



*A Berkshire Hathaway Company*

## **Solvency II Update Tokyo, 16 October 2008**

*Dr. Winfried Heinen*

# Agenda

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- The Solvency II Project: Reminder & Current State
- A Look at the Framework Directive
- Pillar 1
  - Central Idea SCR
  - QIS4 Technical Specifications
  - Some results from QIS3
  - Life underwriting risk
  - R/I Counterparty default risk

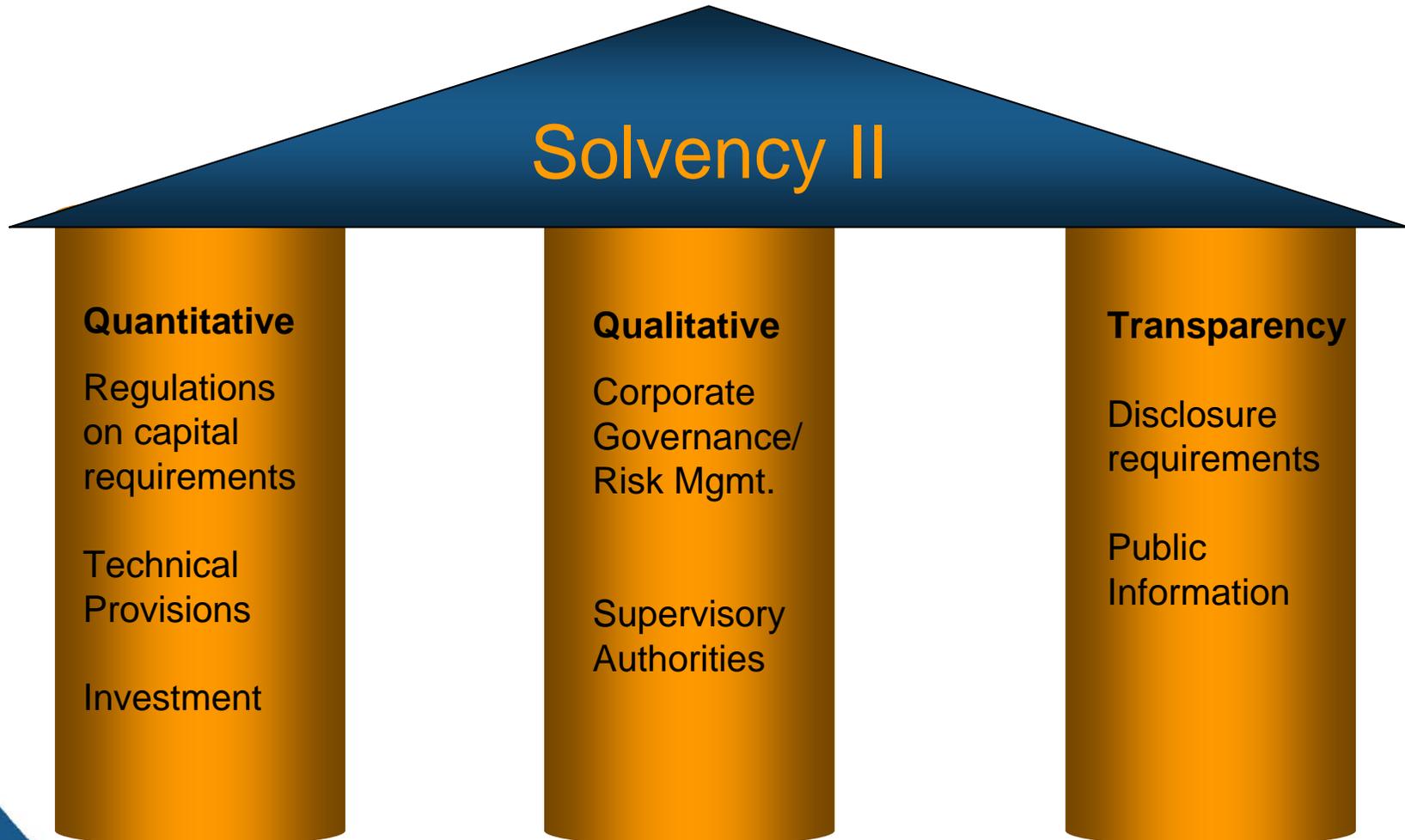
# What is Solvency II?

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- Project of the European Commission to harmonize insurance regulation (incl. Solvency requirements) within the EU
- Replacement of rules-based solvency capital requirements to principle-based risk management requirements including as a subpart the quantification of the solvency capital requirement
- Undertaken by recasting thirteen existing directives regarding insurance into one new directive

# Solvency II: The Three Pillars

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# Solvency II: QIS

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- QIS1 Technical Provisions
- QIS2 +European standard model
- QIS3 +Comparison to internal models, Own funds, groups
- QIS4 +Alignment of Technical Specifications with Framework Directive, Preparation of Implementing Measures, Simplifications
- QISx ?

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## Framework Directive – Qualitative Pillars

Article(s)	Scope	Pillar
27-39	Supervisory Authorities and General Rules	2
40	Responsibility of the administrative or management body	2
41-49	Governance System and general requirements	2
35	Information to be provided for supervisory purposes	3
50-55	Public Disclosure	3
70	Promotion of supervisory convergence	3
210-268	Group Supervision	All

## Key terms in Pillar 2 & 3

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- Key Principles:
  - Prospective, risk-oriented
  - Economic approach
- SRP
- System of Governance
  - Risk Management function
  - ORSA
  - Internal Control
  - Internal Audit
  - Actuarial function
- Principle of Proportionality

## Framework Directive – Quantitative Pillar

Article(s)	Scope	Pillar
74	Valuation of assets and liabilities	1
75-85	Technical provisions	1
86-99	Own funds	1
100-125	Solvency Capital Requirement (SCR)	1
126-129	Minimum Capital Requirement (MCR)	1
130-133	Investments	1
210-268	Group Supervision	All

