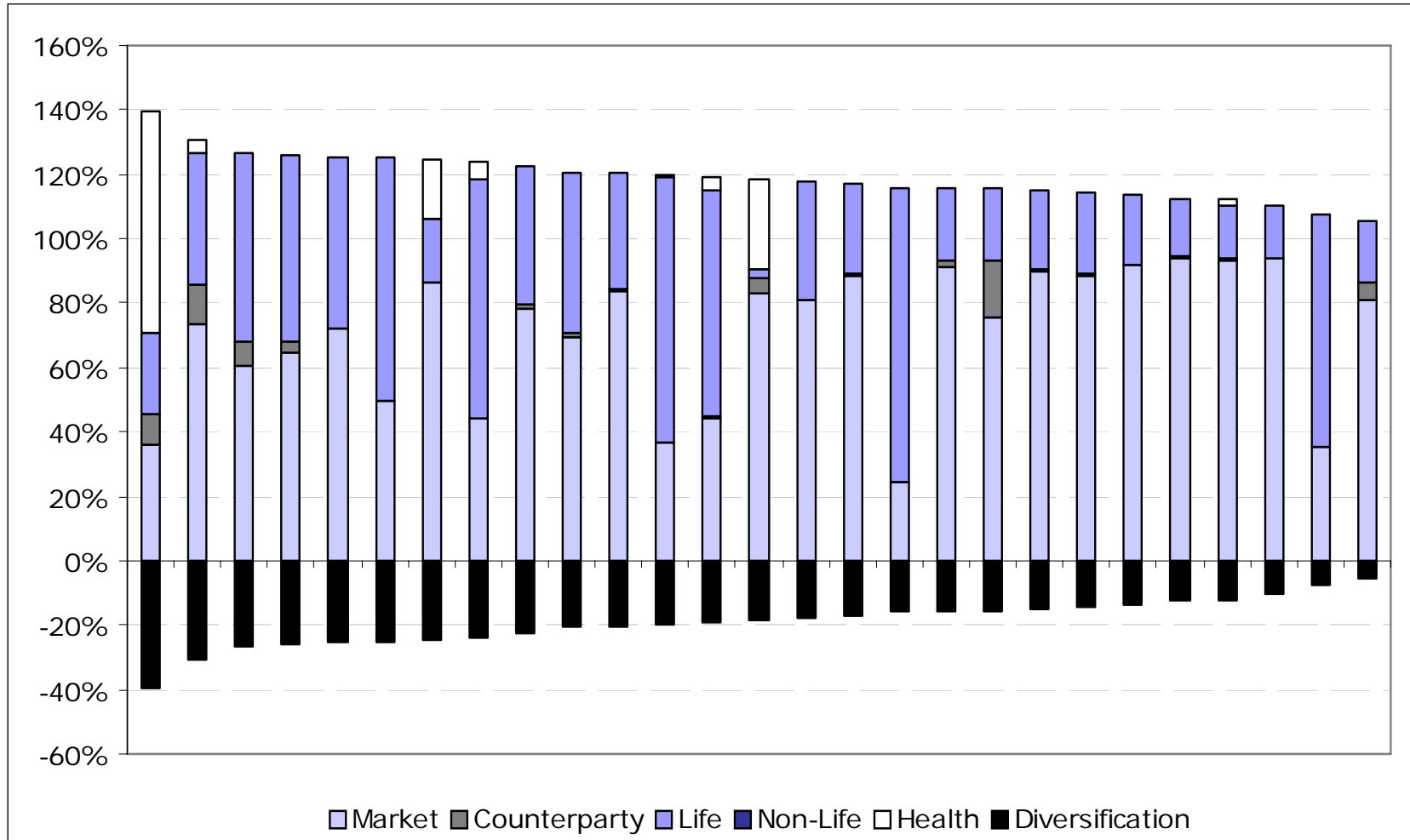
Shock:

Permanent 25% decrease in mortality  
rates for each age

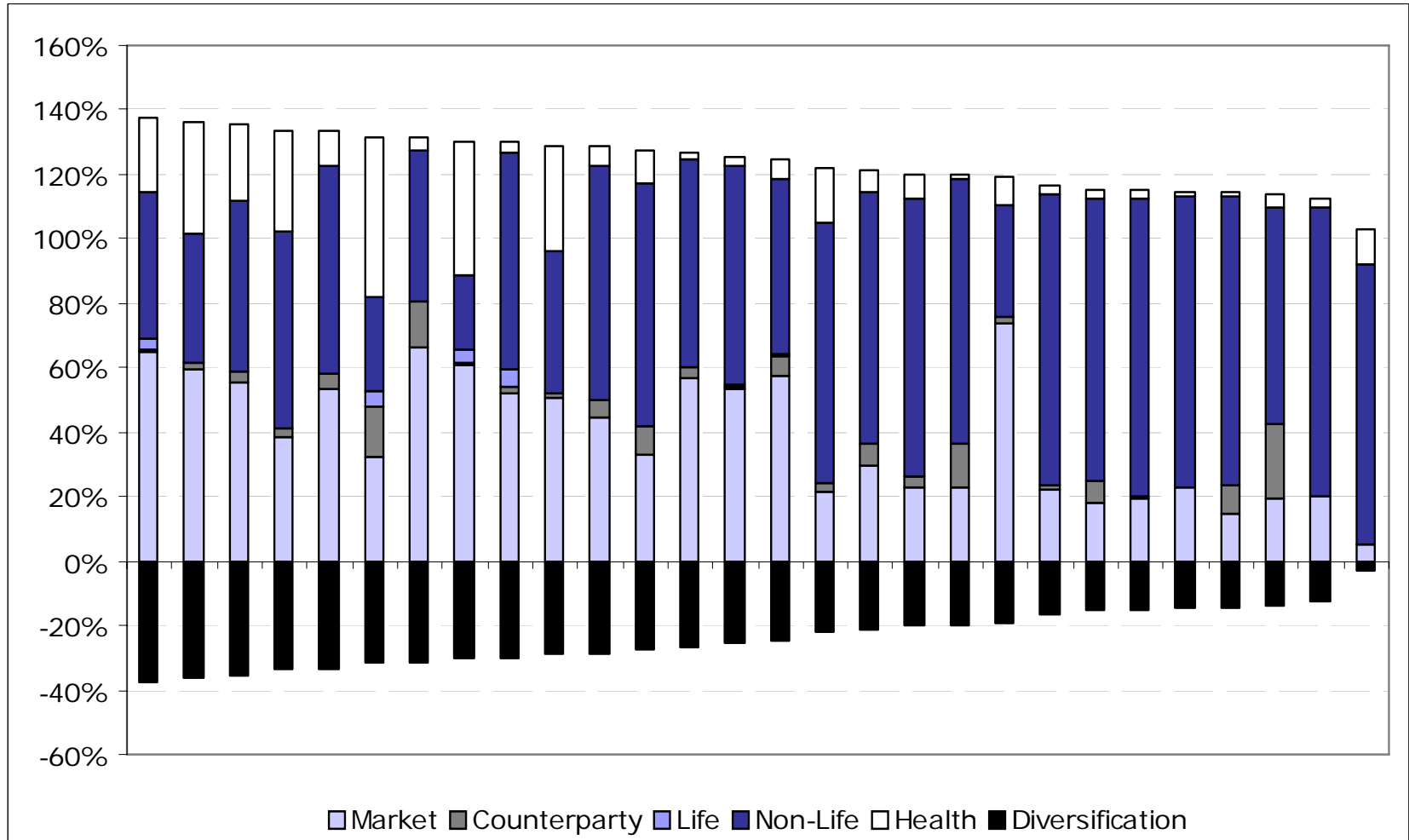
## Capital charge:

Impact of the simulated shock on net asset value  
= economic loss in solvency balance sheet

# QIS4: BSCR Composition (life)



# QIS4: BSCR composition (non-life)



# Internal models

- What is an internal model?

***“A risk management system developed by an insurer to analyse the overall risk position, to quantify risks and to determine the economic capital required to meet those risks” – Solvency II Glossary (CEA/GC)***

- What is the purpose of an internal model?

