



CEIOPS

Committee of European  
Insurance and Occupational  
Pensions Supervisors

# Quantitative Impact Study 4

## Summary results and main messages

**Stakeholder Meeting**

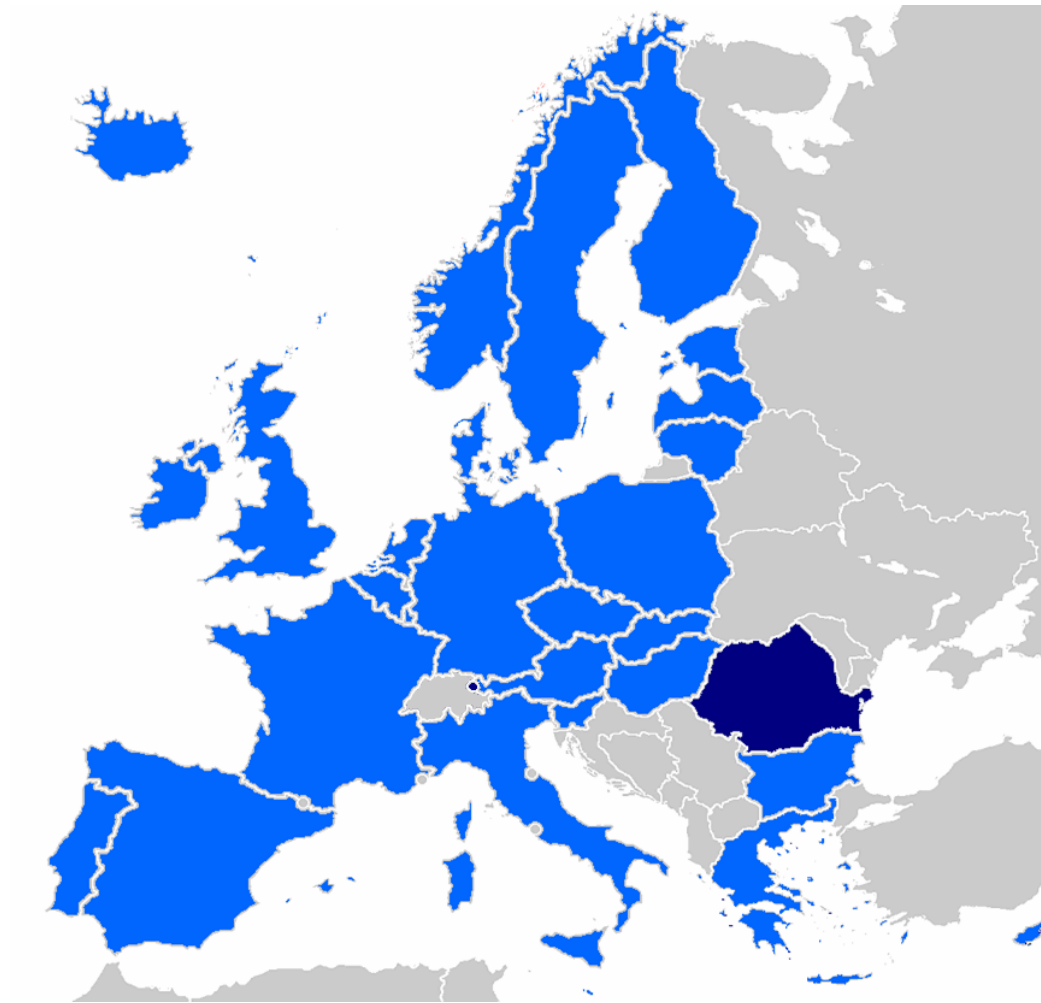
Frankfurt,

20 October 2008

# Agenda

- **Welcome and introductory remarks**
  - Klaas Knot, CEIOPS Managing Board member
- **Introduction to the QIS4 report, General findings**
  - Patrick Darlap, QIS4 Task Force leader
- **Valuation of assets and liabilities (other than TP)**
- **Technical provisions**
- **Own funds**
- **SCR - standard approach**
- **MCR**
- **Internal models**
- **Group solvency**

# Impressive Participation

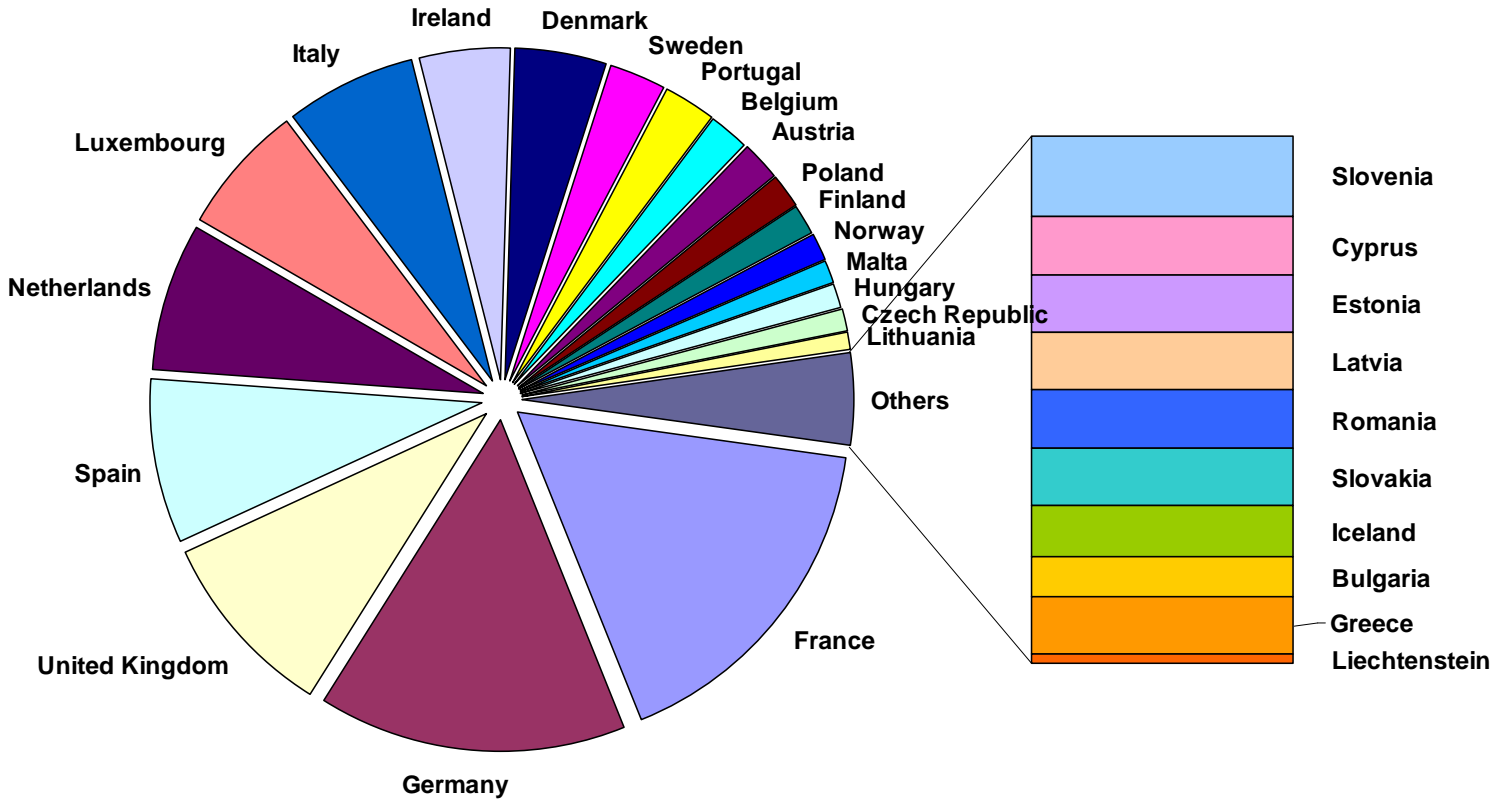


All 30 EEA  
Member Countries

New in sample:

- Romania
- Liechtenstein

# 1412 Solo Participants



## Participation rate (under scope of Solvency II)

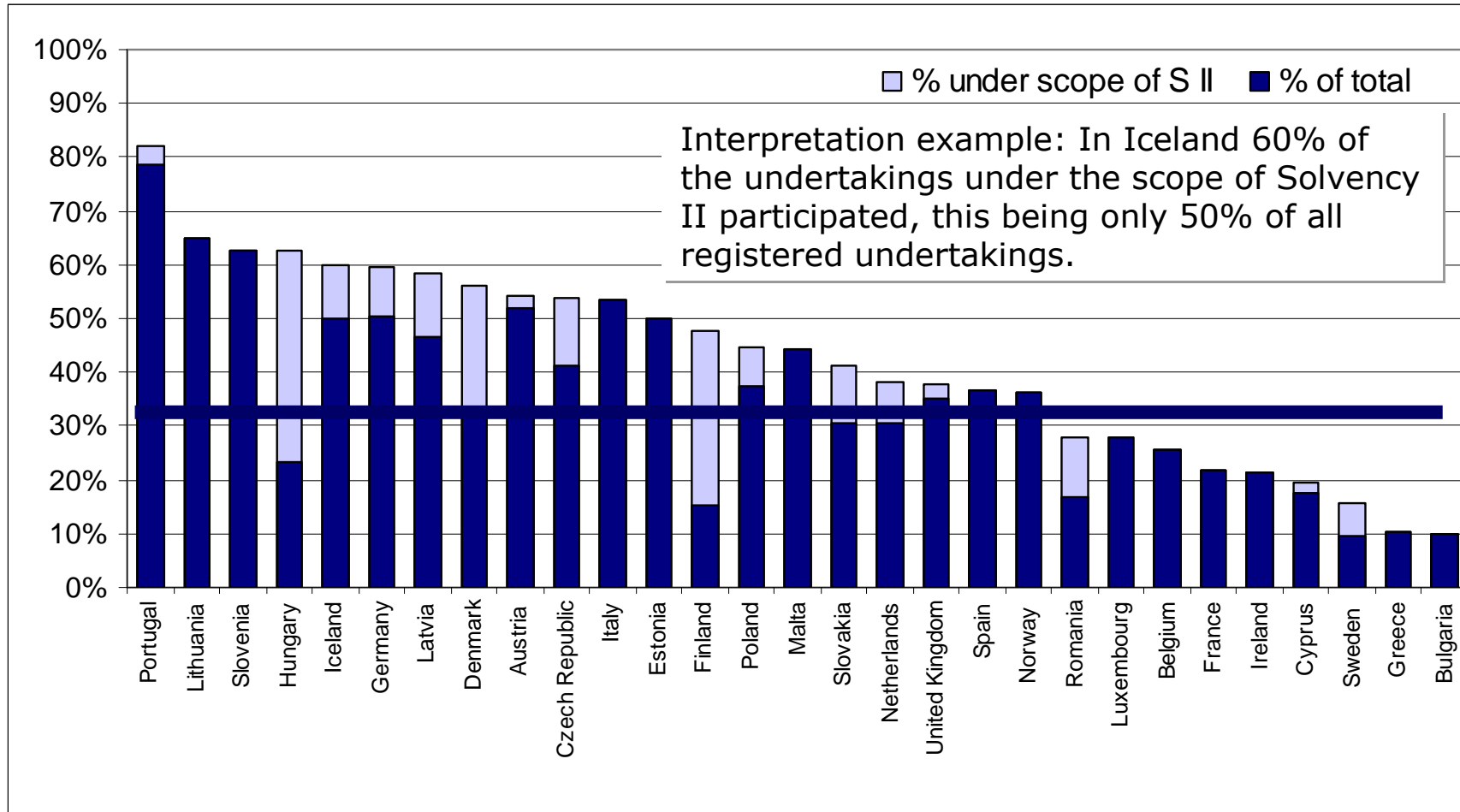
1412 Solo Insurance Companies

**Overall participation rate: 33.6%**

686 P&C-Insurers:	32.0%
351 Life-Insurers:	41.5%
227 Composite-Insurers:	31.9%
49 Reinsurers:	27.1%
99 Captives:	19.2%

(all ratios based on national participation rate information)