# Agenda

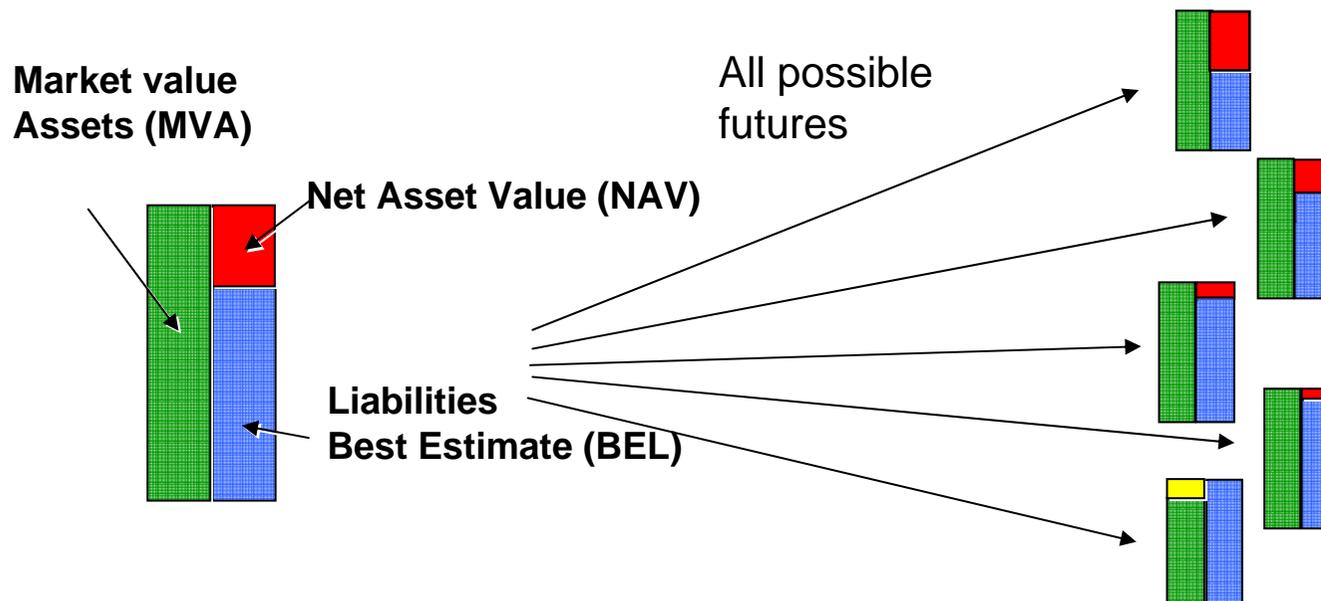
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# Pillar 1: Central Idea SCR

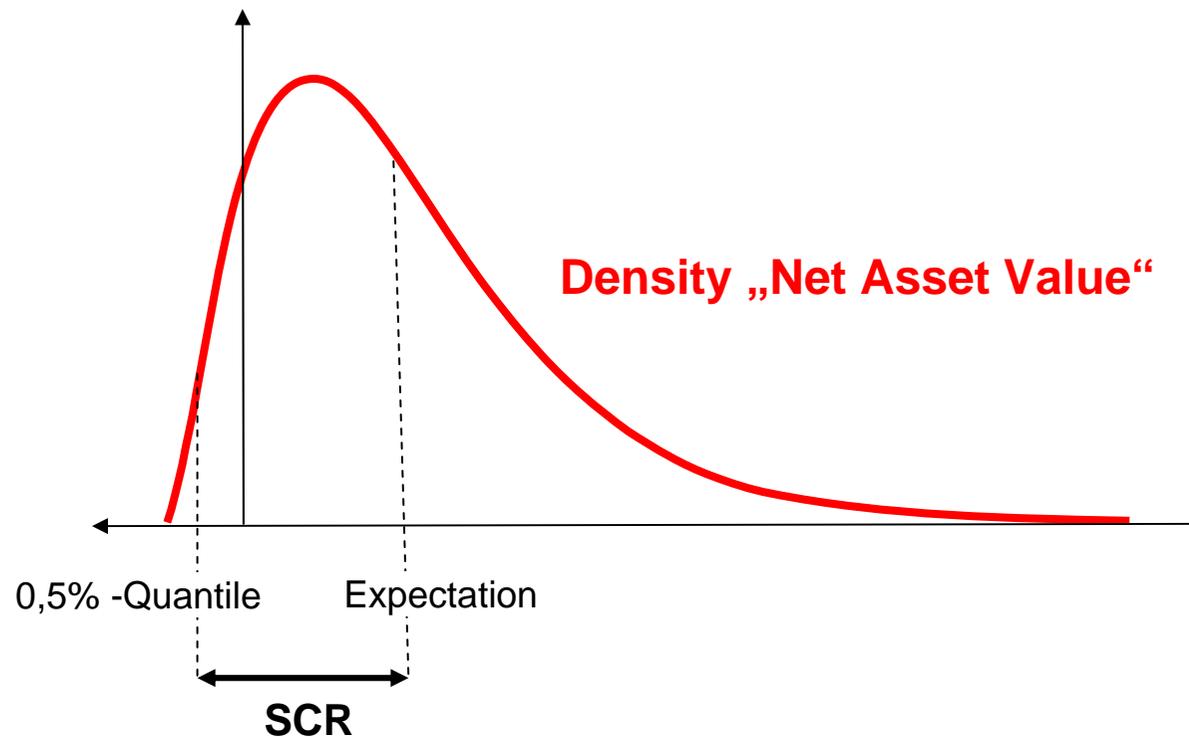
SCR: Find the economic capital that is necessary to fulfill all obligations in the next year with a probability of 99.5% (default once in 200 years)

$$\text{MVA} = \text{NAV} + \text{BEL}$$



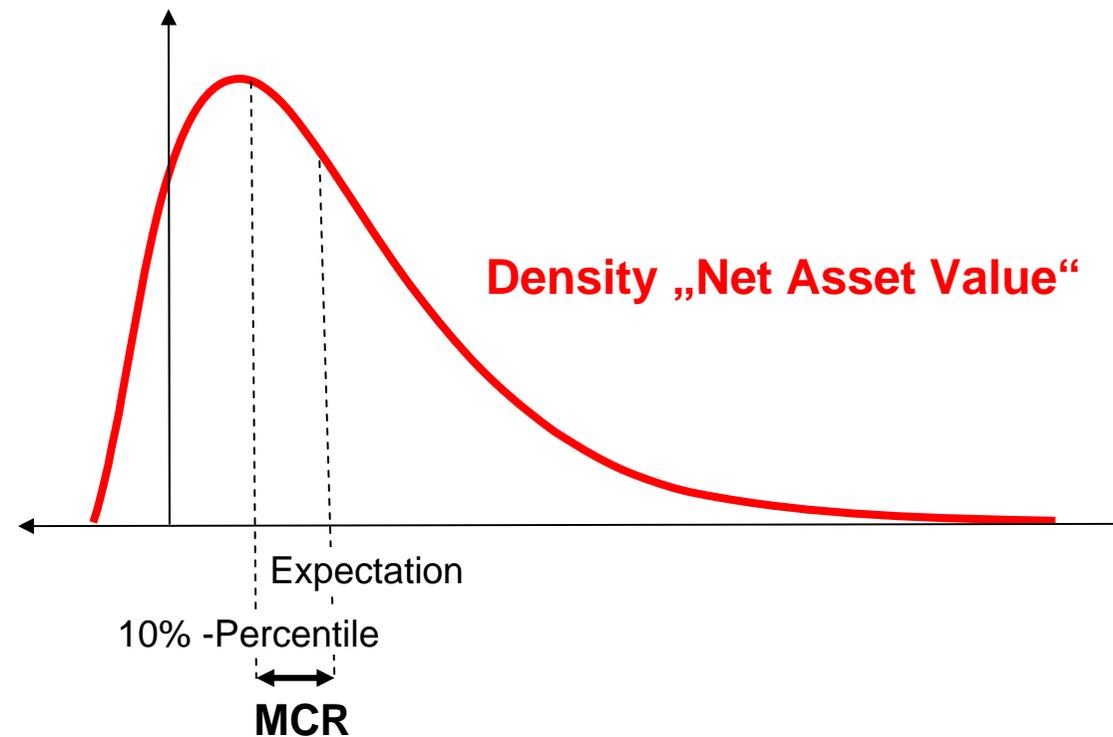
# Pillar 1: Central Idea SCR

SCR: Find the economic capital that is necessary to fulfill all obligations in the next year with a probability of 99.5% (default once in 200 years)