***To fully integrate processes of risk and capital management within the insurer***

# What are the expected benefits?

- **Improved risk sensitivity** of SCR related to the insurer's specific profile leading to a more adequate modelling of non-standard contracts
- **Better alignment** of regulatory capital requirements with economic capital
- **Encouragement of innovation in risk management methodology** leading to higher competitiveness through better risk management and hence lower costs of capital

# Approval process

- Formal application
  - Documentary evidence that requirements are met
  - The administrative or management bodies have overall responsibility for application
  - Systems must be in place to ensure internal model operates properly on a continuous basis
  - Supervisors have six month to grant approval
  - Reason for rejection must be provided
- Requirement to run standard approach in parallel for two years

# Six main tests/requirements...

- Insurers must satisfy:
  - Use test (art. 118)
  - Statistical quality standards (art.119)
  - Calibration standards (art. 120)
  - Profit and Loss Attribution (art.121)
  - Validation standards (art. 122)
  - Documentation standards (art. 123)
  
- Use of external vendor models does not exempt insurers from any of the standards

# Standard formula or internal model?

- Half of QIS4 participants commented on future use of internal models:
  - Majority of companies plans to use a (partial) internal model
  - Size of company relevant: small companies – partial IM; large companies – full IM
  - Comparison with SF: majority of respondents expects that the use of an IM would result in decrease of SCR
- Quantitative input on current IM results following QIS4: lower SCR on average
  - Caveats to comparison: IM vary among companies, different structure and correlations, other risks
  - Further work on calibration of risk modules

# Risk mitigation

- Can lead to reduction of the capital charge
- Asset side (e.g. financial hedging) or liability side (e.g. reinsurance)
- Risks acquired in process of risk mitigation (hedging, derivatives, default risk)
- QIS4 principles for recognition of risk mitigating tools:
  - Substance over form
  - Legal certainty, effectiveness and enforceability
  - Liquidity and ascertainability of value
  - Credit quality of provider of risk mitigant
  - Direct, explicit, irrevocable and unconditional features
  - Criteria for credit derivatives, collateral

# MCR

- MCR: minimum level of security below which the amount of financial resources should not fall (=safety net).
- When the amount of eligible basic own funds falls below the MCR
  - ⇒Withdrawal of licence if the undertaking is unable to re-establish the amount of own funds to the level of the MCR within a short period of time (= ultimate supervisory action)
- Characteristics of the MCR calculation in the Directive: simplicity and auditability, safety net, calibration which ensures interplay with SCR (80-90% VaR), absolute floor

# Diversity of approaches to the MCR

- **Modular approach** tested in QIS3:
  - Aggregates capital charges for the different risks of the company for market and underwriting risk but in simpler way than in SCR calculation (two alternatives were tested, of which one more sophisticated)
- The **compact approach** supported by the industry:
  - CEA proposal: MCR equal to 1/3 of the SCR (standard formula or internal model)
- **Margin over liabilities (not tested in QIS3)**:
  - Fixed percentage of the technical provisions
- The **combined approach** tested in QIS4: complementary advantages of compact and MoL approaches

# MCR design in QIS4

⇒ Combined approach tested in QIS4:

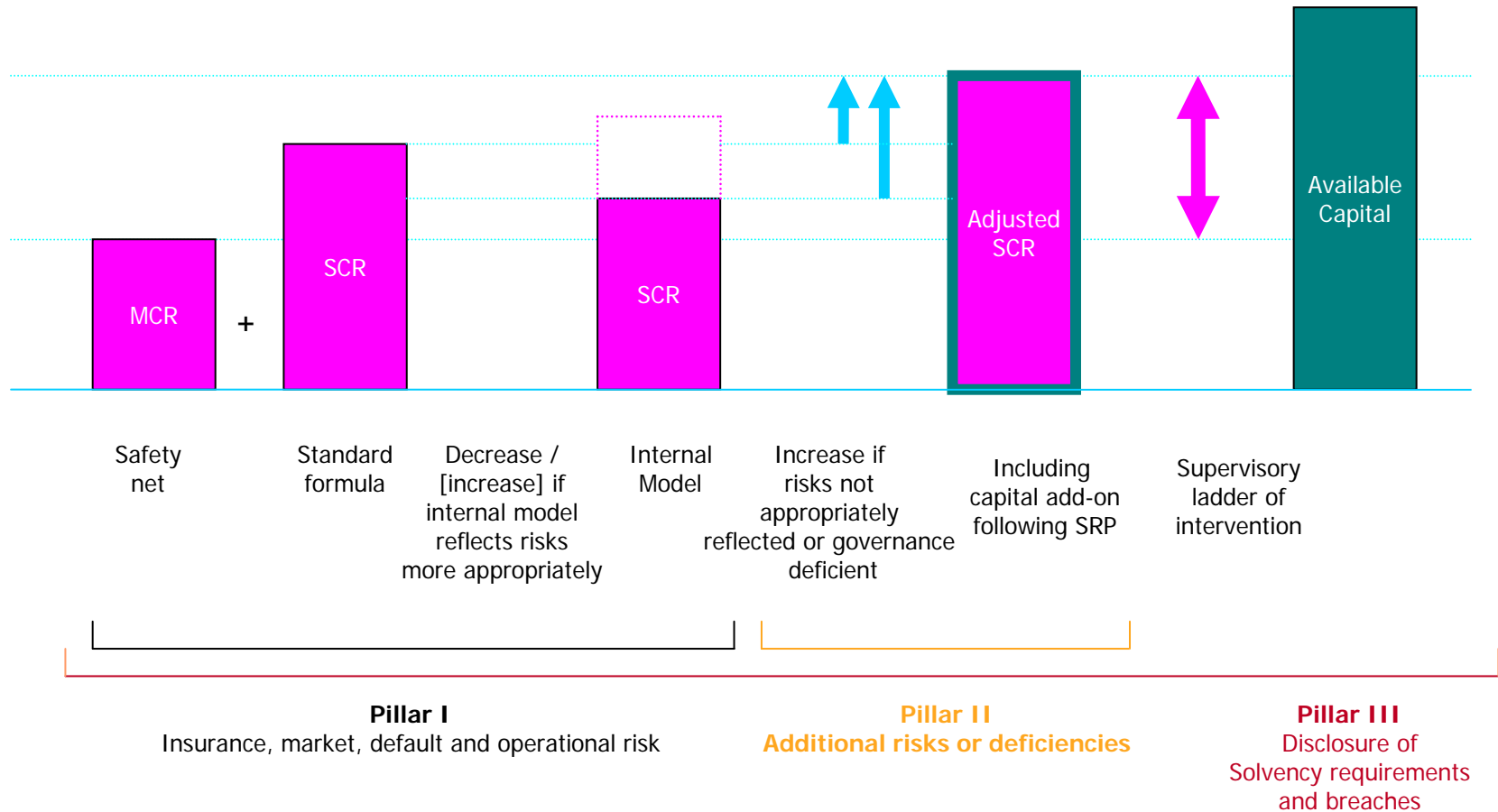
Simplification of modular approach, builds on MoL

Basically = Higher between fixed % of premiums and fixed % of TP

European Commission asked to add a 20 % floor and 50 % cap calculated on basis of SCR

- Acceptable compromise for the majority of supervisors
- Better received by industry than the approach tested in QIS3
- Practicable calculation

# Dynamics of capital requirements



# Supervisory assessment of capital requirements

- The SCR is **calculated at least once a year**.
- It is **monitored** on a **continuous basis**, together with the amount of eligible own funds.
- It must be re-calculated **as soon as** the risk profile of the undertaking deviates significantly from the assumptions underlying the last reported Solvency Capital Requirement.
- The supervisor **can** ask the company to re-calculate it.
- Non-compliance: realistic **recovery plan** / re-establish level of own funds or reduce risk profile (MCR: **finance scheme**)
- All supervisory powers necessary to safeguard the protection of the policyholders

# Recovery plan and finance scheme

- Estimates of income and expenditure
- Forecast balance sheet
- Estimate of the financial resources to cover the TP, SCR and MCR

**Thank you for your attention!**

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