# Participation rate: 33.6%



## Participation rate

**Overall participation growth: + 37.4%**

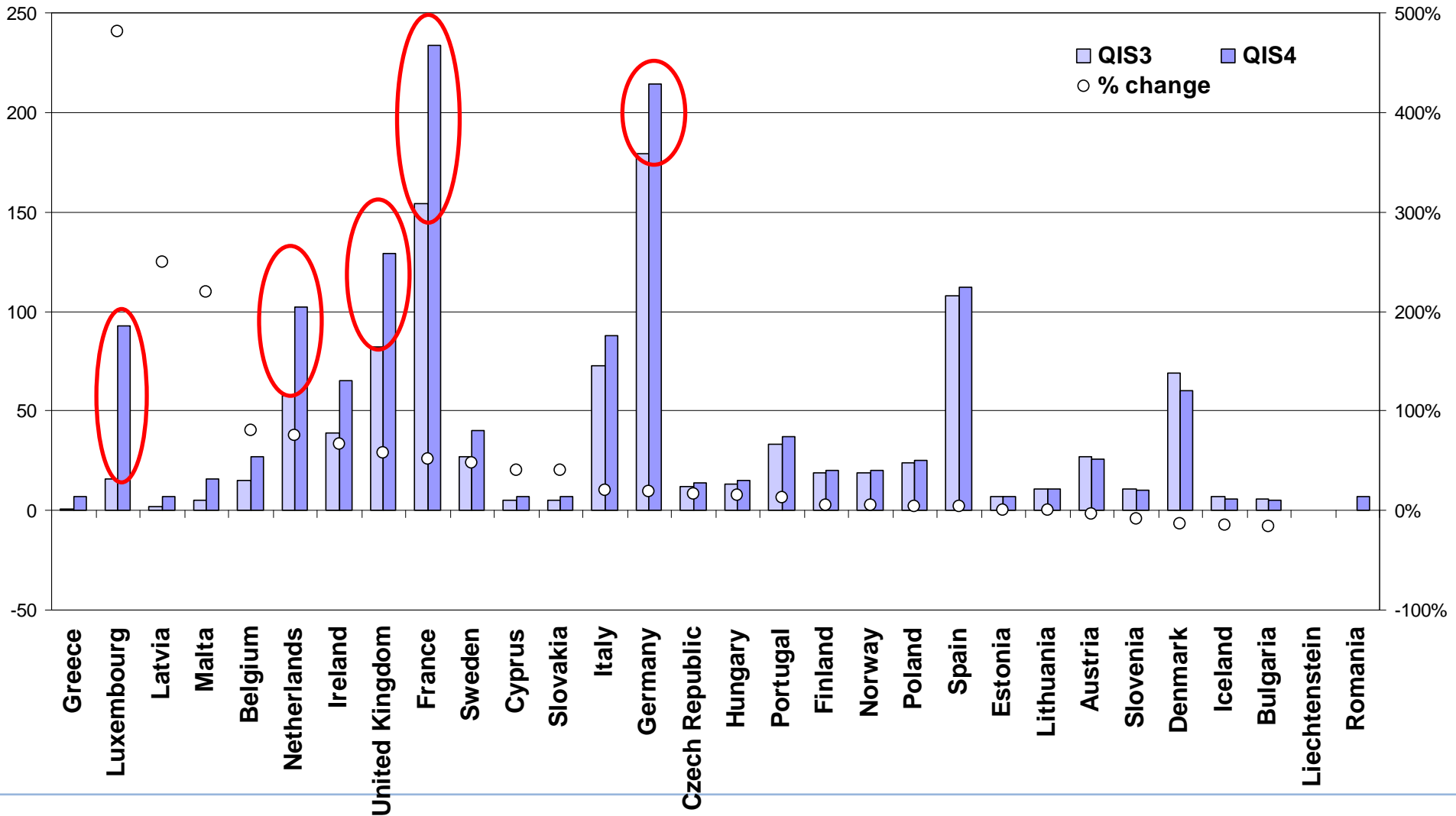
Large insurance undertakings: + 17.6%

Medium size insurers: + 24.8%

Small insurance companies: + 57.8%

**CEIOPS is grateful to industry for the impressive participation!**

# Participation boosters



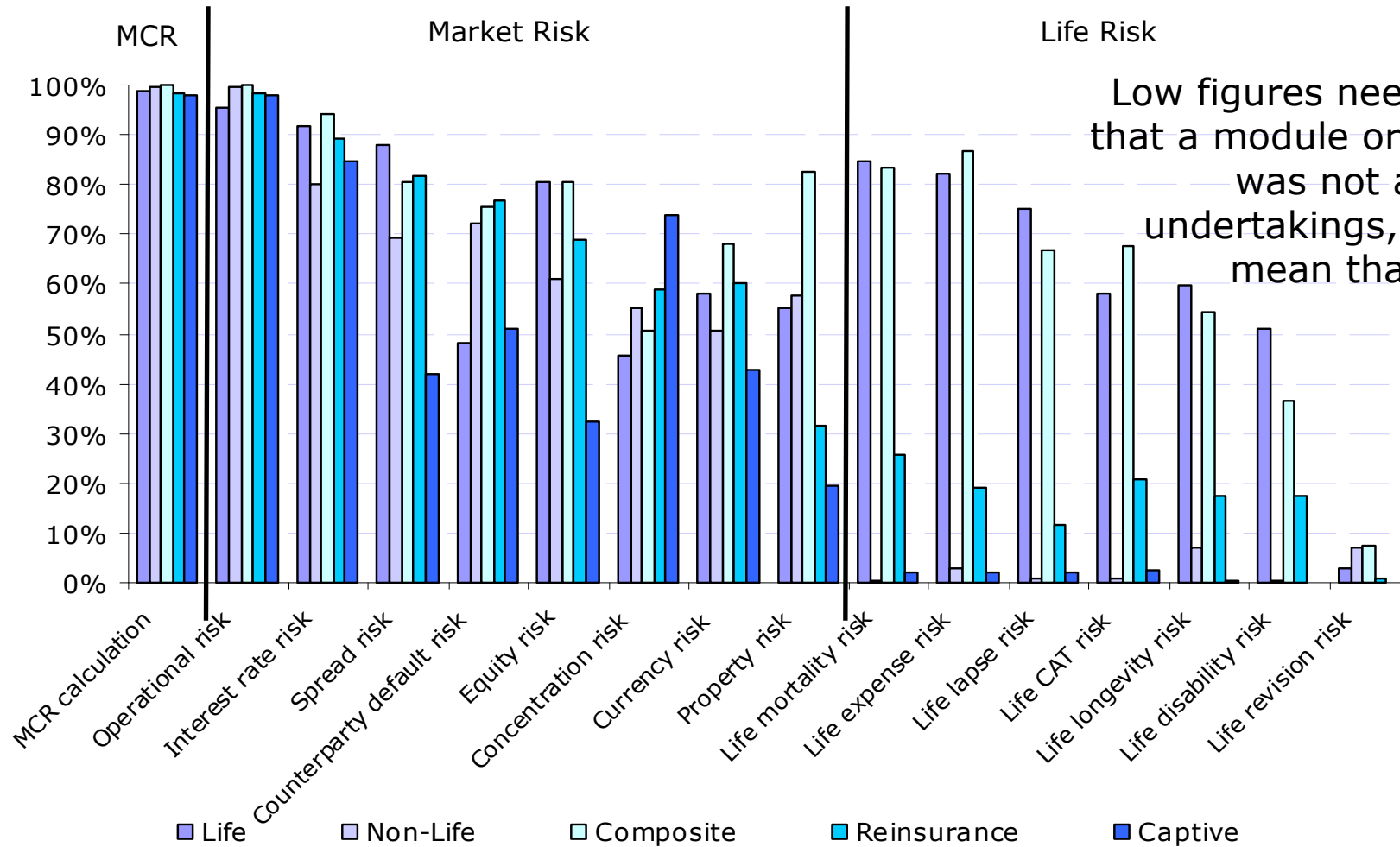


# Reporting Period

2007 data: 98.8%

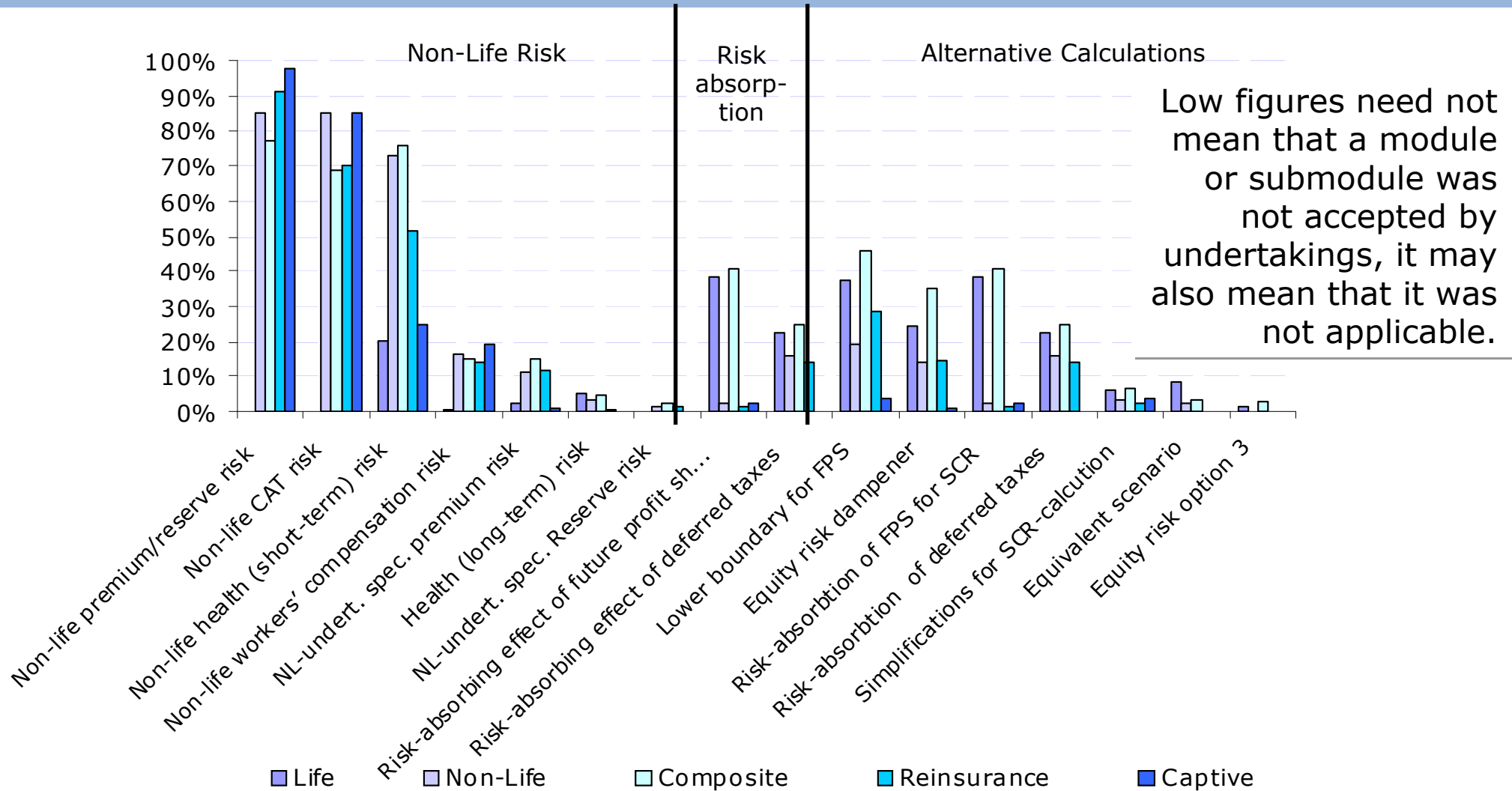
2006 data: 1.2%

# Completeness or applicability of calculations - MCR, SCR Modules Market, Life



Low figures need not mean that a module or submodule was not accepted by undertakings, it may also mean that it was not applicable.

# Completeness or applicability of calculations - SCR modules non-life, risk absorption, alternatives



# Reliability of input data

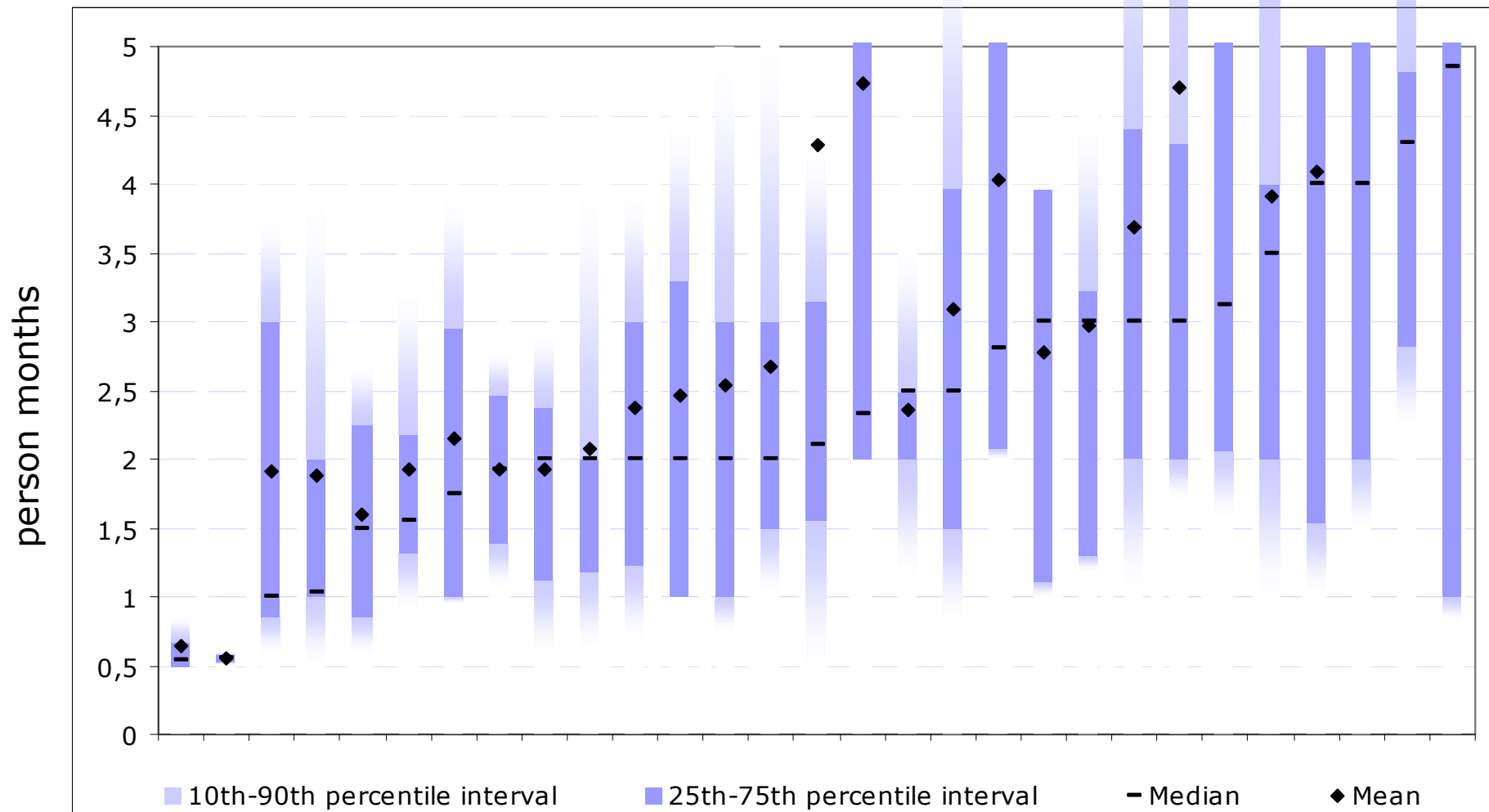
- Two cases:
  - Countries where IFRS apply for solo accounts: data generally considered as adequate
  - Countries where national GAAP are not IFRS: data to be considered with caution
- Frequent updates to the spreadsheet is problem for maintaining data consistency
- Impressions by some countries that QIS-experienced participants provide better quality

# Expectations regarding CEIOPS' future work

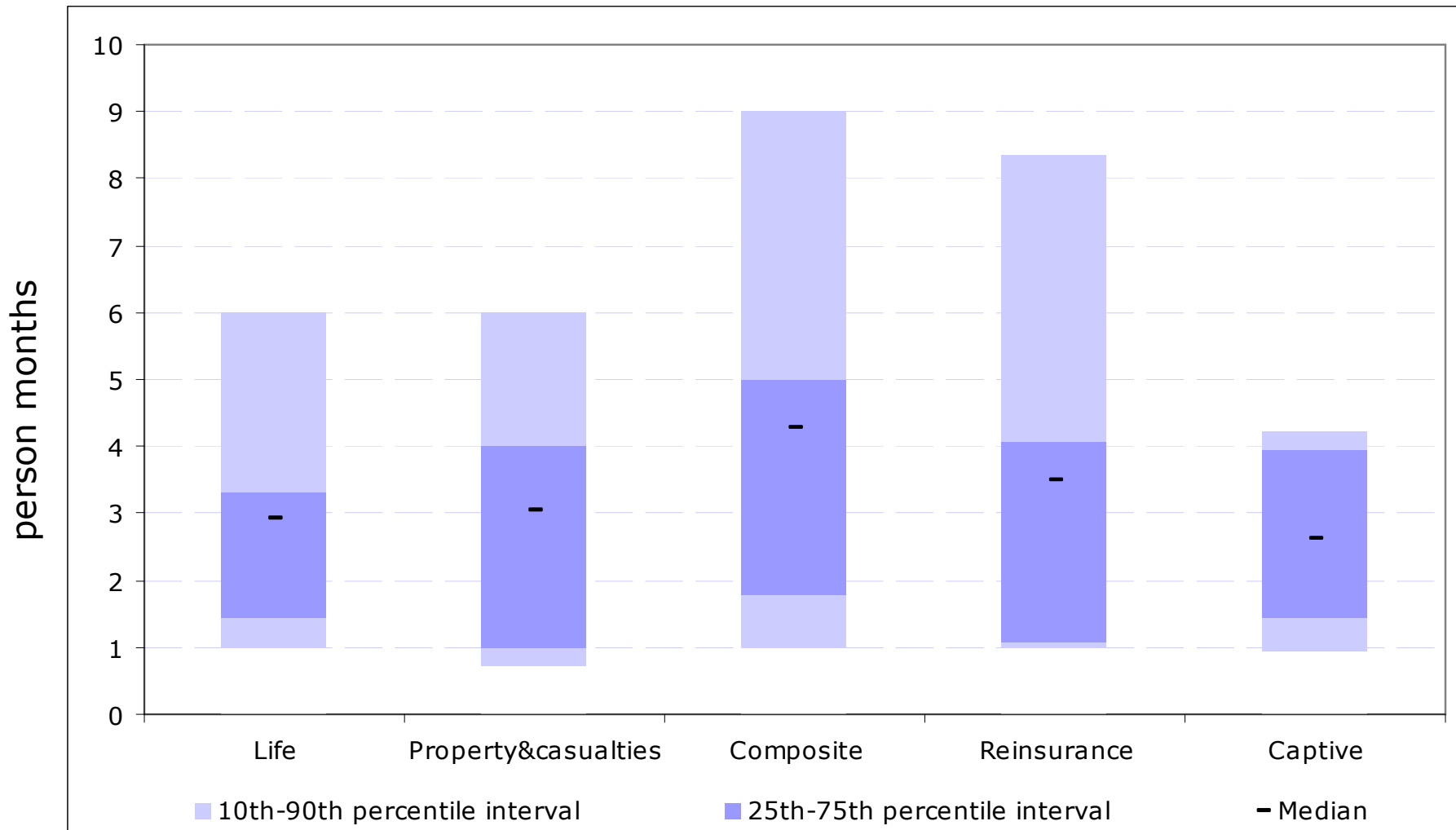
Guidance is preferred to prescriptive rules.

	<b>Importance rank</b>	<b>Unanimity (rank)</b>
Guidance for calculation of technical provisions	High	High
Guidance for calculation of SCR	High	High
Guidance for definition and calculation of eligible capital	High	High
Simplification for methodology for calculation of SCR	High	Medium
Simplification for methodology for assessment of eligible capital	Medium	Medium