# Pillar 1: Central idea MCR

MCR: Find the economic capital that is necessary to fulfill all obligations in the next year with a probability of 90% (default once in 10 years)



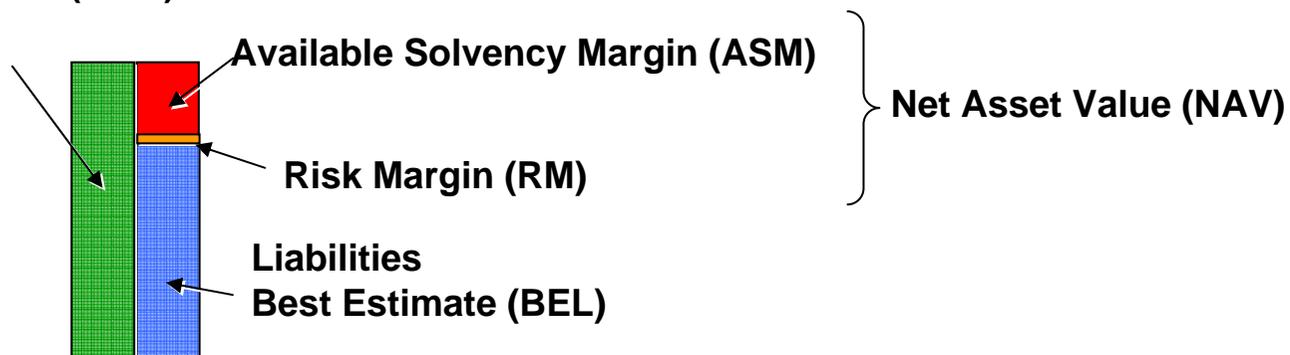
# Pillar 1: Central Idea ASM

The Available Solvency Margin (ASM) is the Net asset value (NAV) less the Risk Margin (RM). The Risk Margin can only be computed after the SCR, since it is the financing cost of future SCR (avoidance of recursive definition).

$$MVA = ASM + RM + BEL$$

$$MVA = NAV + BEL$$

Market value  
Assets (MVA)



# Pillar 1: From theory to practice

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- All possible futures is a nice concept in theory
- In practice:
  - identify a set of scenarios for different risk categories
  - aggregate the loss in net asset value from each scenario
- Each scenario represents the 200 year event for that risk

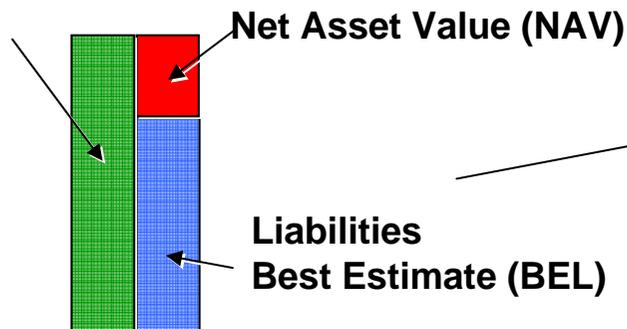
# Pillar 1: Modular Approach

SCR: Find the economic capital that is necessary to fulfil all obligations in the next year with a probability of 99.5% (default once in 200 years)

$$MVA_b = NAV_b + BEL_b$$

$$MVA_s = NAV_s + BEL_s$$

Market value  
Assets (MVA)