# Time consumption for QIS4



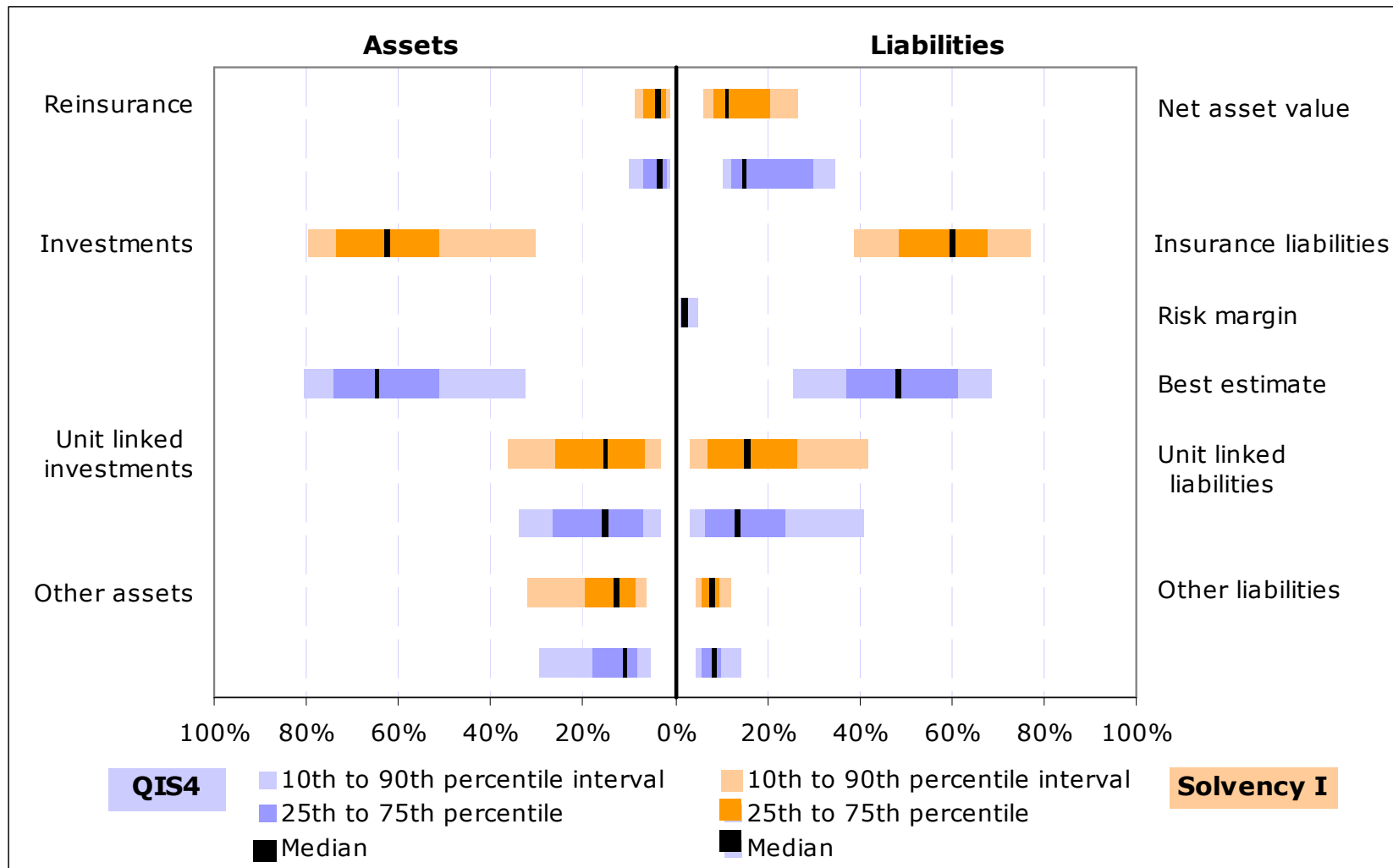
# Time consumption per sector



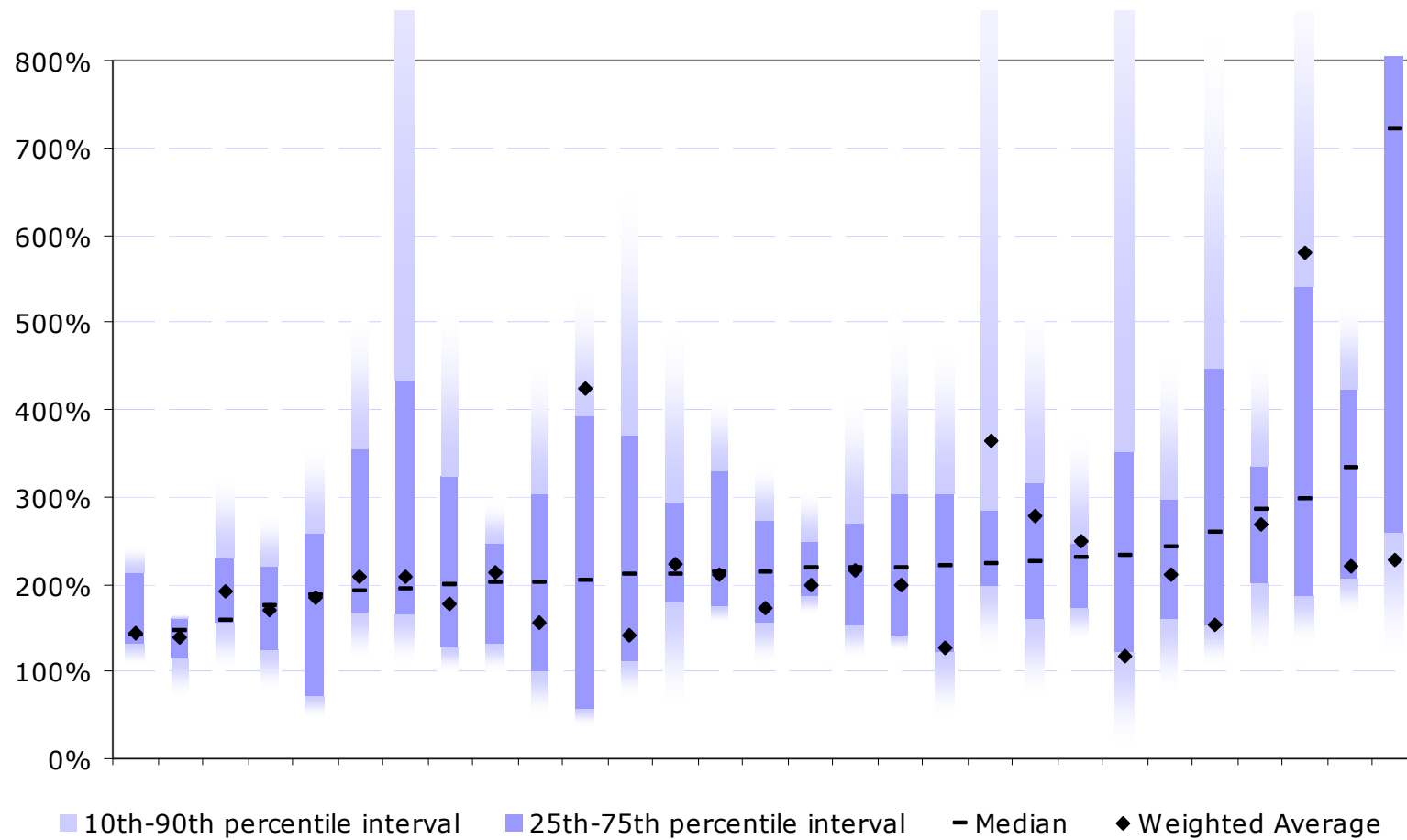
# Overall financial impact



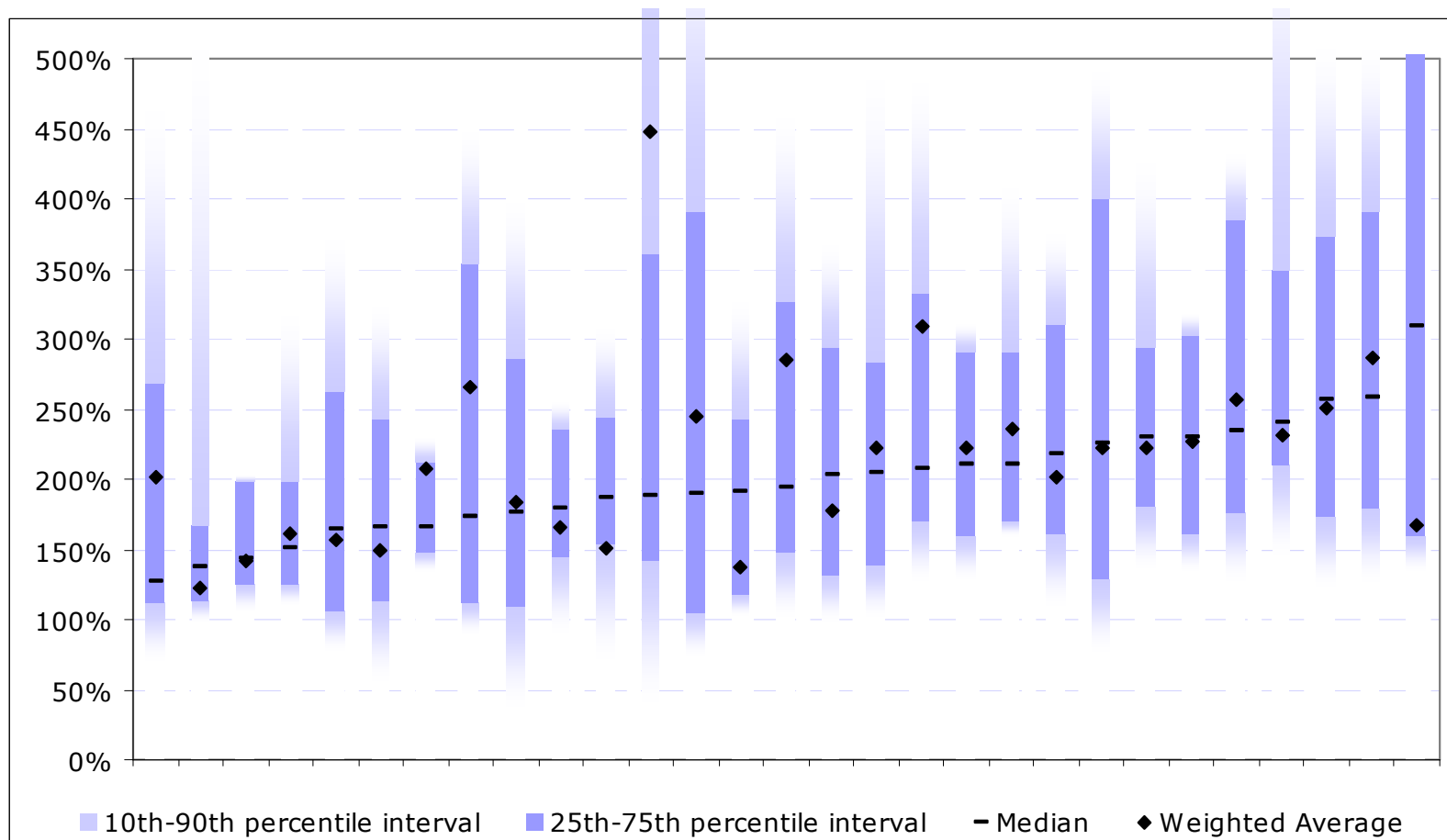
# Overall financial impact: no major impact on total balance sheet composition



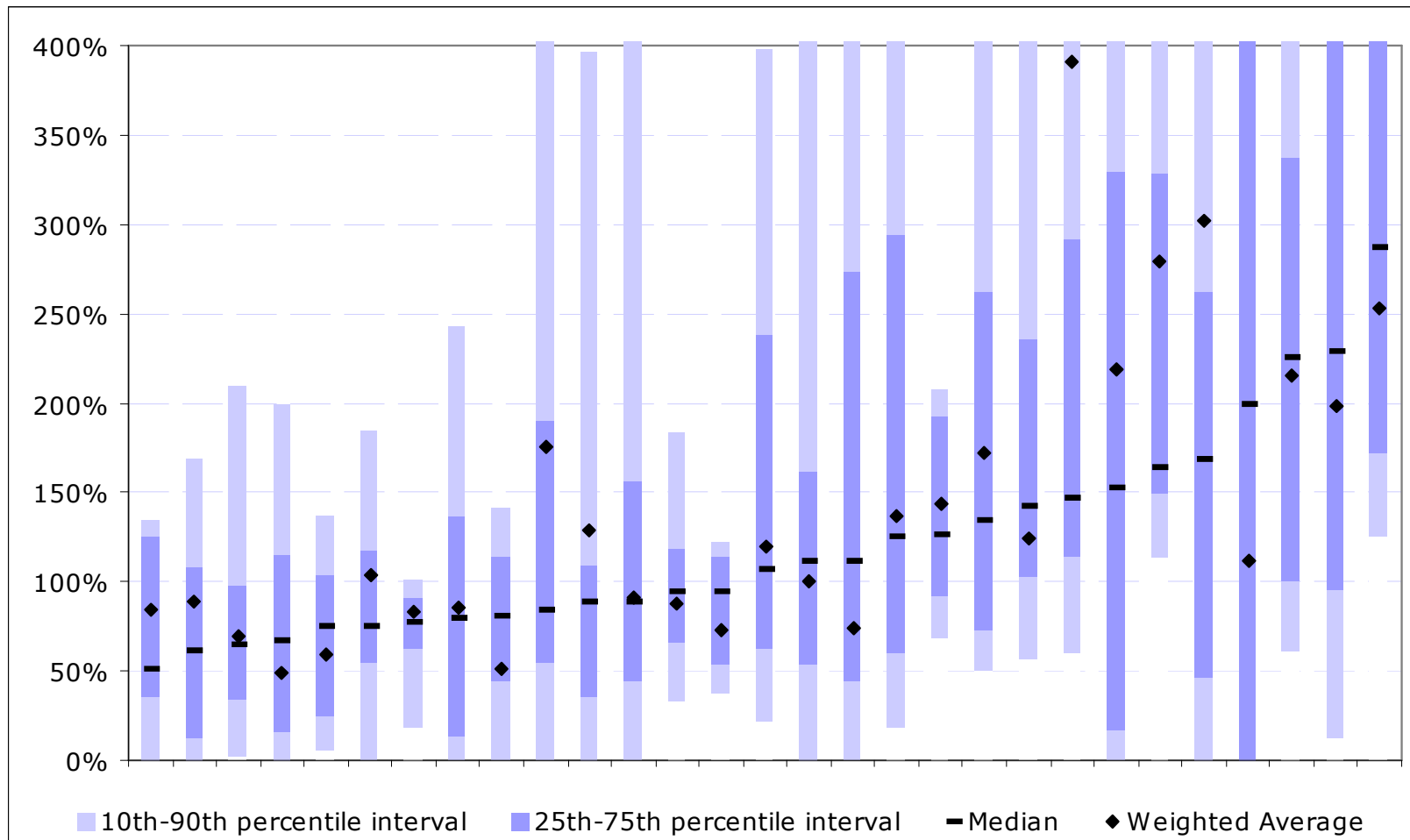
# Capital Requirement QIS4 increase over Solvency I ...



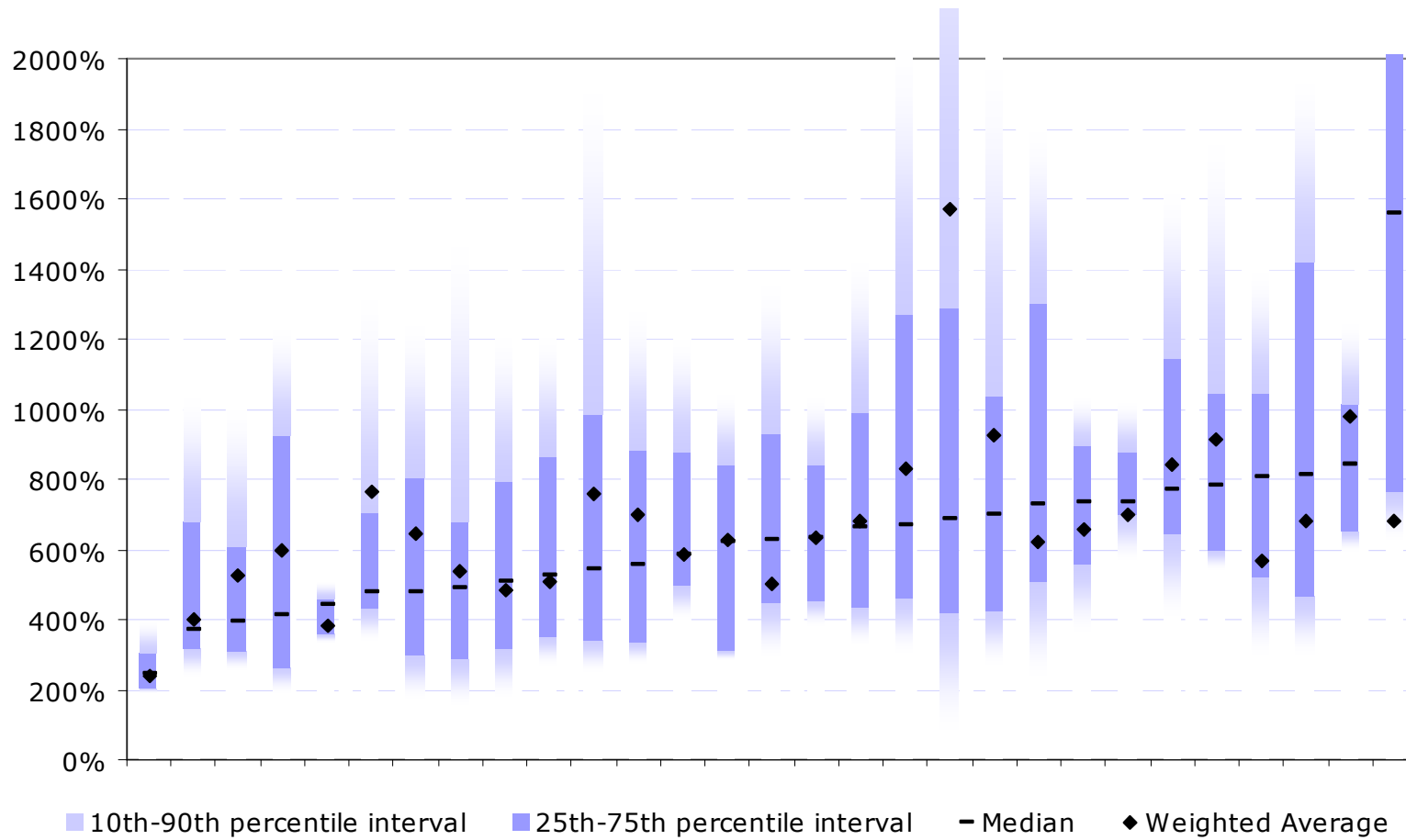
# ... but Solvency Ratios (QIS4 Eligible Capital / SCR) ...



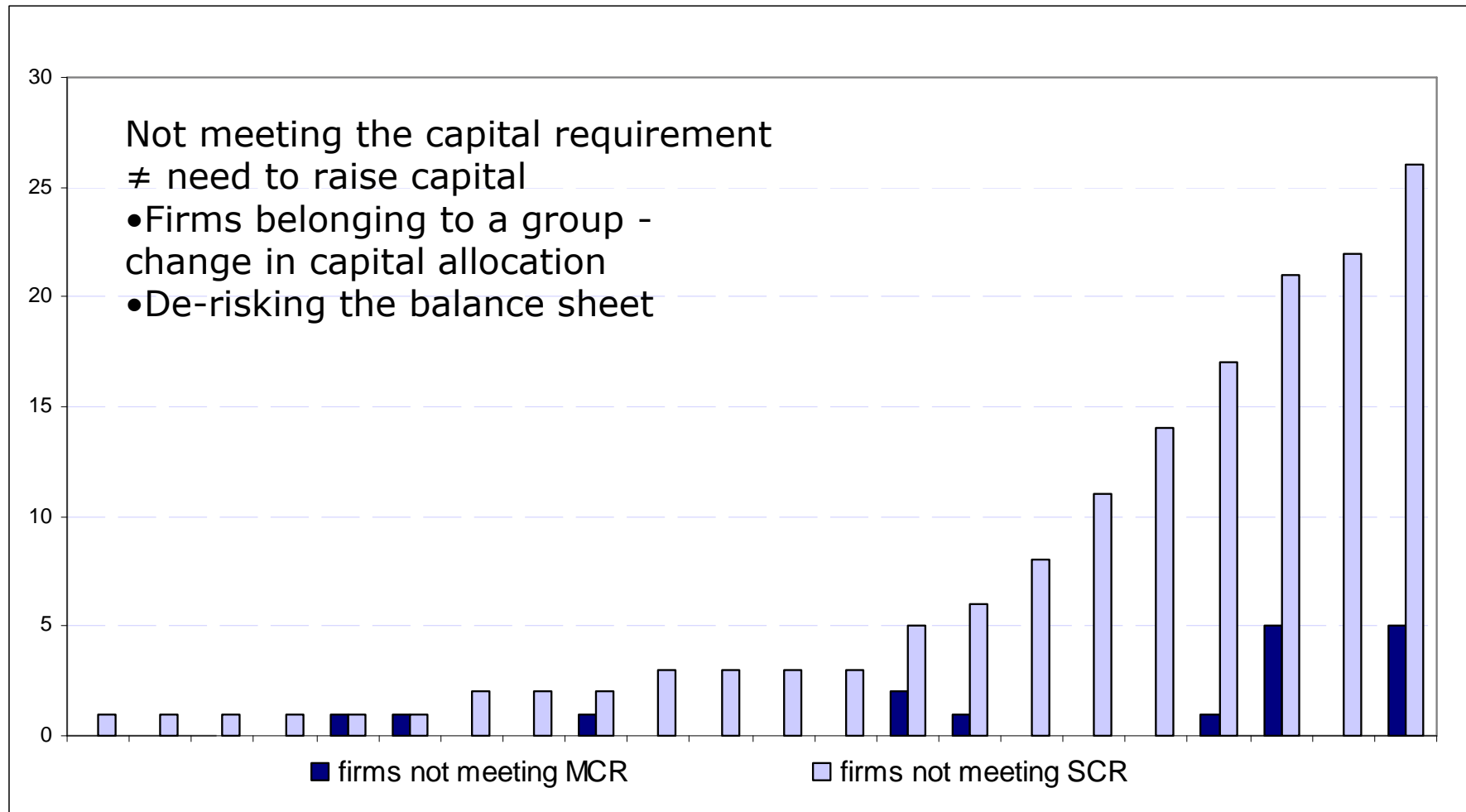
... rise as well (Solvency I ratio / Solvency II ratio)



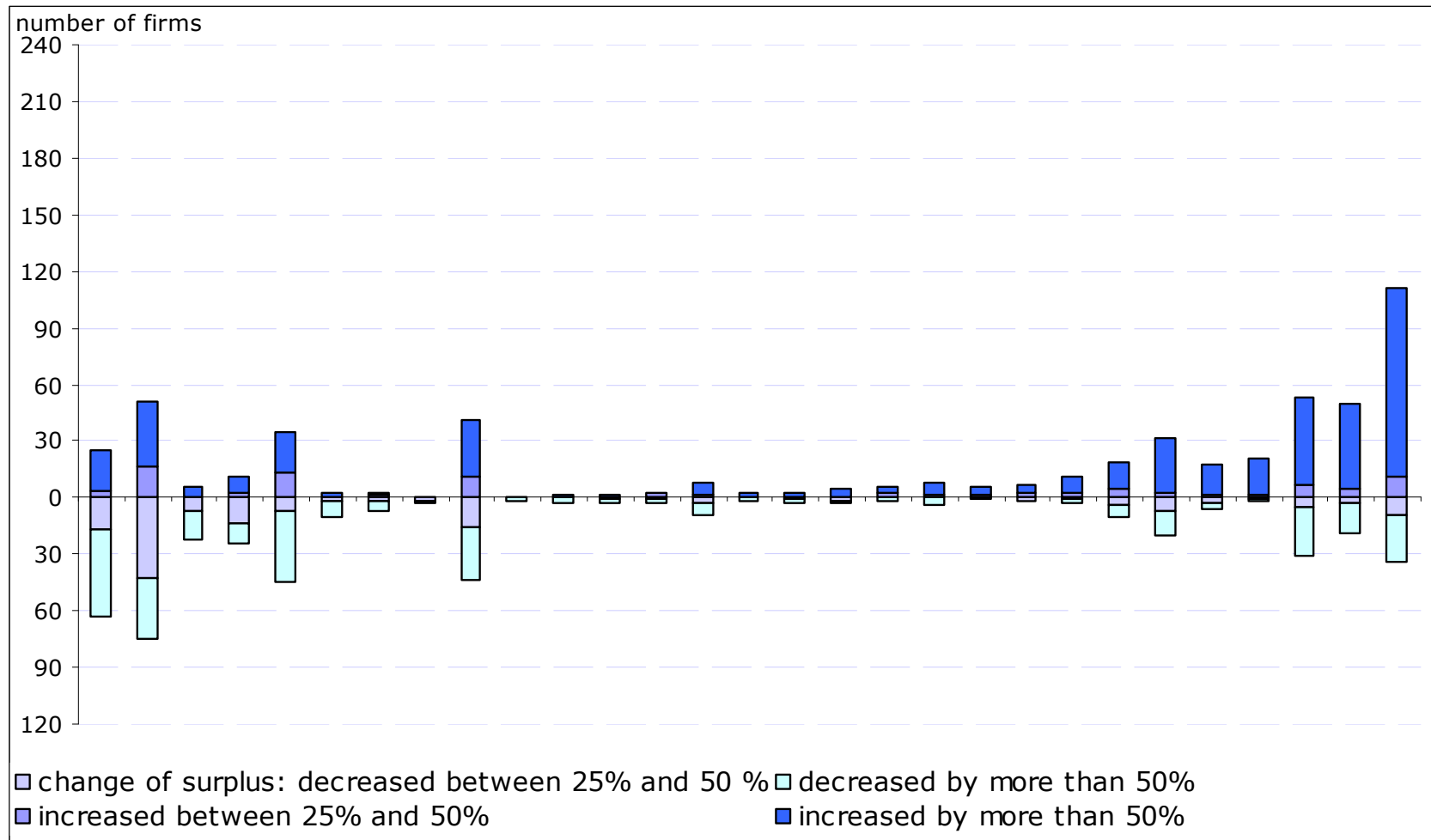
# QIS4 Tier 1 and 2 Basic Own Funds largely exceed the MCR



# Firms not meeting SCR or MCR in QIS4



# Surplus migration Solvency I → Solvency II



# Impact Trends (I)

Methodological considerations on solvency ratios:

- Comparing SCR QIS4 ratios between two firms
  - If firm A has a higher ratio than B, it does not mean that A is richer than B because of:
    - Free assets
    - Underlying distribution is specific to each firm
- Comparing QIS4 to Solvency I
  - Solvency I: include change in technical provisions to take into account the requirement of prudent technical provisions

$$[\text{SCR} + \Delta \text{ Technical Provisions SII/SI}] / \text{SI margin}$$



## Impact Trends (II)

### ↑ Life:

- Majority reports better solvency ratios for QIS4 compared to Solvency I. However, this is not an unanimous fact.

### ↓ Non-Life:

- The opposite is the case, a majority reports declining solvency ratios, with some declining capital surpluses too.

### ? Health:

- The diversity of and their yet insufficient recognition in the QIS4 specification of Health Insurance schemes across individual Member States does not allow to draw a conclusion here. Results from jurisdictions vary considerably regarding SCR coverage.

## Impact Trends (III)

### ↓ Captives:

- Trend towards lower surplus ratios (one supervisor points out the fact that the consideration of equalisation provisions is sufficient for meeting capital requirements in most cases)

# Valuation

# Valuation

- **Broad support** for general design and methodologies
- **IFRS** deemed suitable approximation of economic valuation in Member States using IFRS
  - clear need for Solvency II valuation approach and IFRS phase II to develop consistently

# Valuation

- **No major difficulties in application of economic valuation principles in Member States where IFRS is used.**
  - Esp. IFRS / economic approach GAAP users and large undertakings
- **Some valuation difficulties (for all)**
  - deferred taxes
  - participations
  - reinsurance recoverables
  - intra-group transactions
- **Accounting balance sheet often proxy**
  - Appreciation of analysis required to derive an economic balance sheet

# Valuation

- **Quantitative impact**

- considerable national variation of changes between QIS4 and current balance sheet
- significant increases when national GAAP is not market valuation (e.g. historical cost)
- balance sheet growth (esp. asset side), partly offset on liability side (e.g. deferred taxes)

# Deferred Taxes

- **Unclear definition of treatment**

- inconsistent treatment as IFRS could not be deemed a proxy
- clearer framework needed to avoid inconsistencies
- many undertakings did the QIS4 gross of taxes
- participants do not disagree with net of tax calculation
- More guidance requested on calculation of risk-mitigation properties for SCR

- **Impact when calculated**

- on some markets, DT amount is greater than risk margin
- huge impact on balance sheet → decrease of own funds
- complexify the comparison between Solvency I and Solvency II

# Valuation

- **Intangibles**

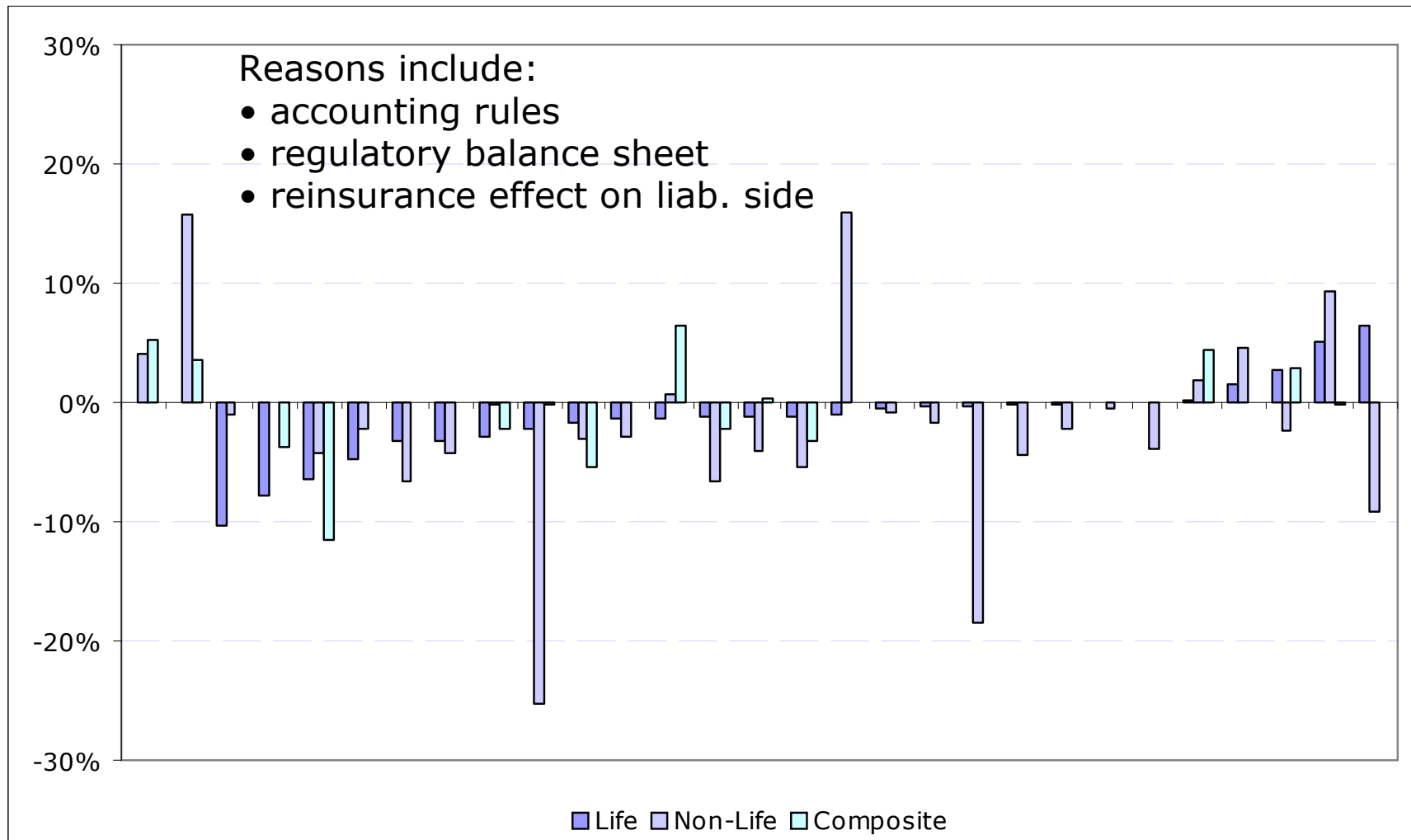
- mixed views: zero or economic value ?

- **Further guidance needed**

- methodologies for specific balance sheet items (i.e. deferred taxes and reinsurance recoverables)
  - use of IFRS values and local accounting values as or instead of market values
  - need to harmonise use of mark to market and mark to model approaches



# Total assets evolution: Difference QIS4 balance sheet and current valuation



# Technical Provisions

# Technical Provisions - Liability valuation

New approach (best estimate + risk margin) agreed by most supervisors and undertakings...

...but difficult to assess consistency of methodology:

- occasionally wide variety of methods used
- doubt on consistency of application of Technical Specifications
- difficulties in valuation of liabilities

# Technical Provisions: Difficulties in liability valuation

- Data requirements (splitting of data; data intensity of best estimate calculation)
- Small and medium sized companies (lack of data and resources for stochastic valuation)
- Insufficient guidance in the QIS4 Technical Specifications:
  - future premiums to be taken into account,
  - valuation of options and guarantees
  - calculation of future discretionary benefits
  - calculation of net technical provisions

## Technical Provisions: Best estimate

- Methodological approach in QIS4 very similar to QIS3 and supported by most
- But questions or reservations raised on
  - Treatment of future premiums
  - Use of own data or market data for expenses and other relevant parameters
  - Choice of a higher risk-free interest rate for non-redeemable annuities (1 MS)
  - Allowance for future management actions
  - How to allow for mean rather than median expected future cash-flows?

# Technical Provisions: Risk margin

- Cost-of-capital methodology not questioned
- Risk margin calculation too complex
  - CEIOPS Helper tab applied by most firms
  - Concrete calculation is complicated and data demanding
  - Some concerns that the result depended on the chosen simplification, especially for non-life business

# Most difficult areas life / non-life

- *Life* firms
  - Valuation of future discretionary benefits
  - Valuation of options and guarantees (especially for smaller firms)
- *Non-life* firms
  - Segmentation by line of business
  - Need for substantial amounts of data
  - Calculation of net of reinsurance provisions
  - Assessment of premium provisions
  - Weight to place on future large claims

## Most difficult areas life / non-life

=> Guidance was requested on the mentioned areas, and on the treatment of future premiums in life and non-life

- Further industry suggestions:

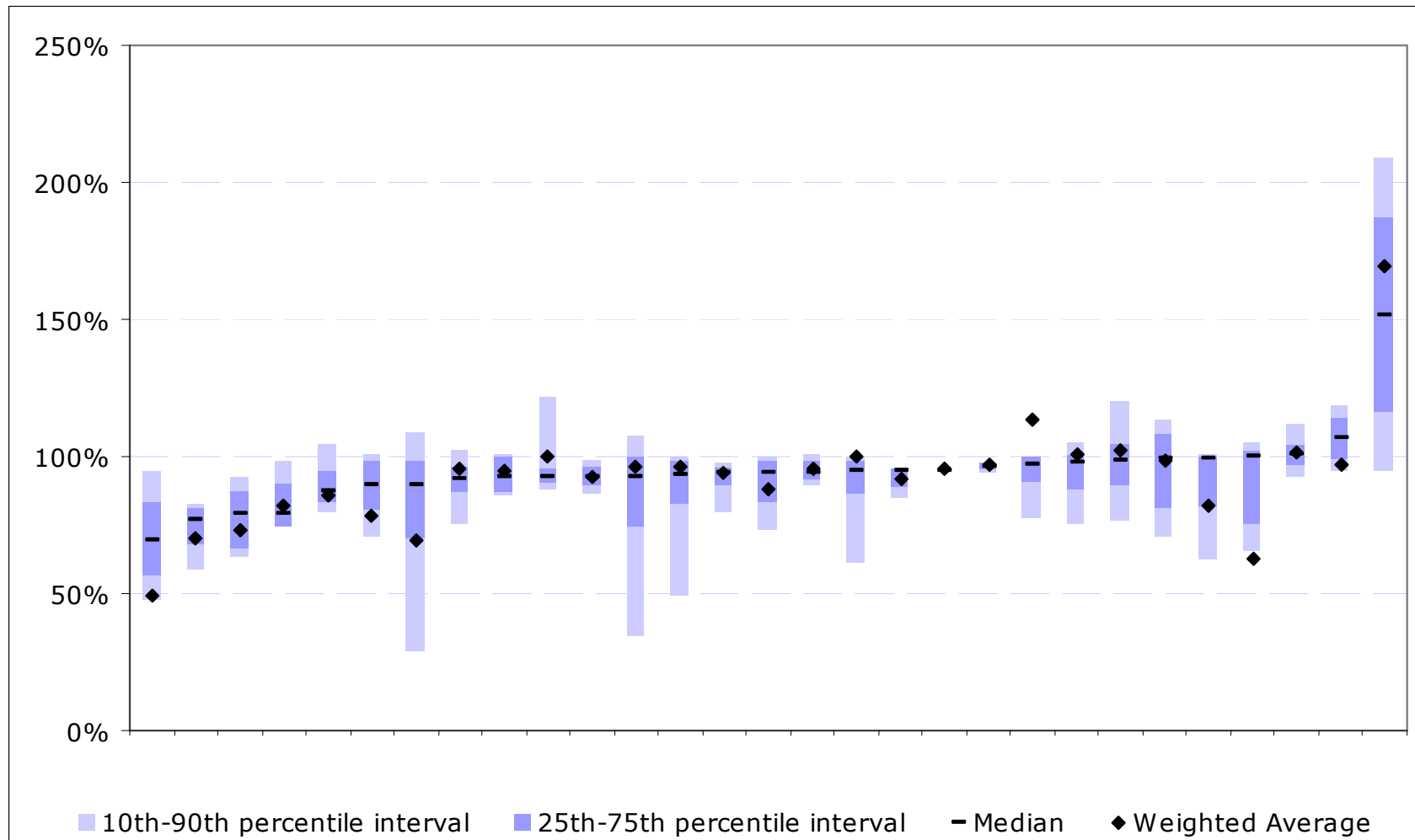
- Diversification between lines of business and geographical areas
- Questions were raised by some undertakings about the appropriateness of the 6% cost of capital rate
- Some comments that the methodology may need to be reviewed for long duration business where risks evolve slowly over time



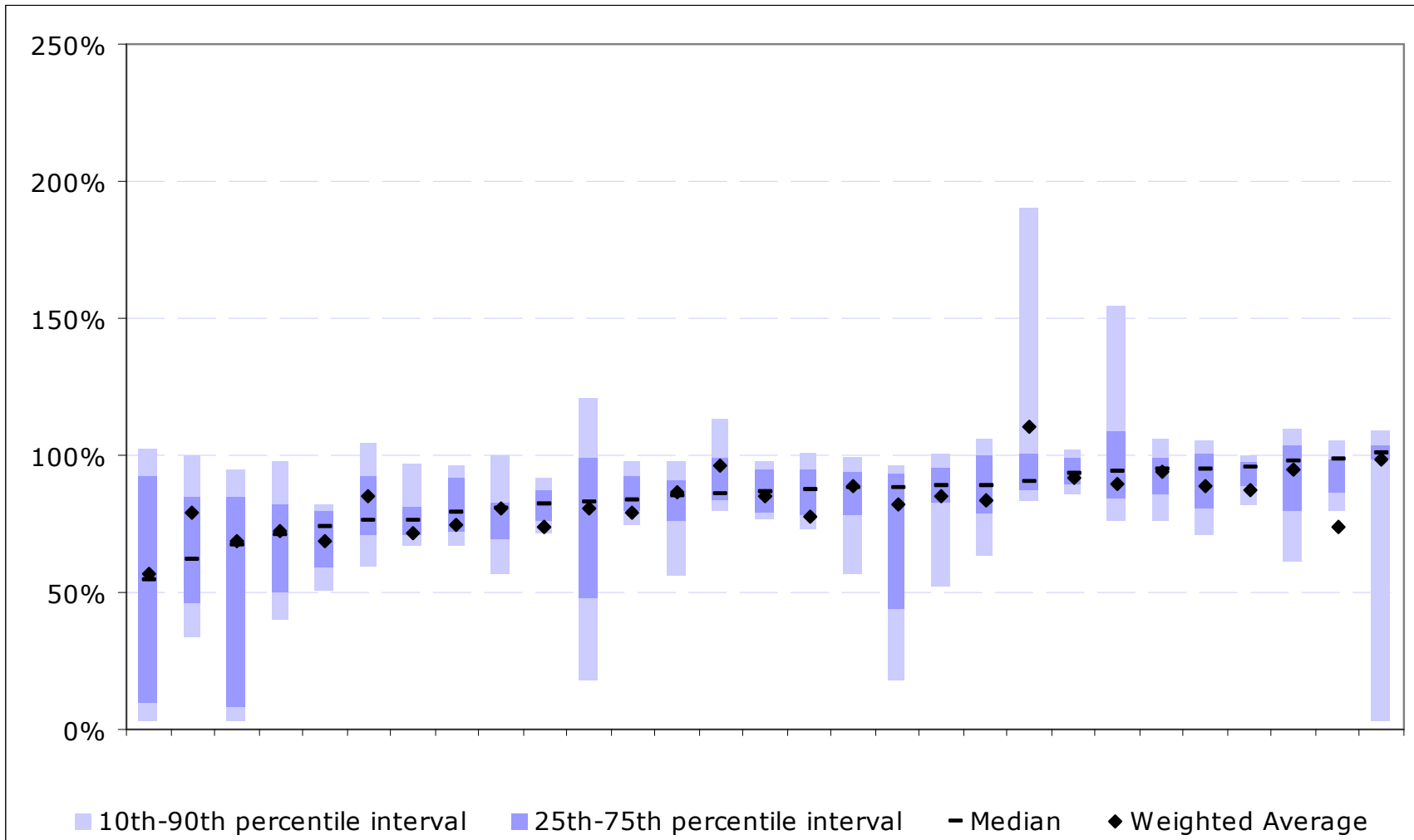
# Move from Solvency I to Solvency II

- Main difference: Different valuation principles
- Solvency II technical provisions = best estimate + risk margin
  - Best estimate: discounted probability-weighted average of future cash-flows
  - Risk margin: to ensure that technical provisions are equivalent to amount that insurance undertakings would be expected to require in order to take over and meet the insurance liabilities.
- Valuation principles
  - prudent under Solvency I
  - market-consistent under Solvency II

# (Net) Technical Provisions life: QIS4 / Solvency I



# (Net) Technical Provisions non-life: QIS4 / Solvency I



# Technical Provisions: QIS4 vs Solvency I

## Provisions generally lower than Solvency I

- Higher discount rate
- Absence of implicit margins for prudence
- Recognition of anticipated profits on future premiums and charges
- Absence of surrender value floor
- Negative BE on given contracts reduce overall TP
- Removal of equalisation provisions

Offset in life by:

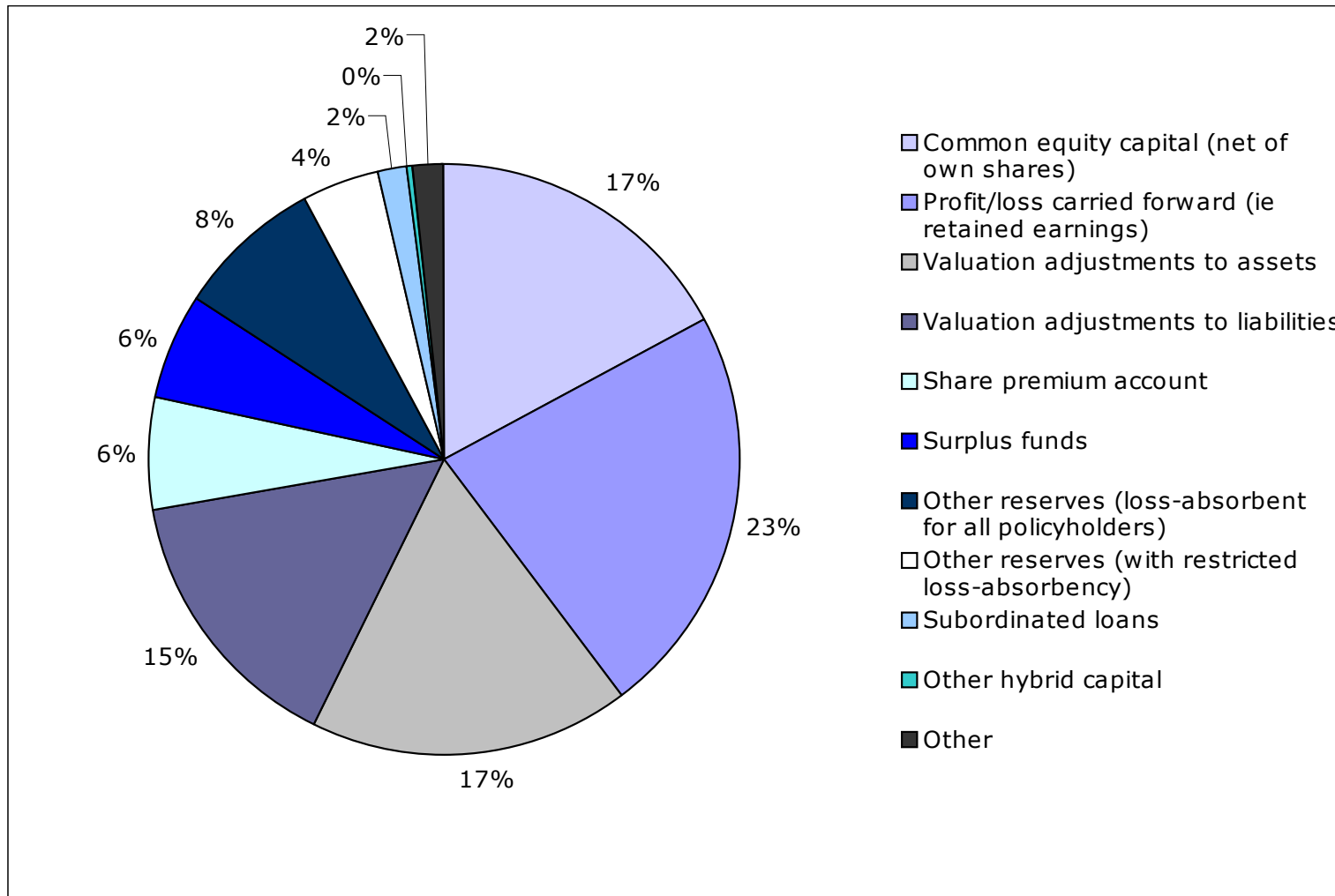
- Explicit allowance for future bonuses

# Own Funds

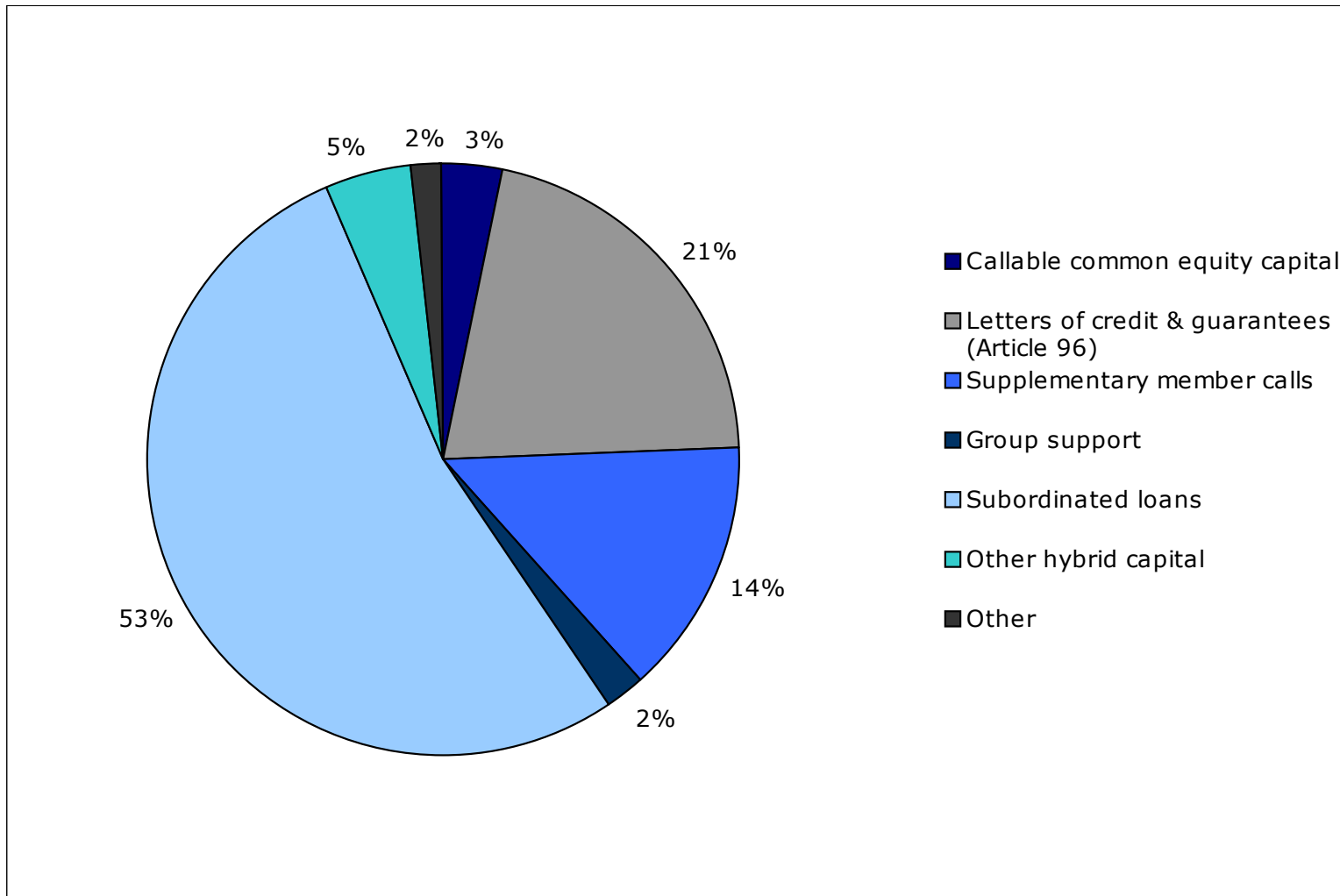
# Evolution and composition

- Own funds **increase** by 27% on average
  - Solvency II valuation adjustments (including the impact of future premiums) account for most of the increase
  - Deferred tax impact unclear
  - Reclassification of equalisation provisions into own funds
  - 100% inclusion of hybrid capital instruments, subordinated liabilities and ancillary own funds, subject to the Solvency II limit structure, into own funds
- **Total own funds average composition:**  
95% Tier 1 / 4% in Tier 2 / 1% in Tier 3
- Overall, the **classification** of own funds is **deemed suitable and practicable** by undertakings and supervisors but...
- Potential strong issue increase of **hybrid capital in the future**

# Composition of Tier 1 (all undertakings)

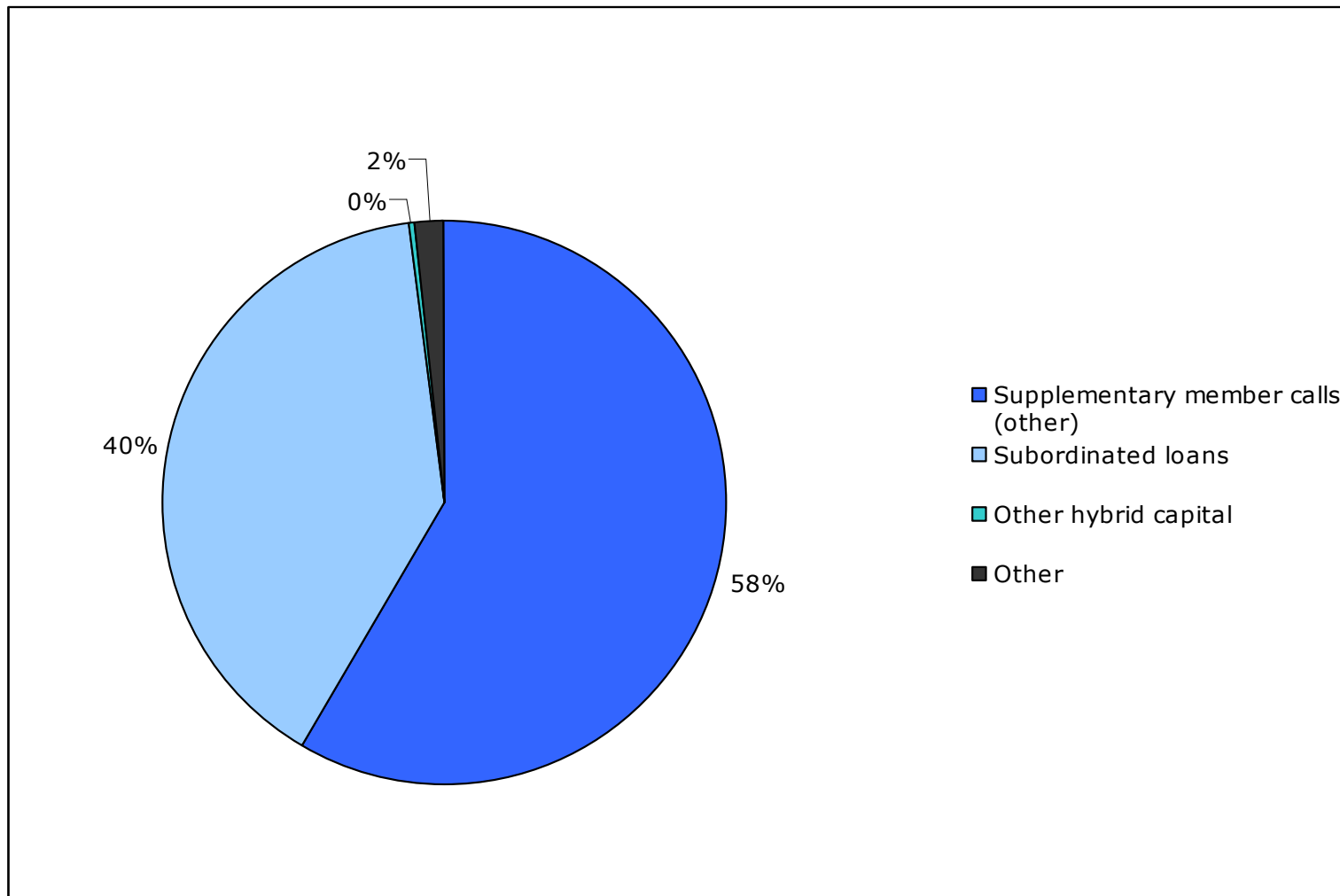


# Composition of Tier 2 (all undertakings)





# Composition of Tier 3 (all undertakings)



## Own funds : main issues

- **Hybrid capital instruments** and subordinated liabilities
    - Majority reported in **Tier 2**
    - Shift to **reporting date** approach would result in reclassification into a lower tier for a significant number of instruments
    - Consider **alternative ways** of satisfying the **sufficient duration** requirement for dated hybrids and subordinated liabilities
    - **Grandfathering** measures in relation to hybrid capital/subordinated liabilities classification
    - **Not** consider **splitting** hybrid capital instruments/subordinated liabilities **according to debt/equity component**
-

## Own funds : main issues

- **Surplus funds:** significant in 4 Member States
    - 13 other Member States:
      - partly reporting errors
      - subsidiaries of groups of one of the 4 Member States
  - **Group support:** very few undertakings reported group support at solo level
-

# Own funds: main issues

- **Ancillary own funds**

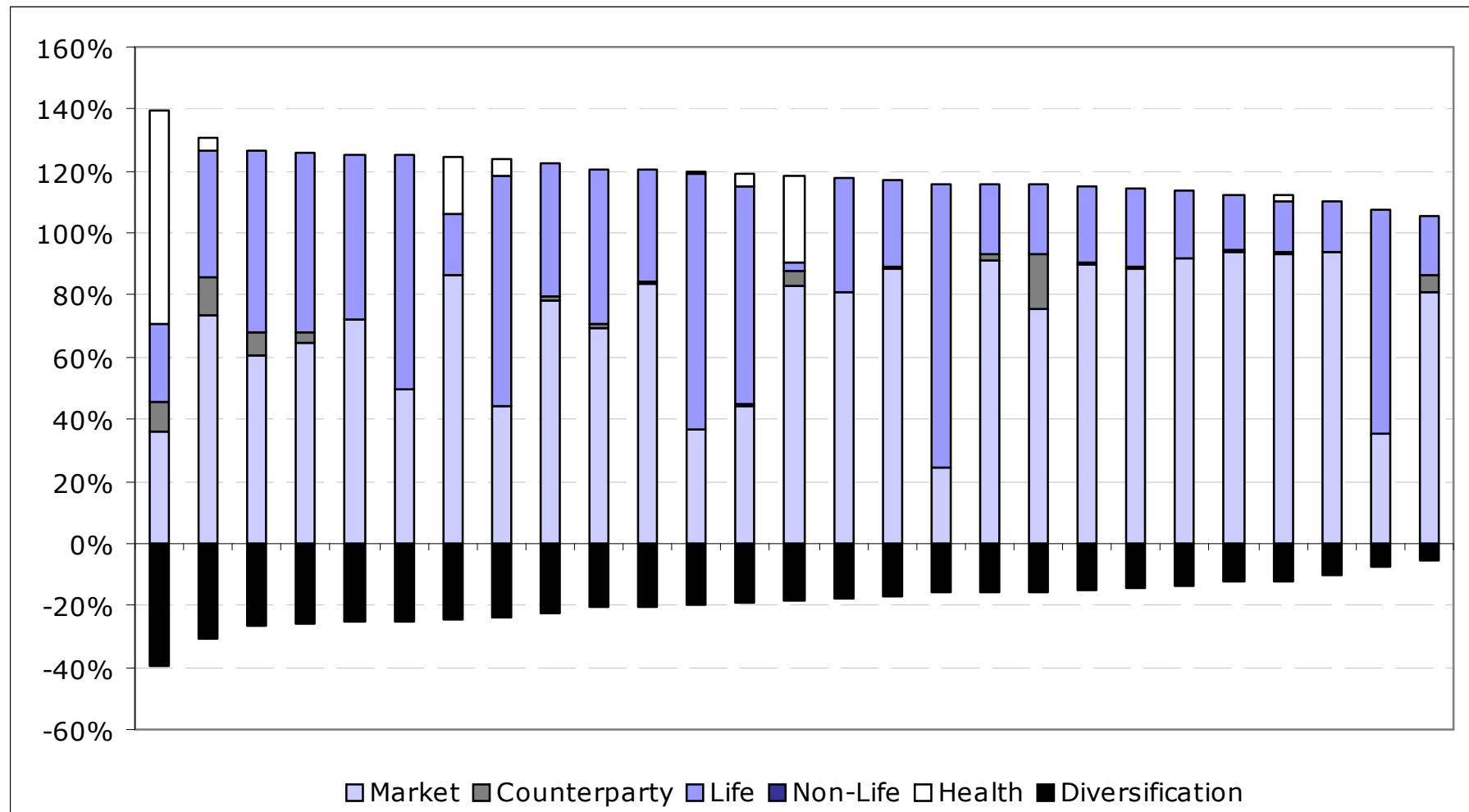
- small volume in relation to basic own funds or total own funds.
- **No useful feedback** on **valuation** of ancillary own funds
- **Request further input** from undertakings on the **valuation** of ancillary own funds

- **Supplementary mutual member calls**

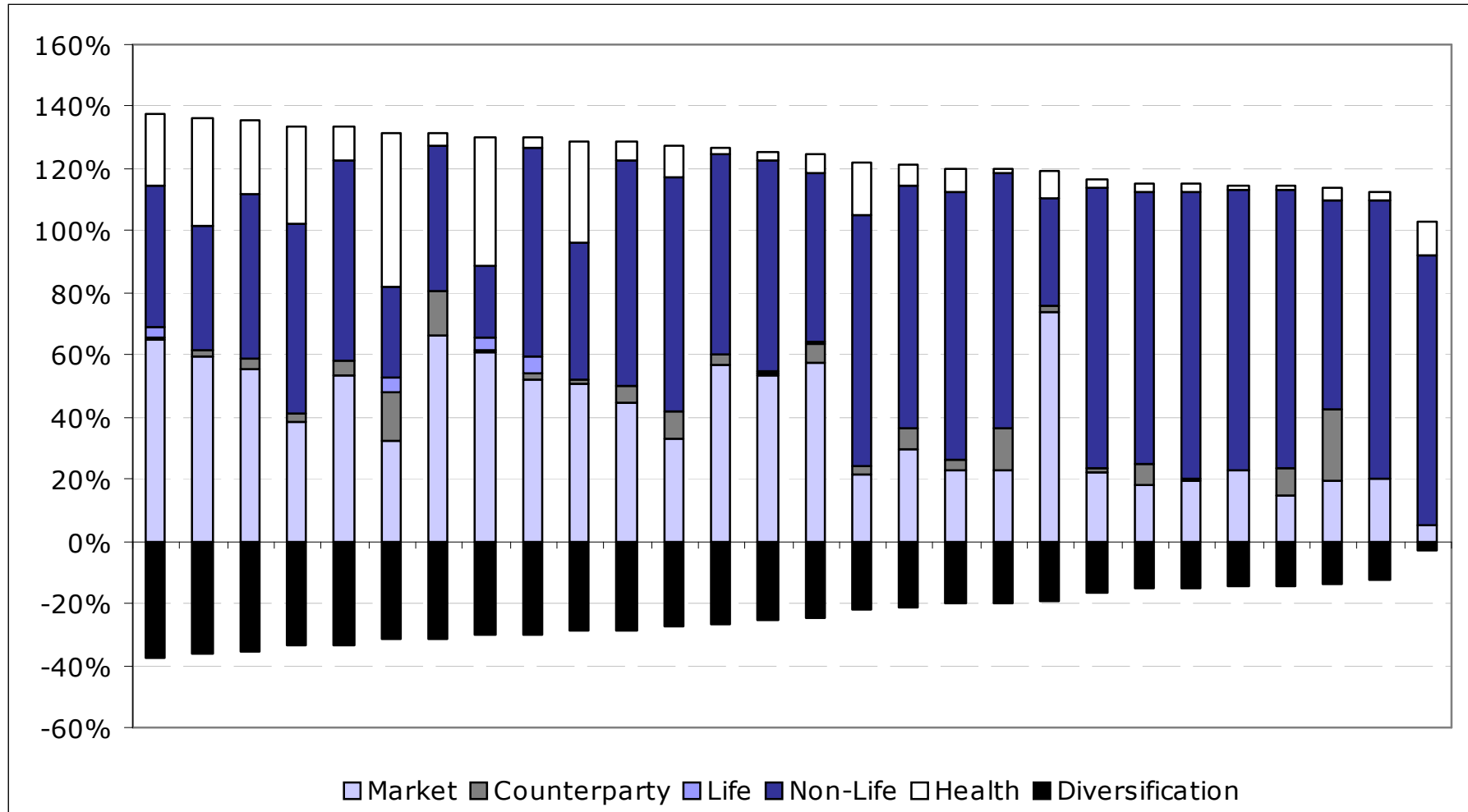
- Most undertakings and supervisors **agreed** or did not object to **40:60 split** between Tier 2 and Tier 3
-

# SCR Standard formula

# BSCR Composition (life)



# BSCR composition (non-life)



# SCR – General comments on the SCR calculation, calibration issues

## Main issues:

- Equity risk
- Counterparty risk
- Deferred taxes
- Operational risk
- Correlations



# SCR : Risk mitigating effect of future profit sharing and deferred taxation

= Key element in SCR calculation for life and health insurers

- Request for further and more detailed guidance on the calculation, and on impact of management actions
- Some undertakings saw the gross of profit sharing calculations as artificial;
- "Lower boundary SCR" calculated by 467 participants
- "Equivalent scenario" tested by 64 participants
- Deferred taxation – Difficulties were encountered with the interpretation of the specification, including in relation to national tax laws, more clarification and guidance needed

# SCR – Correlations

Critics: No objective technical basis for the present correlation matrix

Many alternative suggestions for some specific coefficients

# SCR – Equities

- Calibration
  - Equity shock adequately prudent?
- Participations
  - "Halving" of charge not transparent for some participants and some supervisors
  - Ratio  $SCR_{eq}$  differentiated approach /  $SCR_{eq}$  across the board: 90%
  - Look-through method more fitted to wholly owned subsidiaries for some participants and some supervisors

# SCR – Equities

- Duration dampener
  - Two aspects: cyclical + duration of liabilities
  - Tested by about 25% of participants
  - Resulted on average in a 9% reduction of equity risk capital
  - Contested by majority of undertakings and all but one supervisor:
    - Lack of theoretical and empirical justification
    - Not in line with 1 year, 99.5% Value at Risk
    - Inappropriate incentives for risk management

# SCR - Counterparty default risk

- Unanimously criticised by participants and supervisors as too complex
  - Volume of data collection seen as too burdensome
  - Ad hoc proxies have been used
- Calibration for unrated intermediaries
  - Use of own experience data?
  - CEIOPS' rating?
- Artefacts due to the use of the Vasicek distribution
- Issues not addressed yet:
  - Derivatives
  - Modulated recovery rate
  - Non-rated reinsurance pools: look-through approach?
  - Policyholder's credit (risk mitigation: cancellation!)