One Scenario  
per risk module



$$SCR_s = NAV_b - NAV_s$$

Aggregation assumptions

multidimensional normal distribution with  
estimated (given) correlations

Year t

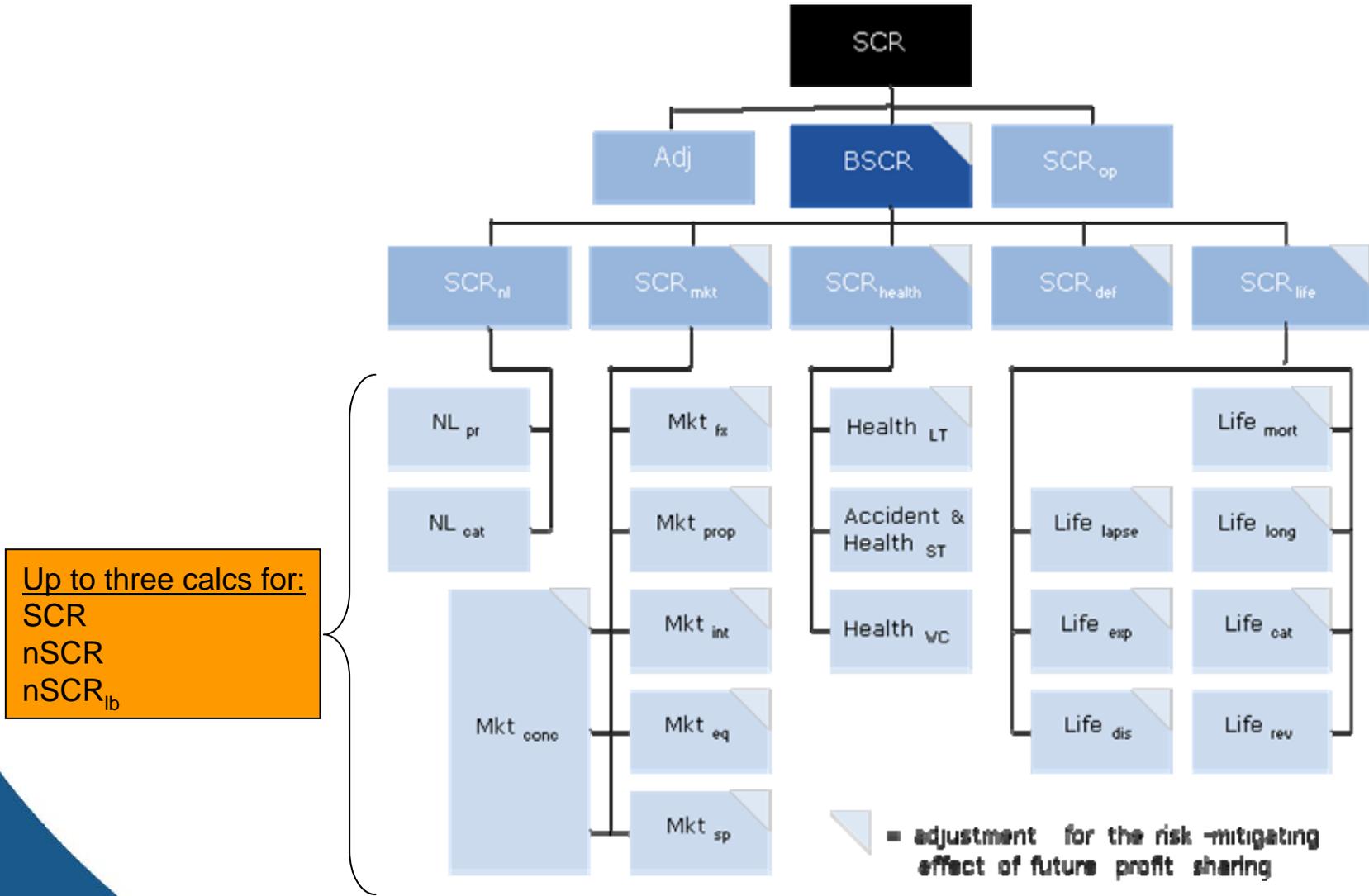
Year t+1

# Agenda

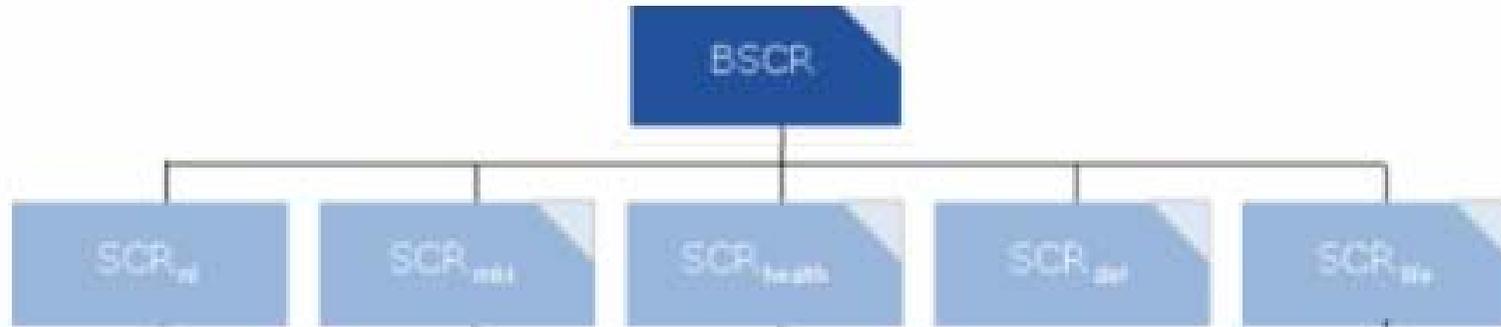
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# QIS 4: Technical Specifications



# Basic SCR



TS.VIII.A.7 For the aggregation of the individual risk modules to an overall SCR, linear correlation techniques are applied. The setting of the correlation coefficients is intended to reflect potential dependencies in the tail of the distributions, as well as the stability of any correlation assumptions under stress conditions.

$CorrSCR=$	$SCR_{mkt}$	$SCR_{def}$	$SCR_{life}$	$SCR_{health}$	$SCR_{nl}$
$SCR_{mkt}$	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

$$BSCR = \sqrt{\sum_{r,c} CorrSCR_{r,c} \cdot SCR_r \cdot SCR_c}$$

QIS4 Technical Specifications TS.VIII.C.4

# Agenda

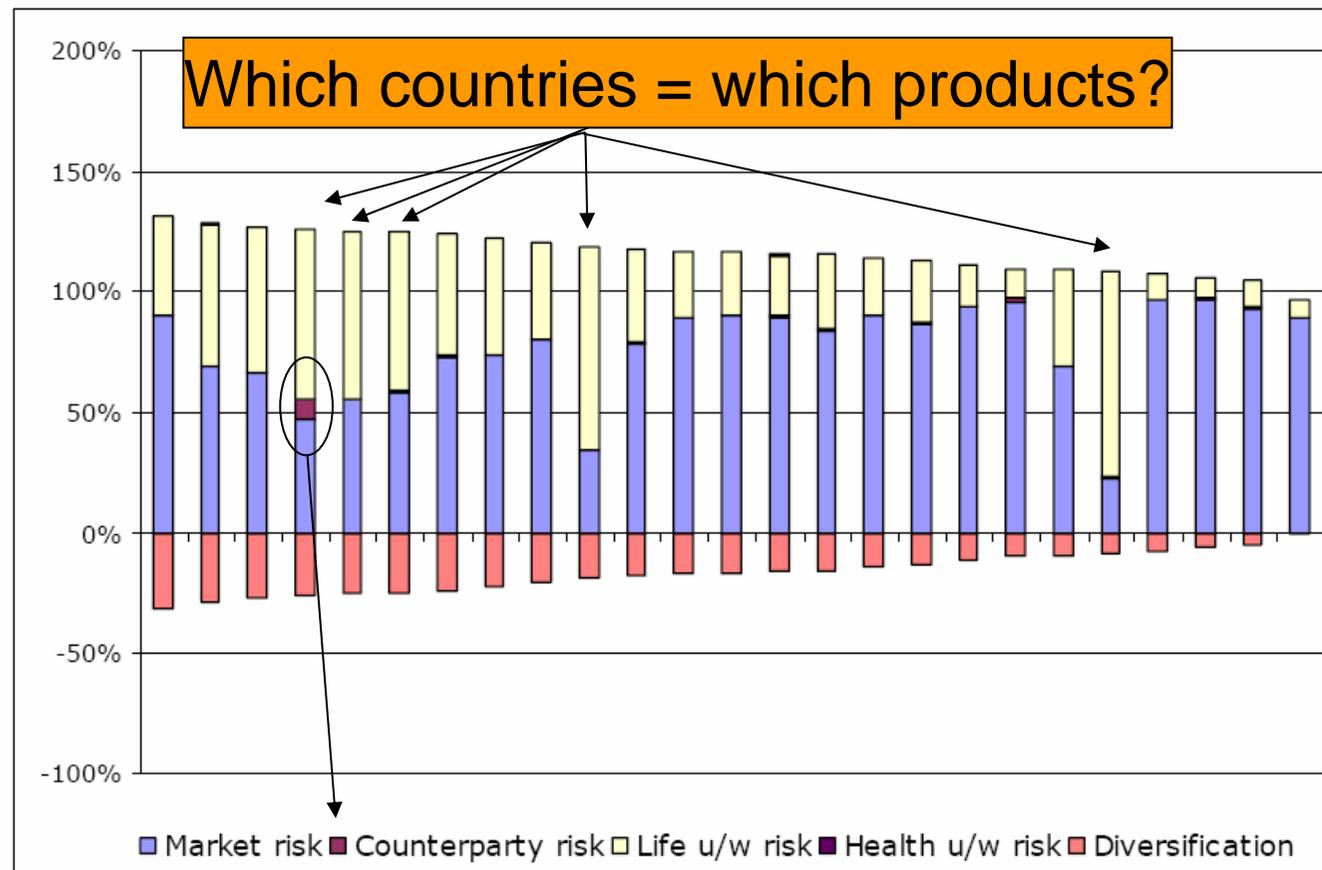
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# Mainly market risk, but there is hope ...

Solvency II - QIS3 Report

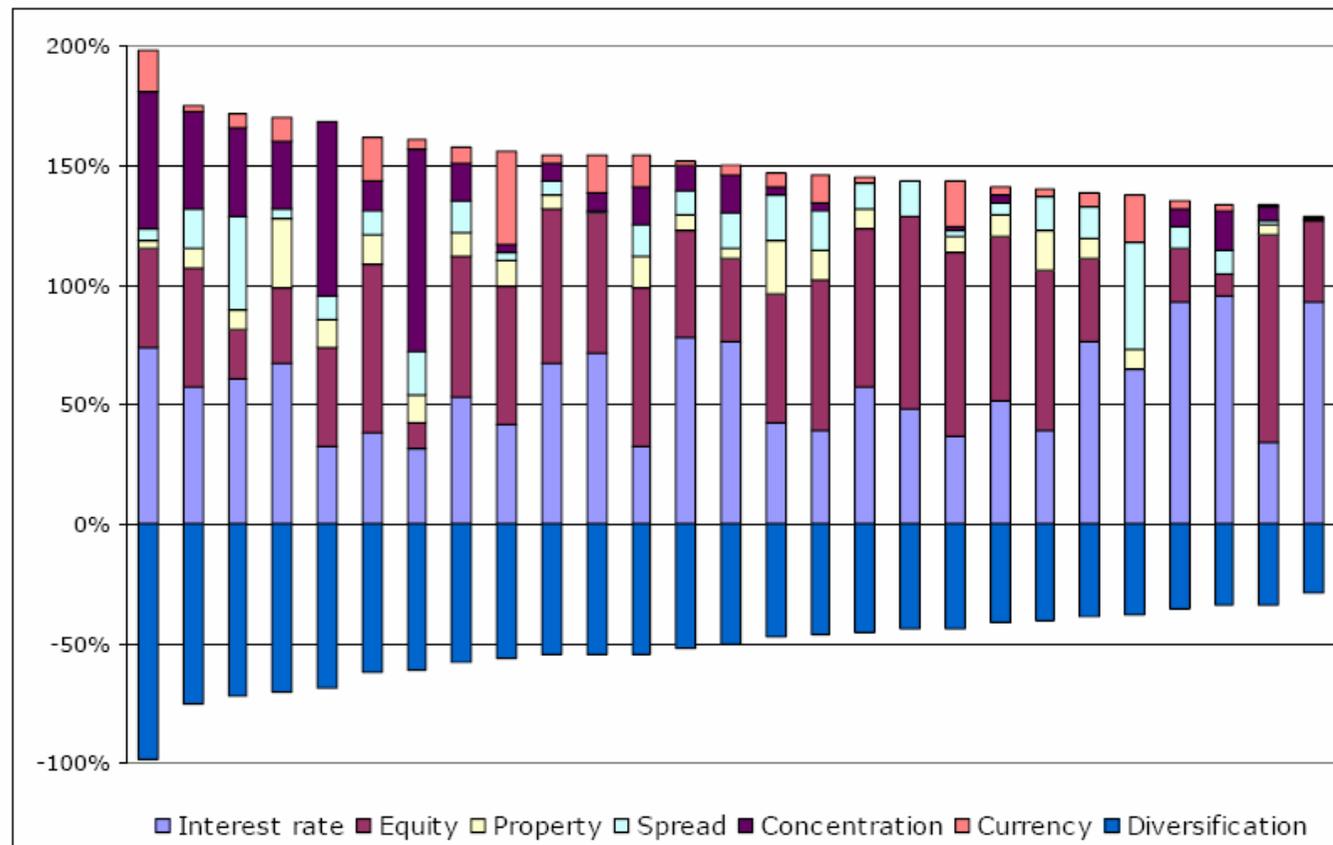
Figure 37: Composition of BSCR (life)



# Within market risk: Interest & Equity

Solvency II - QIS3 Report

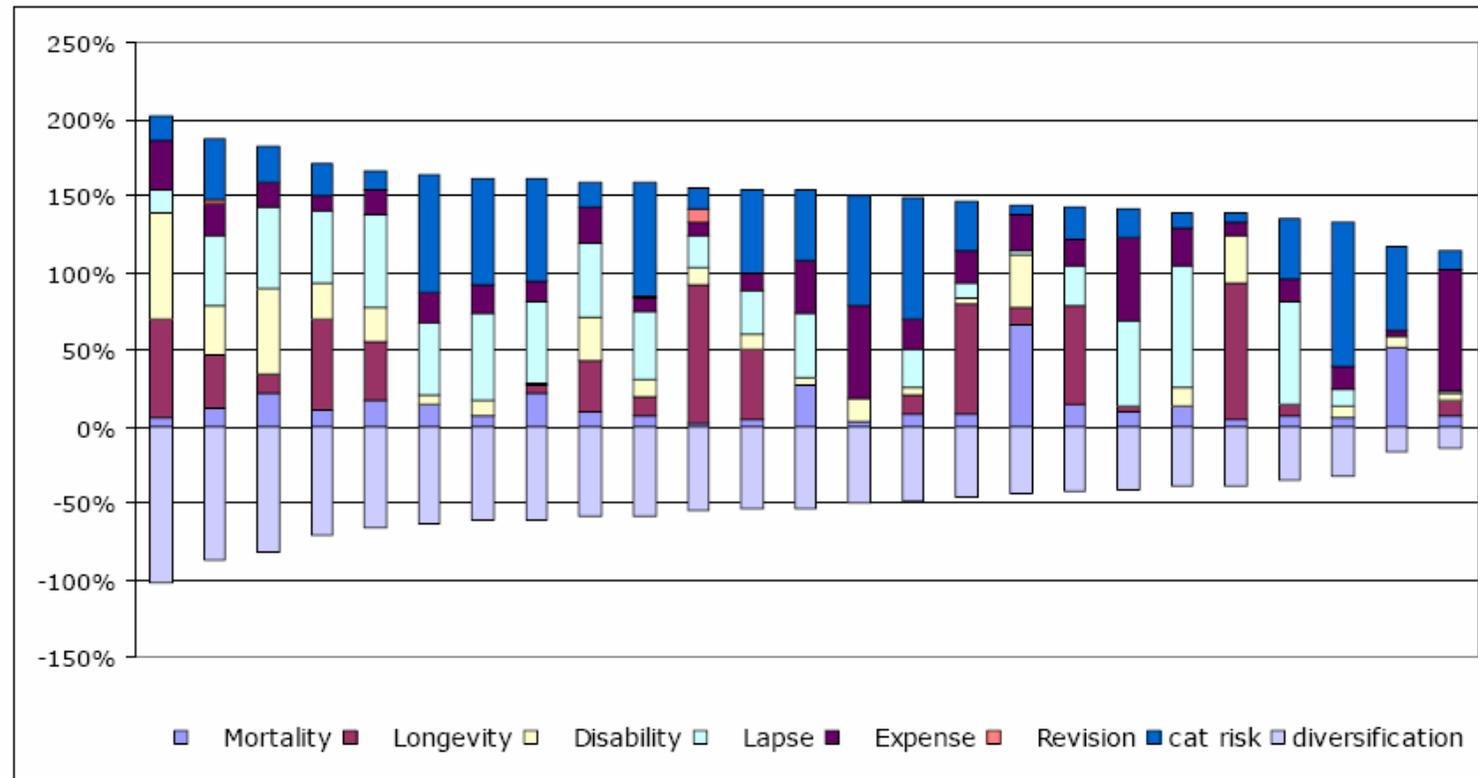
Figure 40: Composition market risks (life)