# SCR – General comments on the SCR calculation, calibration issues

- Life
  - Profit sharing
  - Split Life / Health
  - Lapse
  - Annuities: possible inconsistent treatment with health
  
- Non Life
  - Calibration
  - Loss ratio method (underwriting year vs ultimate)
  - Non-proportional reinsurance
  - Undertaking specific parameters

# SCR - Non-Life underwriting risk

- Non-life geographical diversification
  - Tested by 217 participants
  - Material only in a limited number of countries
  - Issue of location of risk vs location of underwriting (e.g. transport)
  - Granularity (too small, too big, too political)
  - Credit & Suretyship?
  - Alternative method: correlation matrix?
  - Disproportionate effect on the spreadsheet size!
  - Sensitivity to volume?
  - Extend concept to life underwriting? No, for a majority.
- Relevant for groups and reinsurers

# SCR - Non-Life underwriting risk

## Factor-based Method 1

- results differ widely to Methods 2 and 3
- inappropriate for captives

## Regional scenarios (18 MS) by CEIOPS (Method 2):

- No cross border consistency

## Undertaking-specific Cat Scenarios (Method 3):

- Expert / academic external software tools

## Across methods 1-3 further work required

- Level playing field across each method (cherry-picking possible)

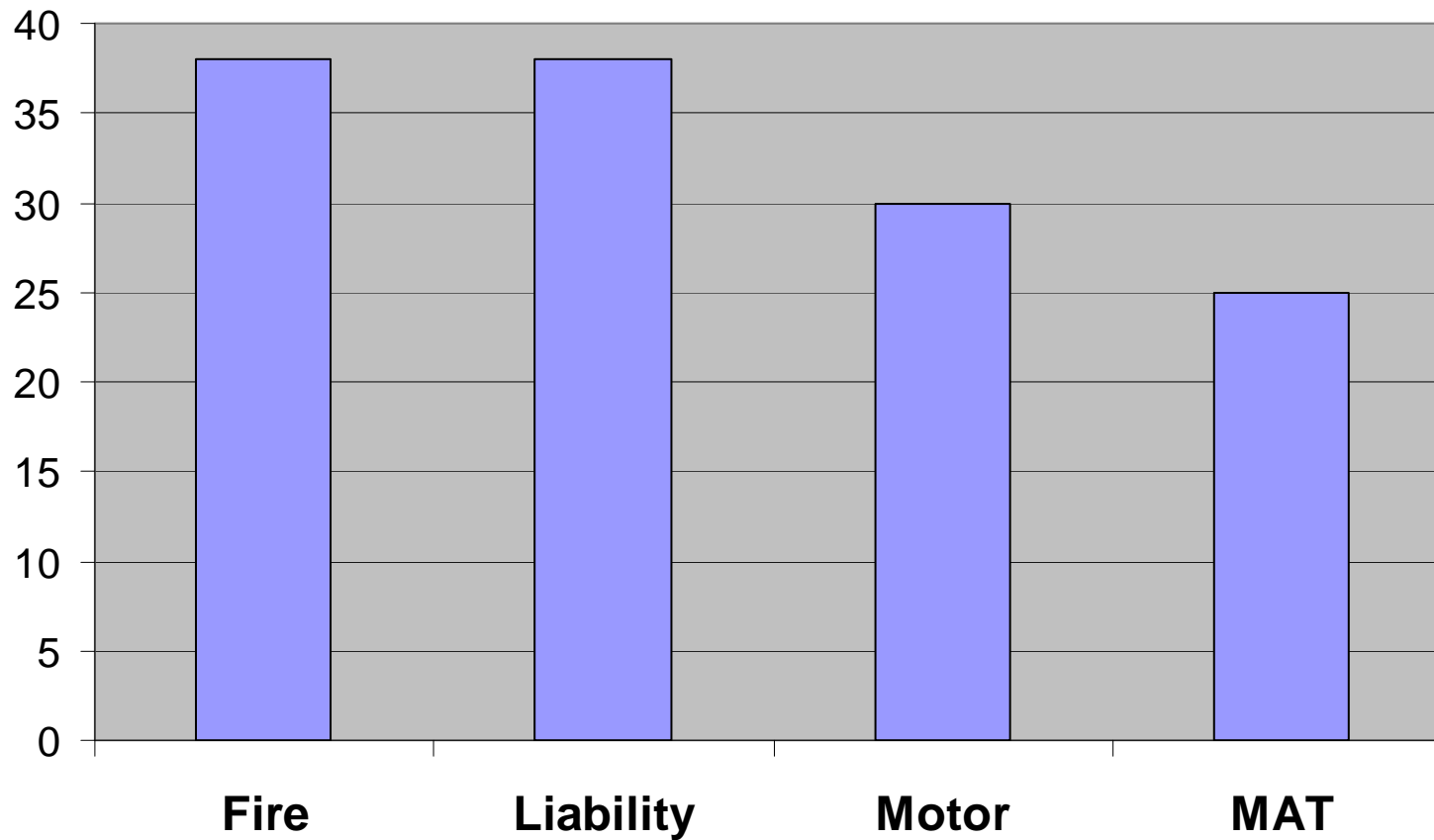


# SCR - Use of undertaking-specific data

- Wide support ...
- But few participants (< 6% of non-life participants):
  - Lack of data history
  - Lack of time
  - Treatment of Cat loss
  - Classification LoBs, sub-LoBs
  - Nature, perimeter of business has changed
  - Change in reinsurance
  - Underwriting year vs accident year
  - Underwriting cycles

# SCR - Use of undertaking-specific data

## Participants testing "undertaking specific" option



# SCR – Health Underwriting risk

## **Still mixed views:**

- Confusion in the classification between: Health sub-modules, Life and Non Life
- Morbidity = Health + Disability?
- Permanent health insurance?
- In the possibly inconsistent treatment of annuities
- Geographical diversification?
- Cat risk (method 1): no risk mitigation?

# SCR Life underwriting risk – Methodological issues

- Biometric risks (i.e. mortality, longevity, sickness): In several countries it was commented that a gradual change to inception rates and trends would be more appropriate than a one-off shock
- Bundling of contracts: Most undertakings chose no unbundling of contracts as the more practical approach

## SCR Life underwriting risk – Practical issues

- Policy-by-policy calculations seen as burdensome by many undertakings for the Lapse risk and Cat risk modules- it was suggested that homogeneous risk groups should be considered
- Scenario approach seen as too complex by some firms

## SCR Life underwriting risk – Calibration issues

- A number of comments were received about the perceived lack of transparency and the need for relevant evidence for the calibration
- Differing views were expressed on the calibration of the various sub-modules, and on application to non redeemable contracts (mass lapse risk scenario)
- Some undertakings were in favour of entity-specific parameters, but supervisors were concerned about potential cherry-picking

## SCR – Operational risk

- Operational risk represented between 5-10% of total SCR
- Formula was seen as simple but not risk sensitive, and there was dislike for the correlation of 1 with other risks
- Suggestions from participants to improve the methodology included
  - Calculate as a percentage of SCR or BSCR
  - Take account of operational risk sources and quality of risk management process and control framework
- Around 40% of undertakings capture loss events, and most of these then attempt to quantify these events
- Most common categorisation of risk events is through ORIC

# Supervisory intervention following breach of SCR

- General welcome from undertakings for the principle that the overall risk situation should be taken into account
- It was suggested that a holistic approach should be applied that reflected both market and entity specific risks, whilst ensuring that policyholder protection was paramount
- Approach could help to avoid forced sale of assets and help undertakings to cope with natural balance sheet volatility; and might be applied to other market risk
- Application of stress tests by undertakings and proactive review by supervisors seen as important



# Supervisory intervention following breach of SCR

- Factors to take into account in recovery plan included
  - Expected duration of policies, and liquidity management
  - Reason for breach of SCR (e.g. market event or firm specific problems)
  - Possibilities for de-risking of undertaking, or restrictions on new business
  - Likelihood of any breach of MCR
  - Quality of assets and transferability of assets and liabilities

# MCR

## MCR – Summary of feedback

### Main findings:

- Overall, the QIS4 combined approach to calculate the MCR was better received by both undertakings and most supervisors than the previous modular design in QIS3.
- A large number of participating undertakings favoured the compact approach proposed by CEA

## MCR – Summary of feedback

### Main findings:

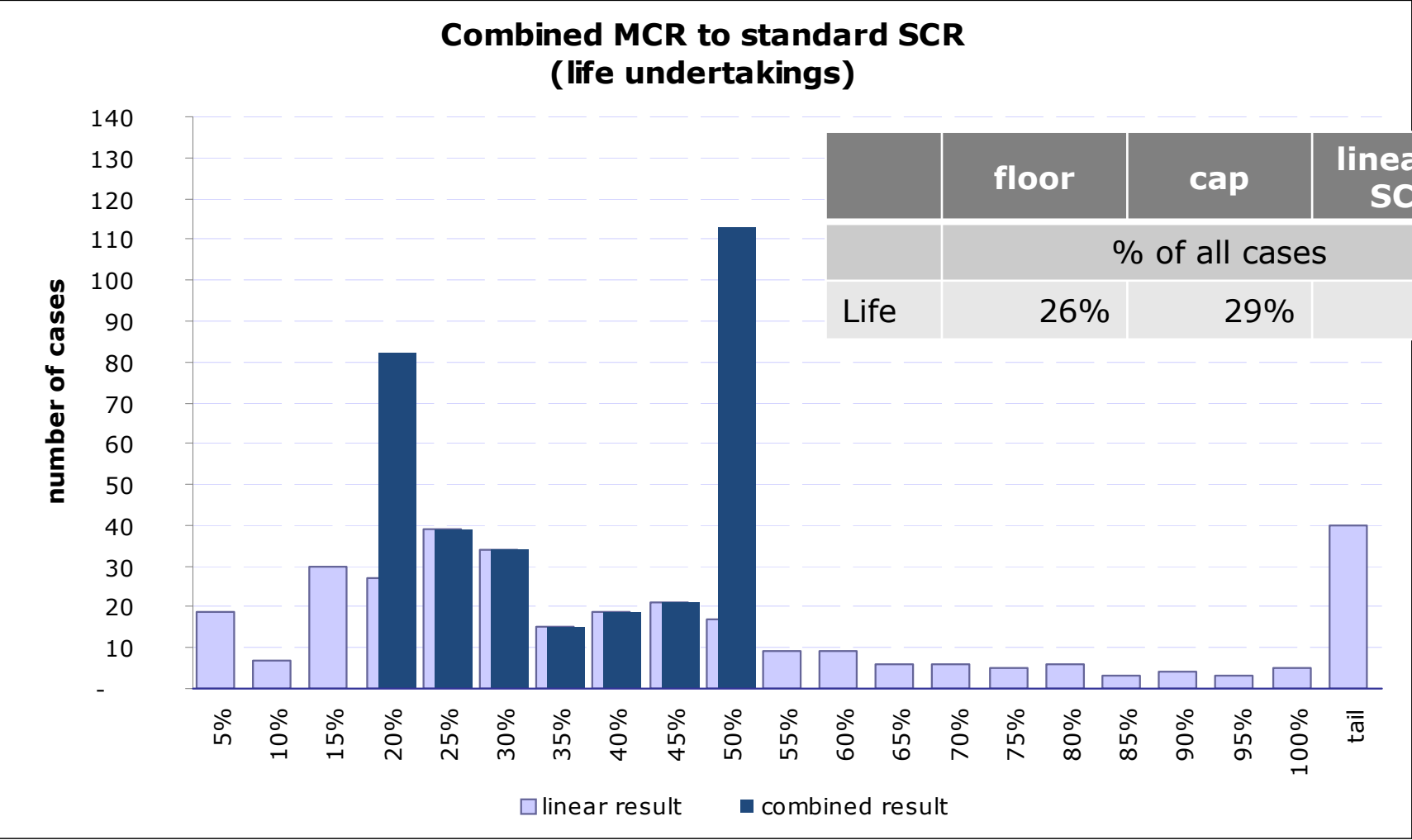
- The calculation of the MCR caused little or no practical difficulty for most participating undertakings.
- By design, the corridor kept all combined MCR to SCR ratios in the 20% to 50% range (save the absolute floor).
- Majority of supervisors expressed support for the combined approach, or regard it as acceptable compromise.
- Some supervisors expressed concerns that the QIS4 combined approach achieved the calibration target and supervisory ladder at the expense of simplicity, auditability and/or safety net.

## MCR – Summary of feedback

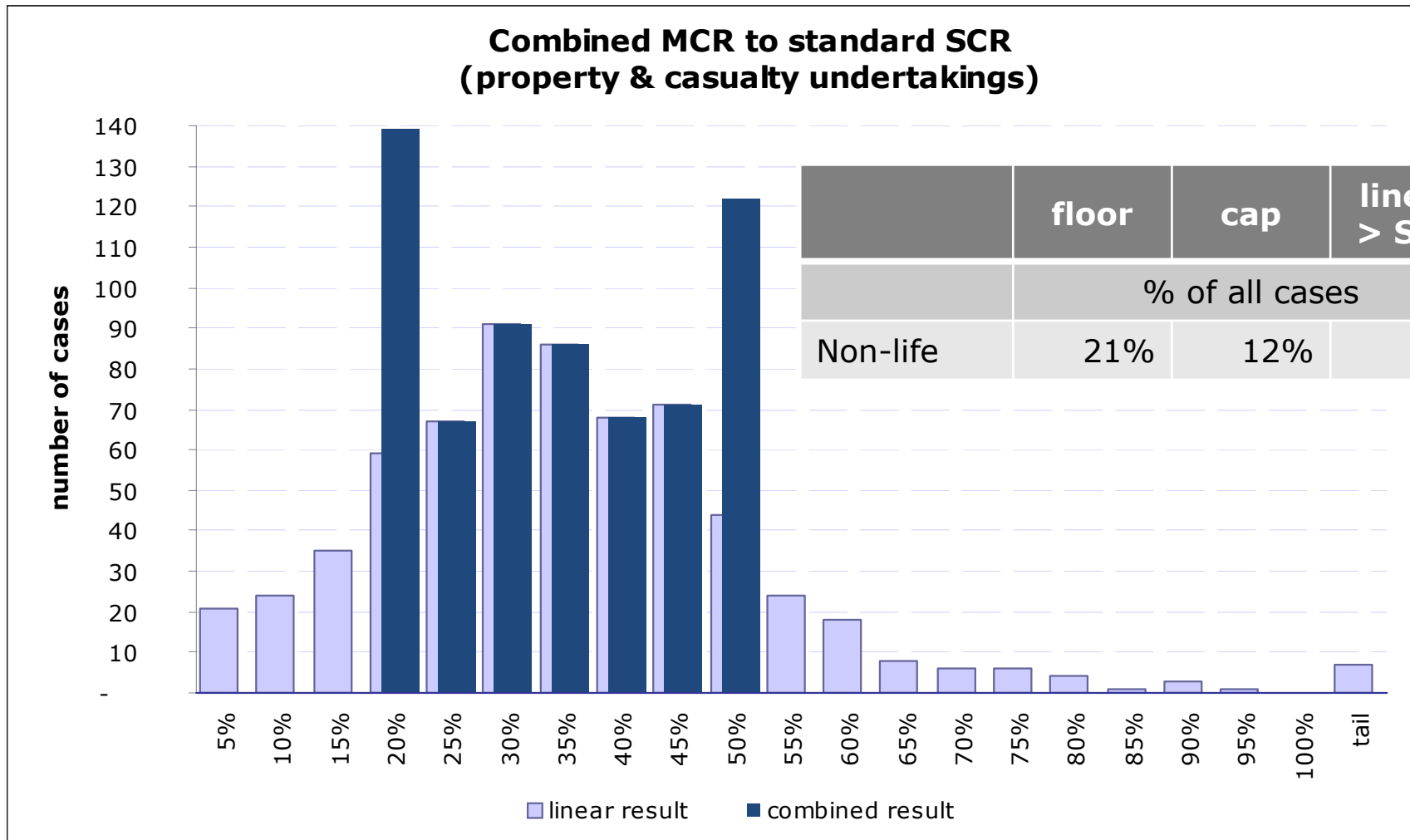
### Main findings:

- For non-life business, the underlying linear calculation broadly met the calibration target.
- For life business, QIS4 results indicate that the underlying linear calculation would need improvement. Although the results were more stable than in the QIS3 modular approach, significant upward and downward deviations from the calibration target were observed, varying between individual business profiles and between country markets.

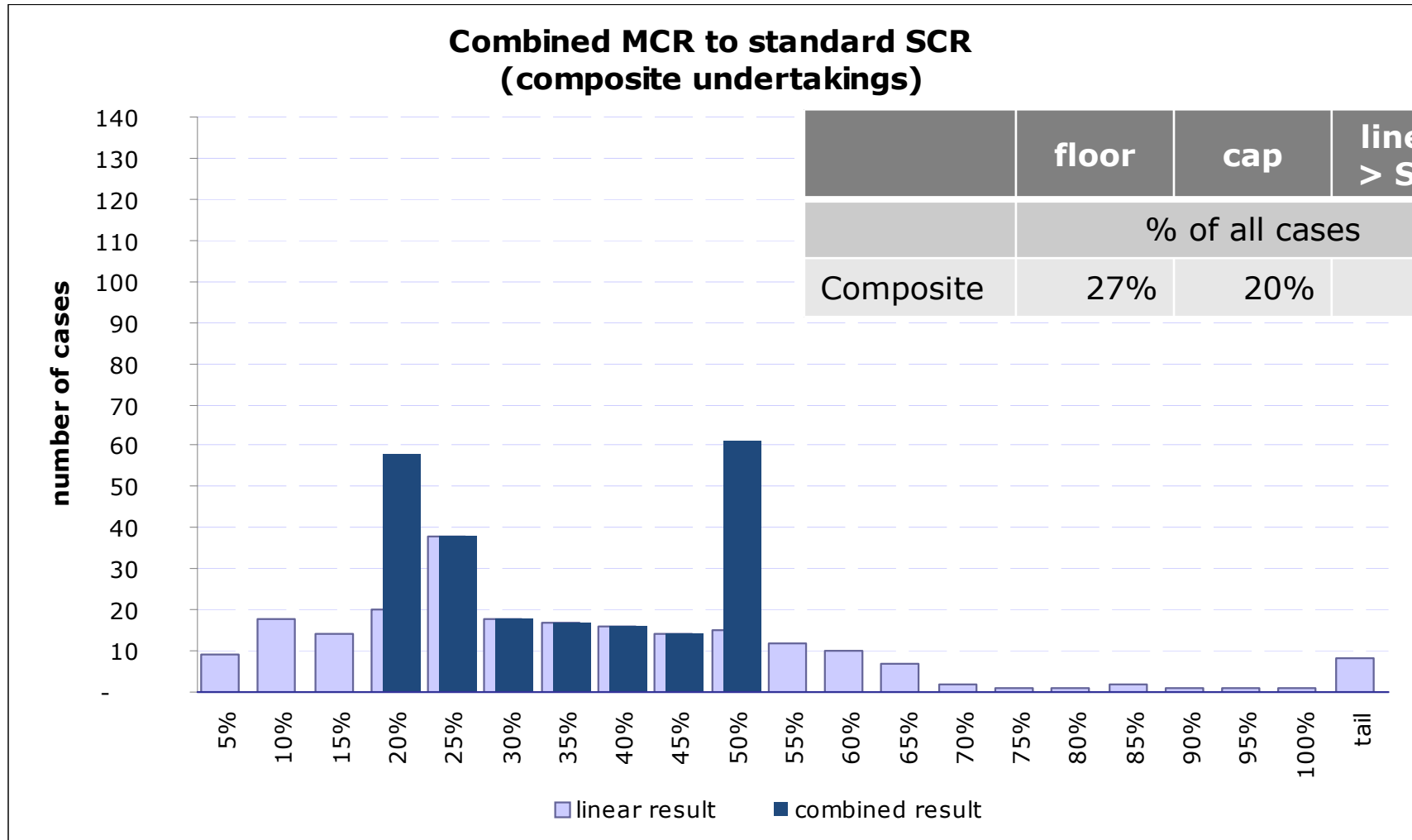
# MCR – Distribution of MCR to SCR ratios, life