# Composition life underwriting risk

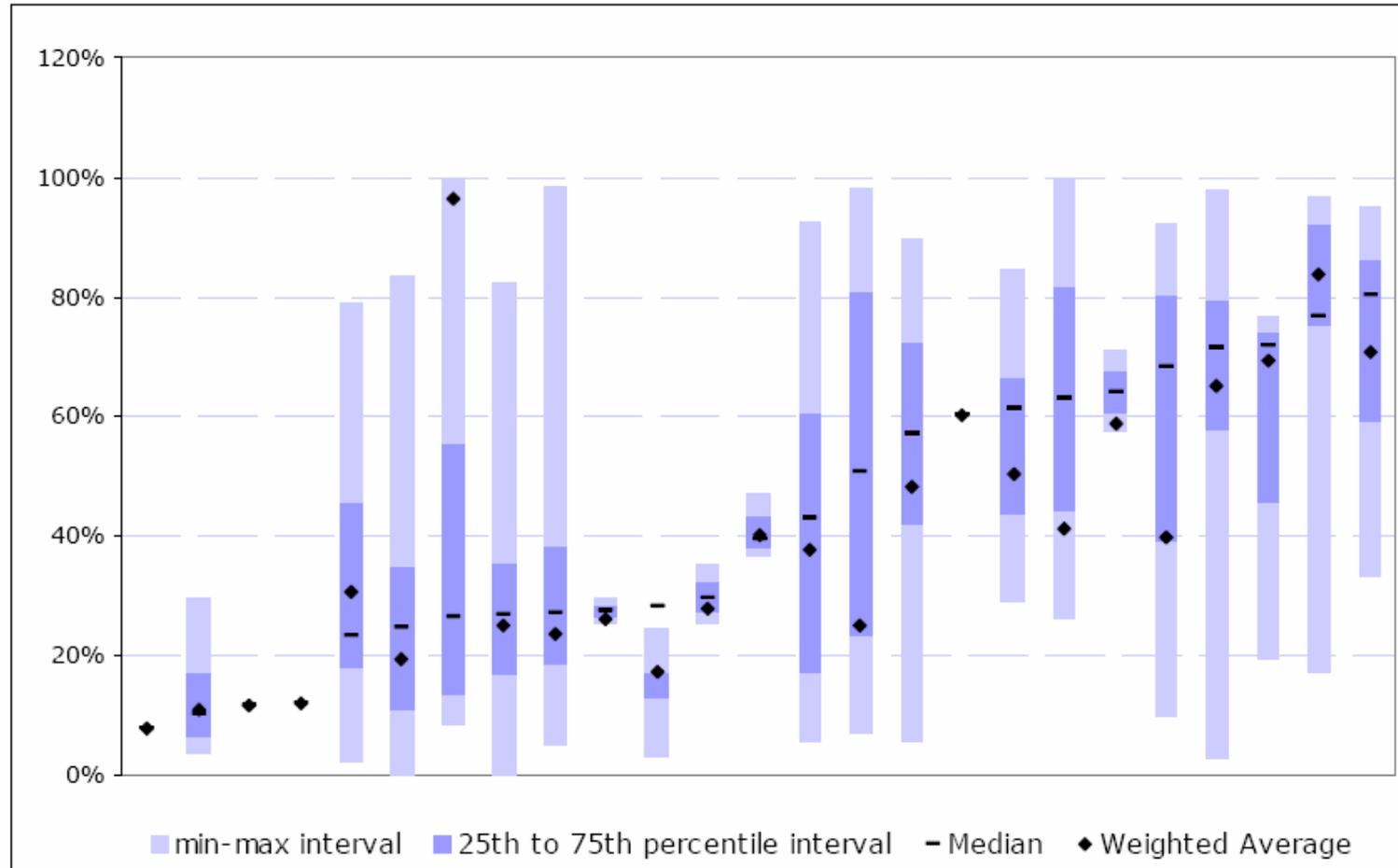
Solvency II - QIS3 Report

**Figure 56: Composition life underwriting risks (life)**



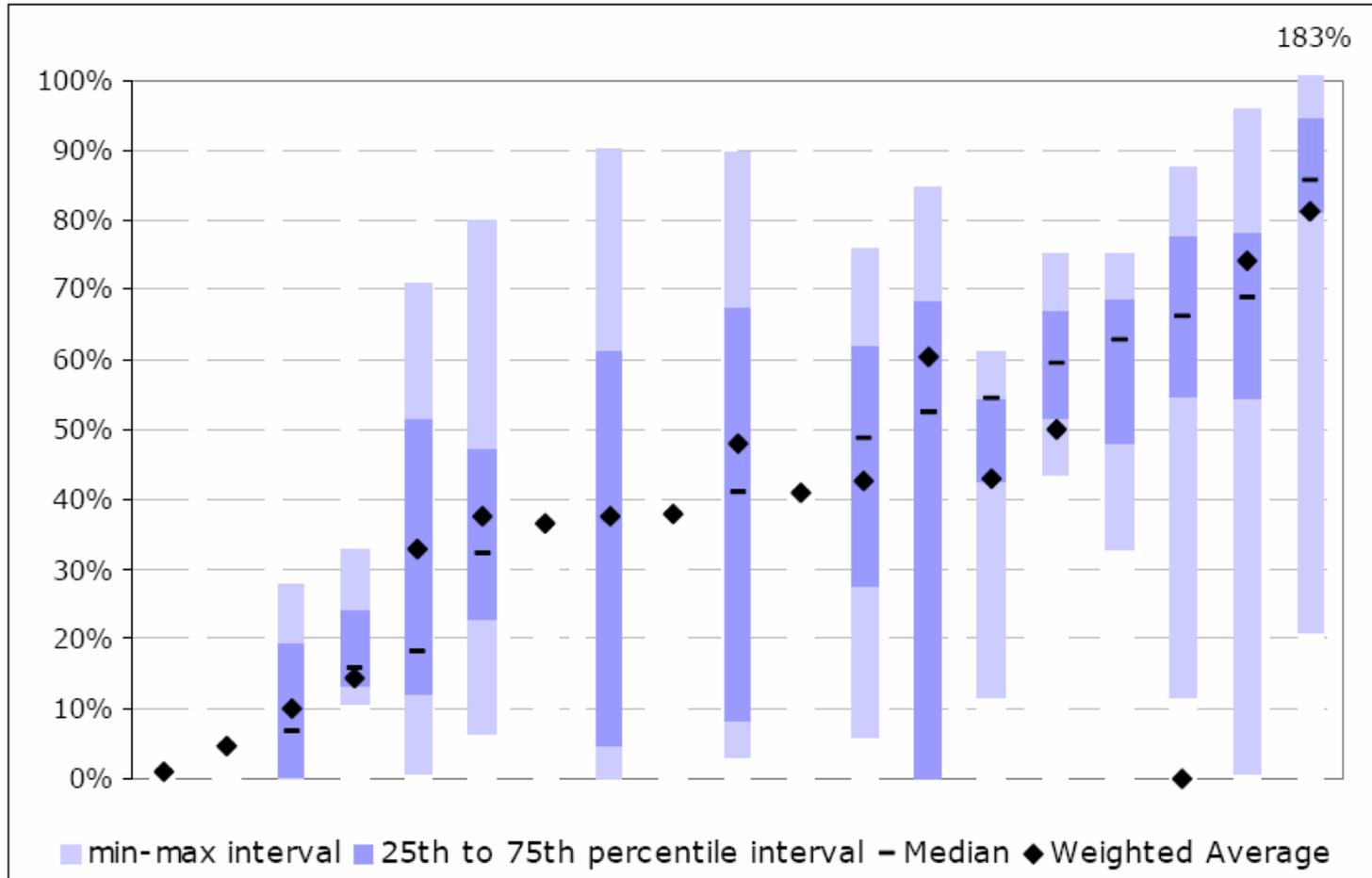
# Life underwriting risk can be main risk driver!

Figure 52: Ratio of SCR<sub>life</sub> to BSCR (life)



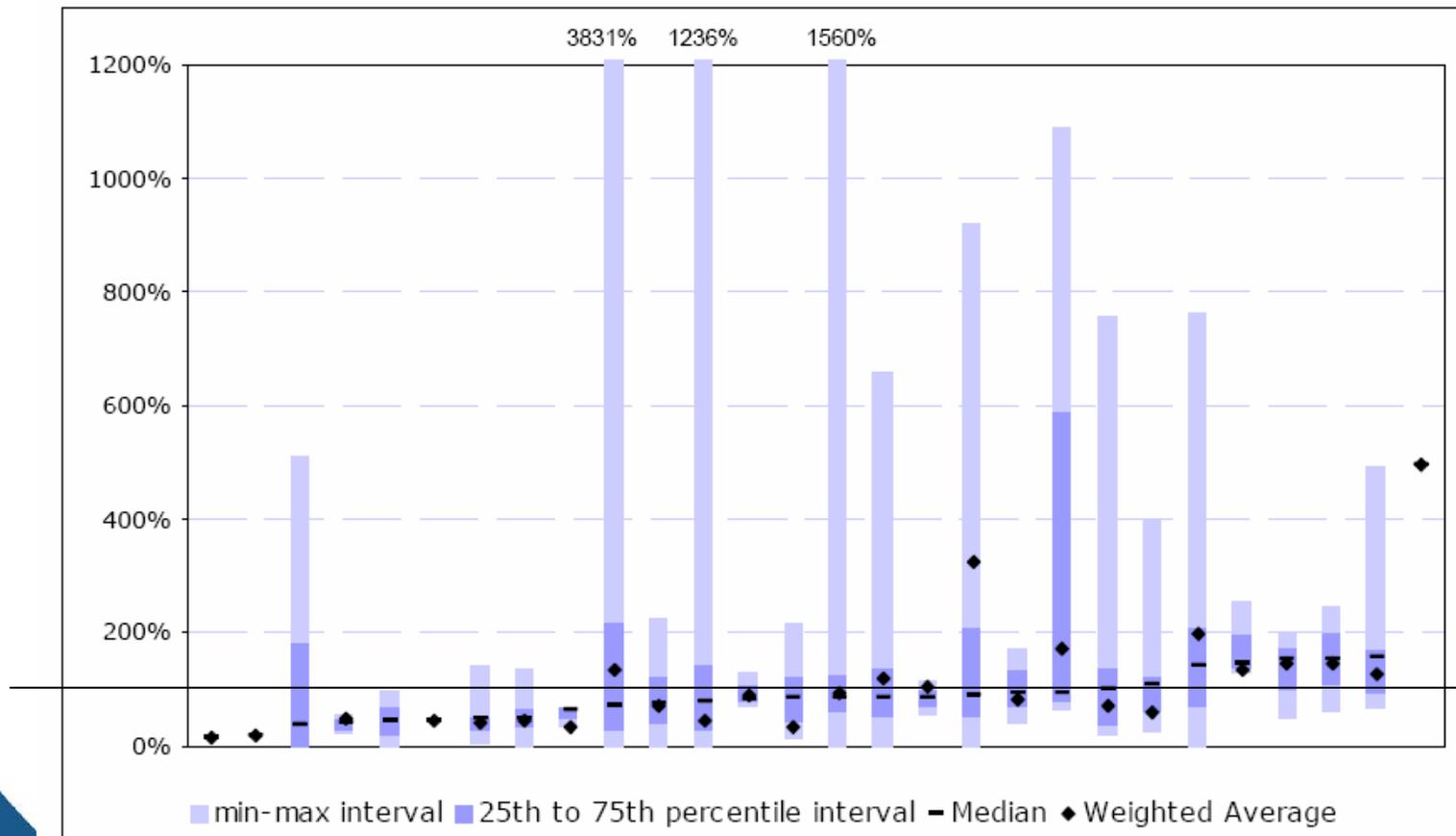
# Shared profit margins have tremendous effects ...

Figure 35: BSCR reduction to aggregated SCR (life)



## ... so SII can require less capital than SI

Figure 9: Ratio of SCR to the effective Solvency I capital requirement (life)



A fact which creates political problems in the process ...

# Percentage of firms that need capital

**Table 19: Percentage of firms with additional capital needs to meet SCR**

	Life	Non-life	Composite	Total
Large	18.3	23.7	7.3	17.5
Medium	12.4	20.0	7.1	15.3
Small	10.9	18.0	13.2	15.4
Total	13.1	19.5	8.7	15.7

**Table 17: Percentage of firms with additional capital needs to meet MCR1**

	Life	Non-life	Composite	Total
Large	5.1	0.0	0.0	1.9
Medium	0.9	3.2	0.0	1.9
Small	1.0	3.9	0.0	2.6
Total	1.9	3.1	0.0	2.2

Unfortunately there are no bars of Solvency Ratio given, but ...

# Winners and Losers

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Solvency II - QIS3 Report

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## 5.2.2 Life

On the whole, most life participants across all participating jurisdictions have calculated a QIS3 solvency ratio in excess of 100%. However, participating life insurers generally show a decrease in their solvency ratios in several jurisdictions, though in some countries the results are more ambiguous or there is an increase in solvency. The latter seems to be the case especially for life undertakings writing substantial with profit business. In the case of with profit business, negative MCRs are occasionally observed. One supervisor commented that they considered this to be the main problem in the methodology for with profit undertakings.

A fact which creates political problems in the process ...