# MCR – Distribution of MCR to SCR ratios, non-life

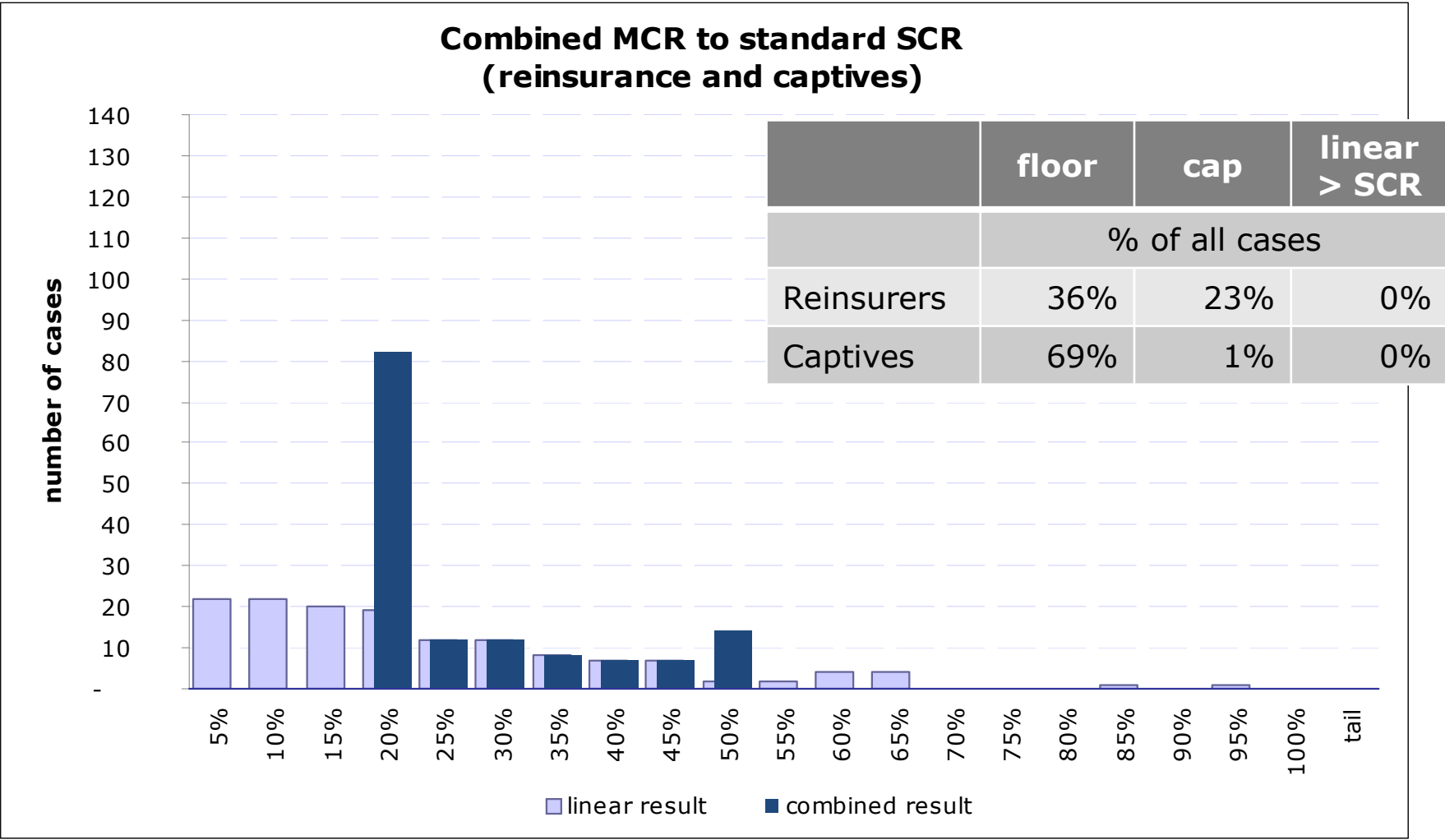


# MCR – Distribution of MCR to SCR ratios, composite

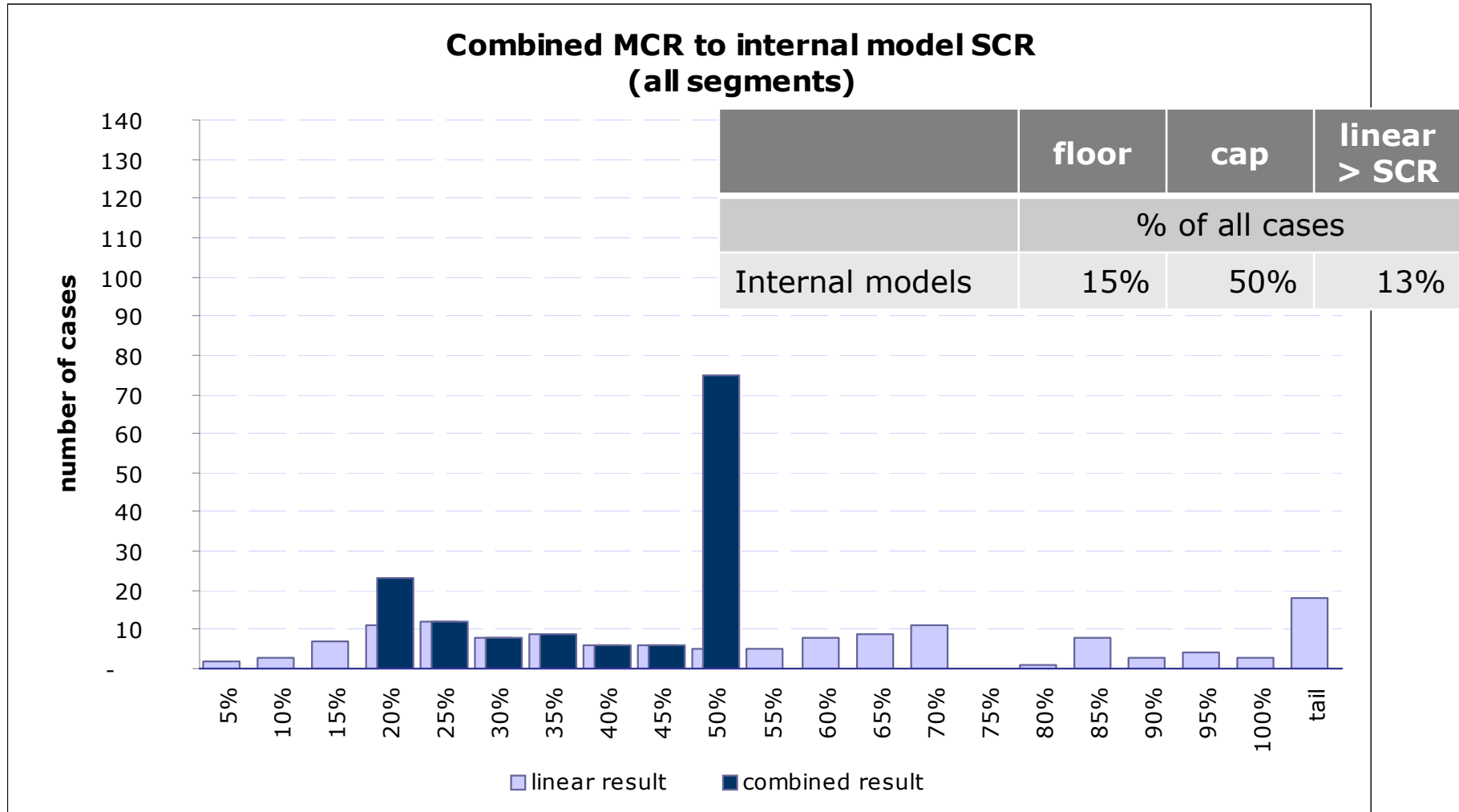




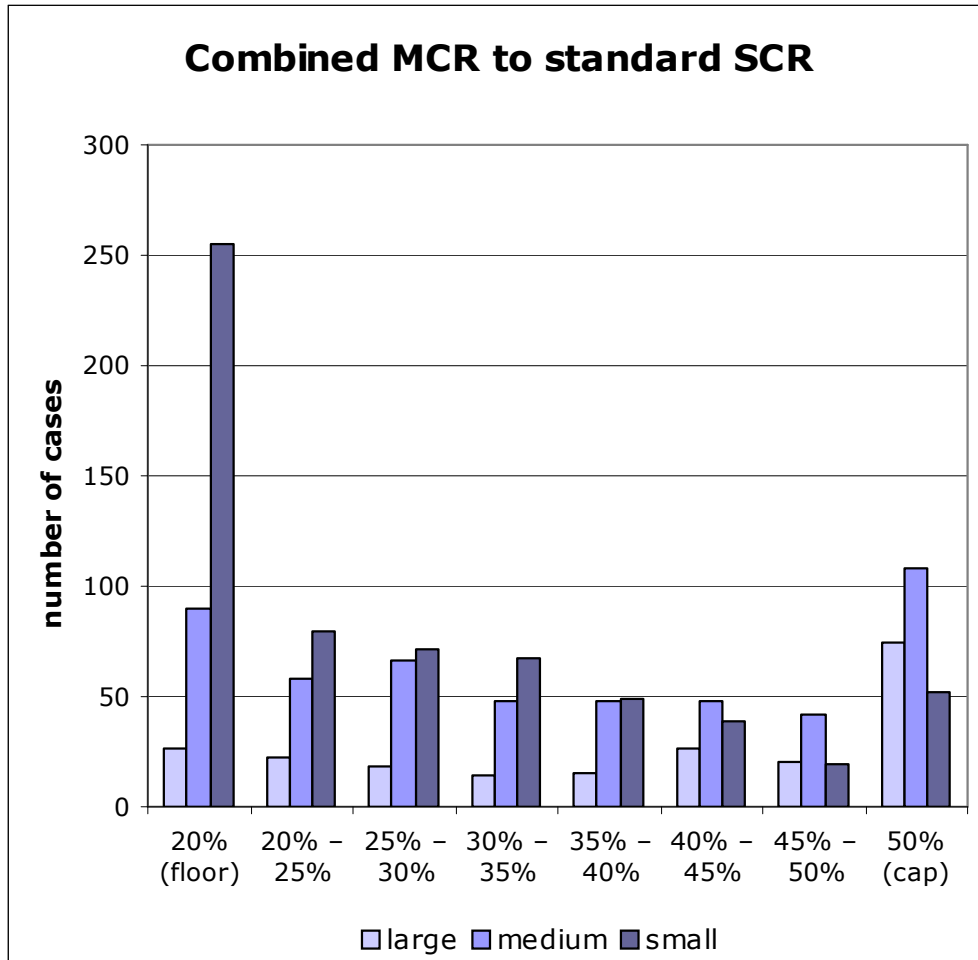
# MCR – Distribution of MCR to SCR ratios, reinsurance and captive



# MCR – Distribution of MCR to SCR ratios, internal models

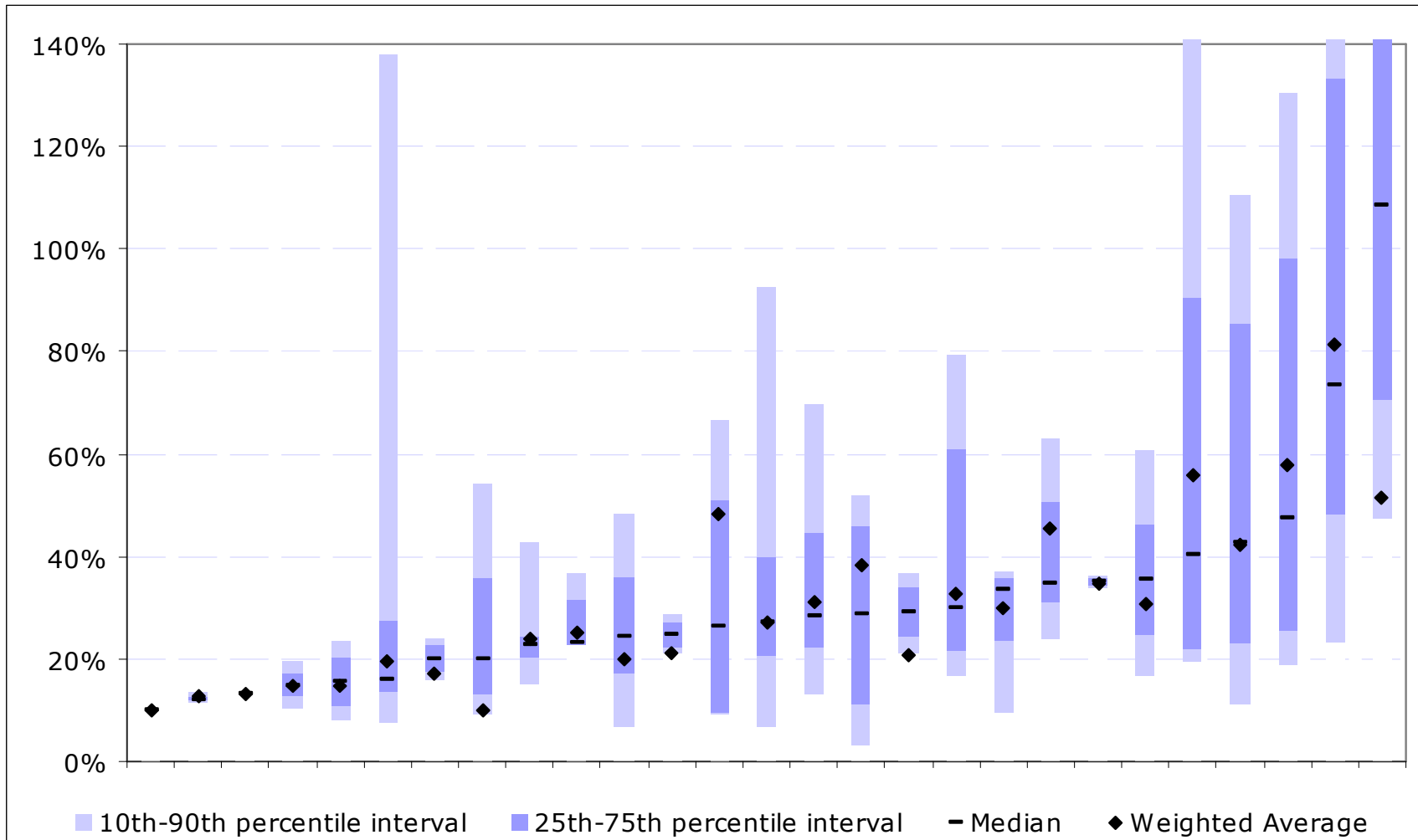


# MCR – MCR to SCR ratios per size segment

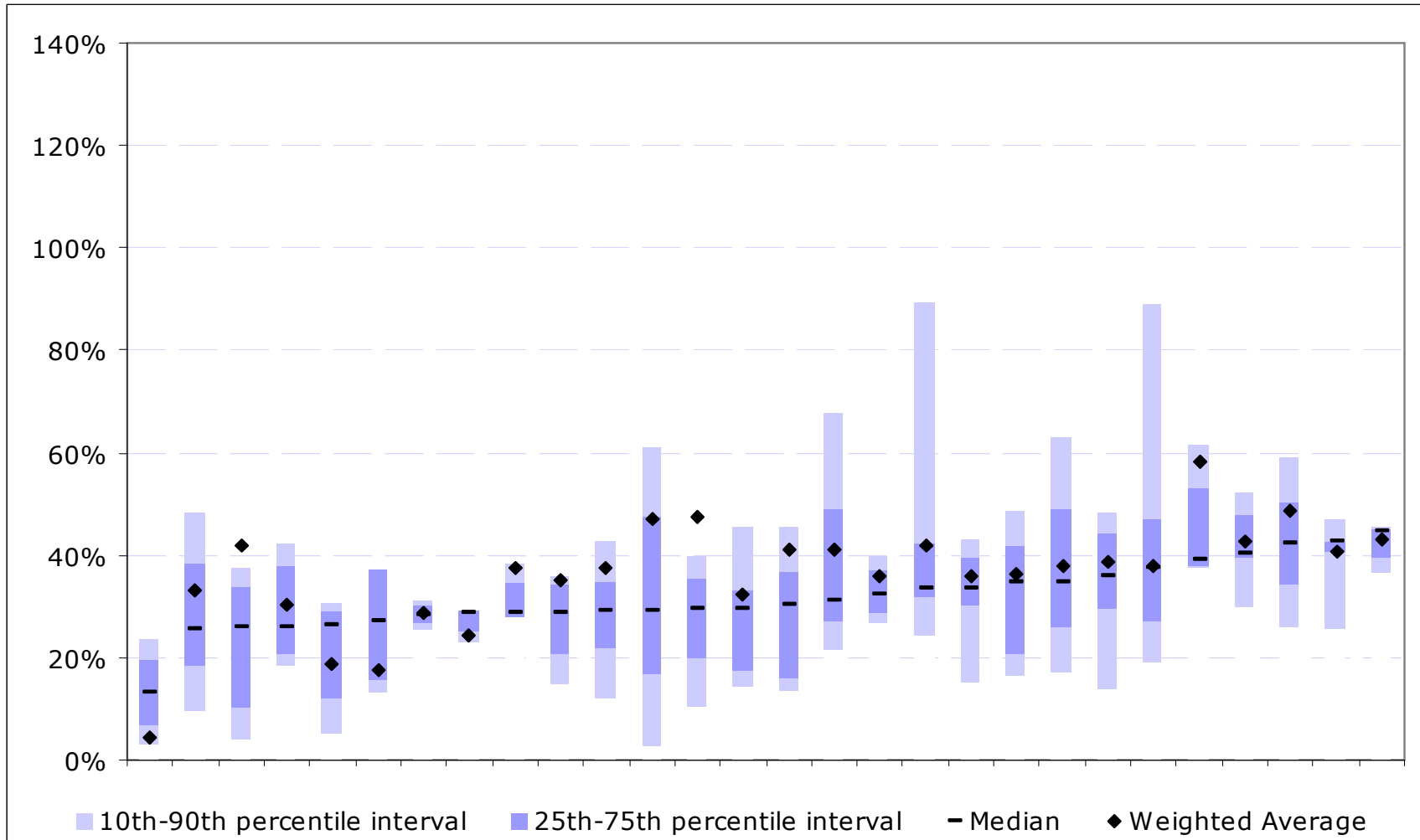


	floor	cap	linear > SCR
	% of all cases		
large undertakings	12%	34%	9%
medium undertakings	18%	21%	5%
small undertakings	40%	8%	2%

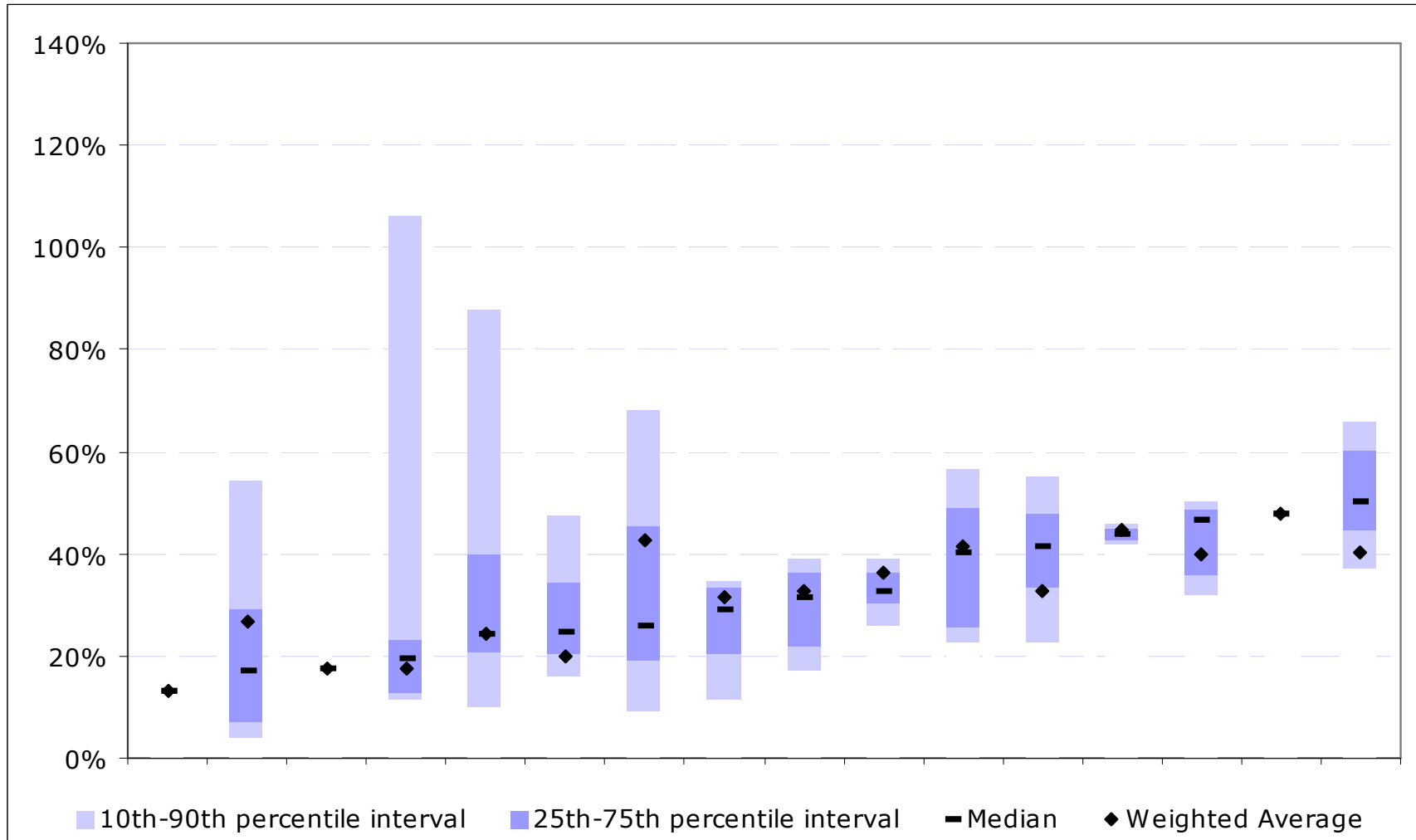
# MCR – Variation by country, linear MCR to SCR, life



# MCR – Variation by country, linear MCR to SCR, non-life



# MCR – Variation by country, linear MCR to SCR, composite



# Internal Models

## Internal Models – main findings

Main findings (with caution due to sample size and auditability):

- Many undertakings consider the standard formula to work reasonably well and will hence not seek internal model approval.
- Replacing the standard formula with a partial or full internal model is nevertheless a possible route for many undertakings.
- Equal considerations were given towards full and partial internal models.
- Better risk management and governance seems to be the key drivers for seeking internal model approval.
- There is a wide variety of partial internal models currently in use.



# Internal Models – main findings

## Main findings:

- The majority of the respondents indicated that SCR will decrease with an internal model and slightly less than half of the respondents reported a potential decrease of more than 20%.
- Risk modules where the internal models seems to create lower capital requirement than the standard formula include overall SCR, BSCR, market risk (interest rate risk) life underwriting risk (longevity risk, lapse risk), health underwriting risk (health short term underwriting risk) non-life underwriting risk and premium/reserve risk.
- Risk modules where the internal models seems to create higher capital requirement than the standard formula include operational risk, equity risk, property risk and mortality risk.

# Internal Models – main findings

## Main findings:

- The development stage of internal models varies significantly by undertaking.
- Due to the very scarce sample size no meaningful estimates can be made for the expected total EU wide costs related to the potential use of internal models in Solvency II.
- In order to reach a full compliance with an anticipated Solvency II framework further work are required by many undertakings in all areas concerned (use test, statistical quality, calibration, profit and loss attribution and validation etc.).

## Internal Models – Qualitative remarks

- Feedback from about half of QIS4 participants
- Do you have plans to use an internal model in the future for calculating the SCR at least partially?
  - 63% of the respondents have plans to use an internal model in the future at least partially. 13% of the respondents have no plans and 24% do not know yet.

## Internal Models – Qualitative remarks

- Reasons for developing an internal model
  - better risk management, better capital management and more transparent decision-making (each over 90%).
  - lower regulatory capital (about 60%)
- Reasons for not having an internal model:
  - too demanding (90%)
  - standard SCR works well (90%)
  - too large administrative burden (87%)
  - too expensive (80%).

## Internal Models – Qualitative remarks

- Full or partial internal model?
  - More than half of the respondents, who have plans to use internal models, have plans to seek full Internal model (full 55% / 45% partial).
  - Size factor is relevant
    - 69% of large respondents have plans to seek full internal model whereas
    - 63% of small respondents have plans to seek partial internal model.

## Internal Models – Qualitative remarks

- Which modules are most likely to be substituted?
  - In general, SCR non-life risk, SCR market risk and SCR life risk modules are most likely to be substituted. Especially (more than 65%)
    - Property and Casualties insurers: non-life premium risk module
    - Composites: non-life premium risk, interest rate risk, equity risk, mortality risk, longevity risk and lapse risk modules
    - Life insurers: interest rate risk module
    - Reinsurers: non-life premium risk and non-life cat risk modules
  - Nearly 40% of all the respondents thought that also SCR operational risk and SCR default risk modules are most likely to be substituted.

## Internal Models – Qualitative remarks

- Potential additional costs in respect of Solvency II model approval requirements?
  - 60% expect additional costs
  - 5% do not expect additional costs
  - 35% of the respondents do not know yet

## Internal Models – Qualitative remarks

- Potential decrease/increase in solvency requirement relative to the standard formula:
  - 72% of the respondents who gave an estimate said that there would be a decrease in SCR.
  - 18% assumed that with internal model the SCR would increase.
  - The larger the respondent the more they expected more than a 20% decrease in SCR.



## Internal Models – Quantitative remarks on internal model relative to standard formula

- 141 firms from 16 countries provided results from their internal model:
  - 63 life firms
  - 59 non-life firms
  - 19 composite firms
- In the analysis of the internal model results below, the ratio of the risk capital calculated by the internal model to the risk capital derived from the standard formula has been considered. Thus if this ratio is more than 100%, the internal model provides higher capital than the standard formula. The opposite is true for a ratio less than 100%.

# Internal Models – Caveats on comparison of internal model and standard formula results !

- Cautious interpretation of quantitative results !
  - Internal models do not necessarily group risks in modules and sub-modules like the standard formula
  - Internal models might use different methods in order to model dependencies
  - Internal models might assess loss-absorbing capacities of future profit sharing or deferred taxes in a one-step approach
  - Internal models might provide capital charges for certain modules only after diversification
  - Internal models might take risks into account which are not covered by the standard formula, and vice-versa .

# Internal Models – Quantitative remarks on internal model relative to standard formula

- The median of the ratios across all firms is 89%.
  - However, this median varies by the type of firm:
    - 95% for life
    - 79% for non-life
    - 102% for composites
  - Further insights into the variance between different types of firms and where there is scope for convergence of internal model and standard formula results can be drawn from an analysis of the results provided at risk module and sub-module level (where available, the risk capital by risk module is compared net of reduction for future profit sharing).

# Internal Models – Quantitative remarks on internal model relative to standard formula

- Within market risk capital
  - equity risk capital internal models > standard formula.
  - All data-providing countries:
    - average global equity stress test within internal models > 40%.
  - Some member states: for life firms
    - internal model SCRs > standard formula SCRs
    - mainly from the choice of higher parameters for equity shocks.

# Internal Models – Quantitative remarks on internal model relative to standard formula

- OpRisk capital
  - internal model > standard formula
  - median ratio 133%
  - 13 of 16 countries: median of the ratio  $\geq$  100%
- Non-life underwriting risk
  - premium and reserve risk
    - internal model < standard formula with a ratio of 76%
    - 10 of 11 data-providing countries: median of the ratios < 100%.

# Internal Models – Quantitative remarks on internal model relative to standard formula

- Life underwriting risk
  - mortality risk:
    - internal model  $>$  standard formula capital
    - median ratio of 130%
  - longevity risk
    - internal model  $<$  standard formula capital
    - median of ratio of 91%
  - lapse risk
    - internal model  $<$  standard formula capital
    - median ratio of 67%.

# Internal Models – Quantitative remarks on internal model relative to standard formula

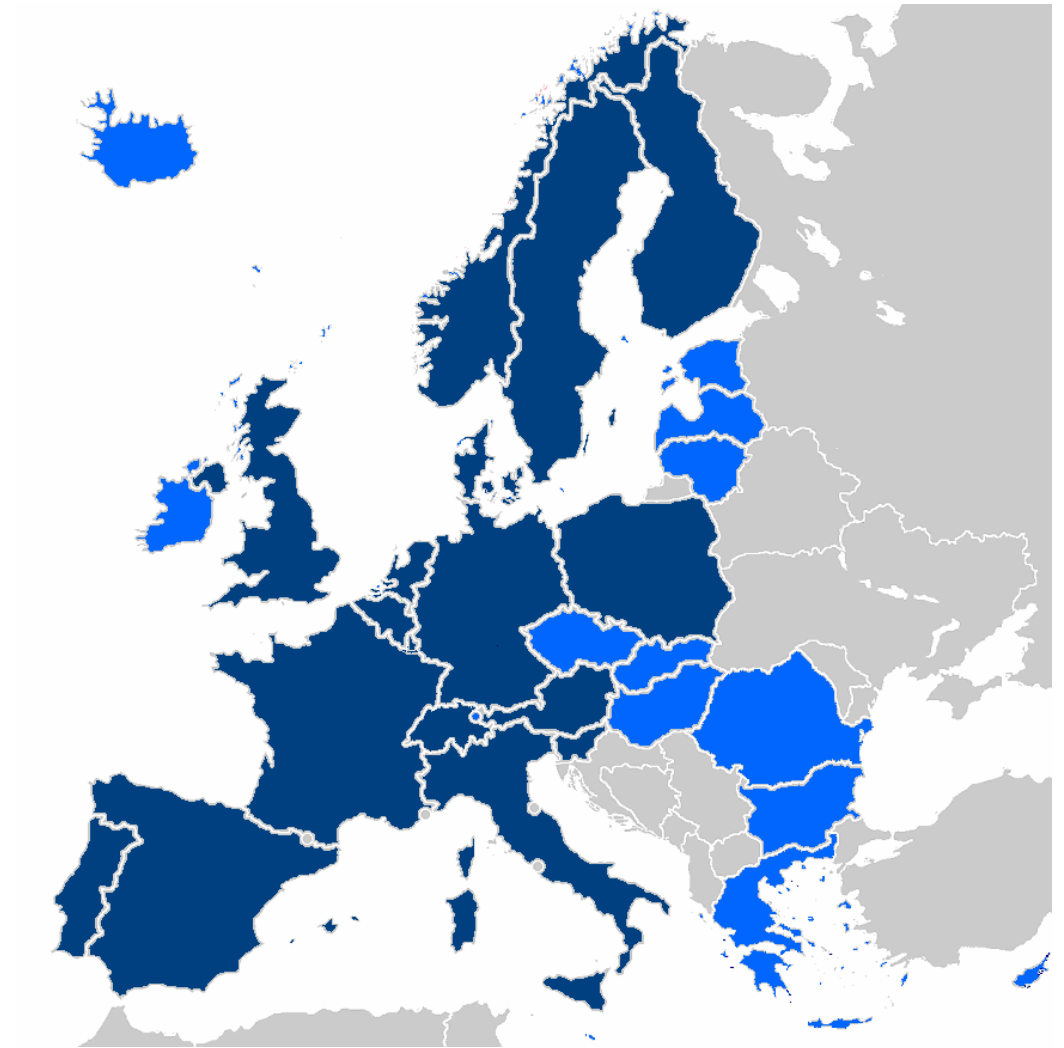
- Counterparty default risk
  - median ratio 100%,
  - wide variation of results among different member states
  - no clear conclusion can be drawn from the given information.
  
- Overall SCR
  - for 13 of the 16 countries that provided internal model results, the median of the ratio was below 100%, with the other 3 countries displaying a median of the ratio above 100%.

# Group Solvency



# Participation

- Number of groups: 111
- Number of EEA home countries: 16



## Quality and quantity of data

- Sample heterogeneous and big enough to have a good view of diversification effects
- Reservation on assessment of own funds
- Good basis for further work on transferability
- General trend on surplus

## Comparison of methods

- Impact of IGT, “real” diversification, non-EEA entities and WP

Impact of	10th	25th	50th	75th	90th	Weighted average	Sample size
Global impact	60.3%	69.0%	80.5%	89.9%	98.1%	73.7%	(48)
IGT	64.4%	79.0%	89.9%	97.5%	100.0%	91.4%	(54)
Real diversification	77.2%	83.5%	88.7%	93.7%	96.2%	78.7%	(24)
EEA	64.5%	71.3%	82.0%	92.7%	97.1%	79.1%	(42)
WP	72.7%	79.4%	86.8%	94.2%	96.9%	84.1%	(35)

# Intra-group transactions

- Participations
  - Equity risk
  - Concentration risk
  
- Internal reinsurance
  
  
- Loans

# Group „specific“ diversification

- Concentration risk
  - 20 of assets out of 120 in one entity leads to concentration risk
  - 25 of assets out of 600 in the group leads to no concentration risk
- Geographical diversification
  - Up to 20% NL premiums and reserves per line of business in some groups
  - Group specific parameters will not always be available because of change of perimeters

## Group „specific“ diversification

- Non-life cat risk
  - Materiality threshold

	<b>Scen. 1</b>	<b>Scen. 2</b>	<b>Scen. 3</b>	<b>Scen. 4</b>	<b>Scen. 5</b>	<b>SCR NLcat</b>
Entity 1	100	30	30	20	0	109
Entity 2	30	0	0	5	20	36
Group	130	30	30	25	20	130 (145)

## Diversification amplified at group level

- Better diversification
  - Business mix
  - No offset within the submodules in the example below

	<b>Market</b>	<b>Life</b>	<b>Health</b>	<b>Non-life</b>	<b>SCR</b>	<b>Div</b>
Non life entity	500	-	-	500	791	21%
Life entity	800	200	-	-	872	13%
Health entity	20	-	20	-	32	21%
Group	1320	200	20	500	1586 (1695)	23%

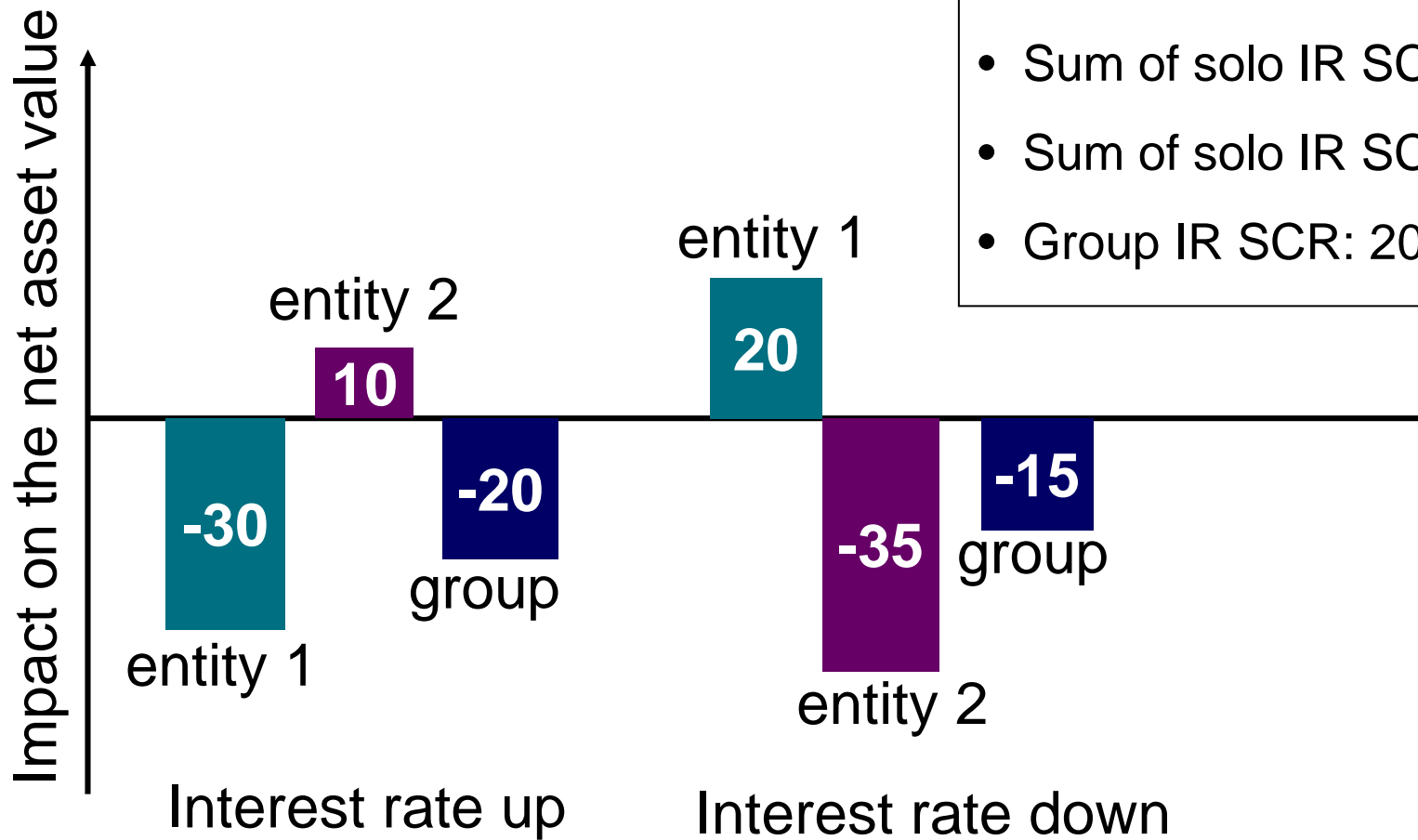
## Diversification amplified at group level

- Better diversification
  - Asset diversification
  - No offset within the submodules in the example below

	<b>IR up</b>	<b>IR down</b>	<b>Equity</b>	<b>Spread</b>	<b>SCR market</b>	<b>Div</b>
Entity up	30	5	15	3	35	27%
Entity down	5	30	15	3	35	27%
Group	35	35	30	6	49 (70)	31%



# Interest rate risk



- Sum of solo IR SCR solo: 65
- Sum of solo IR SCR (up risk) : 30
- Sum of solo IR SCR (down risk): 35
- Group IR SCR: 20

## Group impact

- Impact of reduction for profit sharing (FDB)
  - 36% (as a % of the SCR) as a median and 54% as a weighted average
- Deferred taxes as a percentage of SCR
  - 18.8% as a percentage of SCR

# Group amplified issues

- Non-OECD bonds covering insurance liabilities in the same currency
- Currency risk
  - In the holding
  - On surplus in the different entities
    - Currency of the head of the group
    - Basket of currencies depending on the group
- Interest risk
  - Up and down interest rate shocks at the same time

# Group own funds: some results

- Group own funds calculated applying the solo standard formula to the consolidated accounts
- Group own funds would increase under QIS4 compared to their Solvency I position
- Basic own funds in QIS4 regime are about 98.2% of total group own funds
- Most of the group own funds have been classified as Tier 1 capital (on average 90.8% of the total own funds)

# Main categories of group own funds

## Basic own funds

- Common equity capital (net of own shares)
- Profit/loss carried forward (i.e. retained earnings)
- Valuation adjustments to liabilities
- Subordinated loans (perpetual and dated) => proportion of hybrid capital is higher than at solo level (inclusion of holdings)

## Ancillary own funds

- Supplementary member calls (other)

Most ancillary own funds form a small proportion of total own funds

# Transferability of group own funds

- Adjustments to non-transferable assets in order to limit the use of eligible elements to cover the group own funds:
  - Participation in non-EEA re(insurance) entities
  - With-profit business
  - Minority interests
  - Hybrid capital
  
- The valuation was found difficult by several groups

# Transferability: Non-EEA entities

- Groups noted that the diversification benefits between non-EEA and EEA entities should be recognized
- Supervisors highlighted the importance of understanding the transferability of capital within a group
- Issue for supervisors is how to incorporate the impact of local restrictions on consolidation

# Transferability: With-profit funds

- Groups noted that diversification benefit between with-profit business and other business should be permitted
- Supervisors highlighted the importance of understanding the transferability of capital within a group
- Possible issues CEIOPS to consider:
  - how to consolidate with-profit funds
  - various treatments of with-profit funds across EEA



# Transferability: some issues

- The figures about the treatment of non-transferable assets are not always consistent across groups
- Supervisors noted that it is difficult to draw any general conclusion on the amount of non-transferable assets
- The valuation of non-transferable assets has significant effects on the valuation of group own funds and on surplus
- Groups and supervisors asked for more guidance/clarifications at EU level

# Evolution of surplus

- On average, slight increase of group surpluses
- Results vary largely from one group to another
- Data on group surplus should be interpreted with care given that the calculation of group SCR and group own funds is not completely reliable

# Group Support

- Almost no quantitative data
- groups have focussed more on the core group calculations than on the valuation of the quantitative amounts of group support
- QIS4 was based on the group accounts as at the end of 2007 in a regulatory framework without group support
- Groups have classified the group support as Tier 2

# Group Support

## Qualitative inputs from groups

- comments received from largest groups
- comments in favour of group support regime

## Almost no input from supervisors:

- Still a political issue
- Reference to CEIOPS' Consultation Paper No 25

## Main findings

- CEIOPS appreciates great effort by groups
- First QIS with sample big enough for analysis of potential quantitative/qualitative impact of Solvency II on European groups
- Significant level of “real” diversification (21% on average in subsample)
- Relevant impact of intra-group transactions
- Higher proportion of hybrid capital compared to solo results
- Slight increase of group surplus but the results vary largely from one group to another

[www.ceiops.eu](http://www.ceiops.eu)