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# Life insurance risk

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graph TD
    SCR_life[SCRlife] --- Life_mort[Lifemort]
    SCR_life --- Life_lapse[Lifelapse]
    SCR_life --- Life_exp[Lifeexp]
    SCR_life --- Life_dis[Lifedis]
    SCR_life --- Life_rev[Liferev]
    SCR_life --- Life_long[Lifelong]
    SCR_life --- Life_cat[Lifecat]
    SCR_life --- Life_rev2[Liferev]
    
```

$$SCR_{life} = \sqrt{\sum_{rxc} CorrLife^{rxc} \cdot Life_r \cdot Life_c}$$

<i>CorrLife</i>	<i>Life<sub>mort</sub></i>	<i>Life<sub>long</sub></i>	<i>Life<sub>dis</sub></i>	<i>Life<sub>lapse</sub></i>	<i>Life<sub>exp</sub></i>	<i>Life<sub>rev</sub></i>	<i>Life<sub>CAT</sub></i>
<i>Life<sub>mort</sub></i>	1						
<i>Life<sub>long</sub></i>	-0.25	1					
<i>Life<sub>dis</sub></i>	0.5	0	1				
<i>Life<sub>lapse</sub></i>	0	0.25	0	1			
<i>Life<sub>exp</sub></i>	0.25	0.25	0.5	0.5	1		
<i>Life<sub>rev</sub></i>	0	0.25	0	0	0.25	1	
<i>Life<sub>CAT</sub></i>	0	0	0	0	0	0	1

$$nSCR_{life} = \sqrt{\sum_{rxc} CorrLife_{r,c} \cdot nLife_r \cdot nLife_c}$$

QIS4 Technical Specifications TS.XI.A.6/7

## Scenario specifications:

QIS4 Technical Specifications TS.XI.B-H

Mortality – qx \* 110%

Longevity – qx \* 75%

Cat – qx + 0.15%

Lapse – wx \* 50% resp. 150% + Mass lapse 30%

Expense – Cost \* 110% and Inflation +1%

Disability – ix \* 135% in n. year, \* 125% in the f. years

## Example Life insurance risk

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- Start a new company (=tranche of business) with
  - 10,000 policies sold (term insurance),
  - 10,000 as an average sum insured,
  - Pricing  $q_x$  of 0.3%
  - Best Estimate  $q_x$  of 0.25%
  - Lapse Rate is 4% per year
  - Yearly Expenses are 6% \* Premium
  - Acquisition Commission is 10% of the FY Premium
- The Interest Rate Curve for Solvency II Reserving is 4% flat

# BEL

- Present Value of Projected Profit: 196,878
- Present Value of Projected Premium: 2,126,982
- Expected PV Profit / Expected PV Premium: 9,26%

Premium	Claims	Cost	Acq Comm	Projected Profit
300,000	250,000	18,000	30,000	2,000
287,250	239,375	17,235	-	30,640
275,042	229,202	16,503	-	29,338
263,353	219,460	15,801	-	28,091
252,160	210,133	15,130	-	26,897
241,443	201,203	14,487	-	25,754
231,182	192,652	13,871	-	24,659
221,357	184,464	13,281	-	23,611
211,949	176,624	12,717	-	22,608
202,941	169,118	12,176	-	21,647

# SCR

Year	Mortality		Lapse			Expense	SCR
	CAT	Up	Mass	Up	Down		SCR
0	150,305	177,298	61,058	17,232	-	18,267	<b>246,623</b>
1	143,895	158,378	53,901	13,980	-	15,827	<b>230,560</b>
2	137,755	139,808	46,865	11,033	-	13,526	<b>211,386</b>
3	131,876	121,555	39,938	8,400	-	11,362	<b>184,095</b>
4	126,246	103,586	33,108	6,095	-	9,334	<b>166,887</b>
5	120,853	85,869	26,363	4,129	-	7,442	<b>150,763</b>
6	115,689	68,373	19,692	2,519	-	5,684	<b>135,938</b>
7	110,744	51,069	13,082	1,281	-	4,060	<b>122,719</b>
8	106,007	33,925	6,522	435	-	2,571	<b>111,524</b>
9	101,471	16,912	-	-	-	1,218	<b>102,877</b>

# Financing the SCR

Solvency II						
Year	NAV	Risk Margin	ASM	SCR	Capital needed	Profit
0	196,878	86,907	109,971	246,623	136,651	2,000
1	202,673	74,994	127,679	230,560	102,881	30,640
2	178,915	63,606	115,308	211,386	96,078	29,338
3	155,560	52,960	102,600	184,095	81,495	28,091
4	132,568	43,591	88,976	166,887	77,910	26,897
5	109,897	34,921	74,976	150,763	75,786	25,754
6	87,509	26,910	60,599	135,938	75,339	24,659
7	65,364	19,504	45,860	122,719	76,859	23,611
8	43,422	12,627	30,796	111,524	80,728	22,608
9	21,647	6,173	15,474	102,877	87,403	21,647

Internal rate of return: 22,5%

# Comparison to Solvency I

Solvency II						
Year	NAV	Risk Margin	ASM	SCR	Capital needed	Profit
0	196,878	86,907	109,971	246,623	136,651	2,000
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4	132,568	43,591	88,976	166,887	77,910	26,897
5	109,897	34,921	74,976	150,763	75,786	25,754
6	87,509	26,910	60,599	135,938	75,339	24,659
7	65,364	19,504	45,860	122,719	76,859	23,611
8	43,422	12,627	30,796	111,524	80,728	22,608
9	21,647	6,173	15,474	102,877	87,403	21,647

Internal rate of return: 22,5%

Solvency I			
Year	SCR	ASM	Capital needed
0	300,000	98,439	201,561
1	287,250	101,337	185,913
2	275,042	89,457	185,585
3	263,353	77,780	185,573
4	252,160	66,284	185,876
5	241,443	54,949	186,495
6	231,182	43,755	187,427
7	221,357	32,682	188,675
8	211,949	21,711	190,238
9	202,941	10,824	192,118

# Adj/Net SCR: Effect of Profit Sharing

- Start a new company (=tranche of business) with
  - 10,000 policies sold (term insurance),
  - 6,000 as an average sum insured,
  - Pricing qx of 0.5%, 78.2% of profit paid as additional benefit
  - Best Estimate qx of 0.25%
  - Lapse Rate is 4% per year
  - Yearly Expenses are 6% \* Premium
  - Acquisition Commission is 10% of the FY Premium
- Additional benefits in best estimate: first year lower, others higher
- Policyholder receives lower additional benefits in stress scenarios

## Adj/Net SCR: Effect of Profit Sharing

Year	Mortality		Lapse			Expense	SCR
	CAT	Up	Mass	Up	Down		
0	150,305	177,298	61,058	17,232	-	18,267	246,623
1	143,895	158,378	53,901	13,980	-	15,827	230,560
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5	120,853	85,869	26,363	4,129	-	7,442	150,763
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8	106,007	33,925	6,522	435	-	2,571	111,524
9	101,471	16,912	-	-	-	1,218	102,877

w/o PS or  
fixed PS

Year	Mortality		Lapse			Expense	SCR
	CAT	Up	Mass	Up	Down		
0	19,895	23,365	54,907	15,496	-	3,982	65,096
1	19,029	20,856	48,470	12,572	-	3,450	59,706
2	18,198	18,397	42,143	9,921	-	2,949	50,625
3	17,403	15,983	35,914	7,554	-	2,477	43,061
4	16,640	13,609	29,773	5,481	-	2,035	36,778
5	15,909	11,272	23,707	3,713	-	1,622	30,738
6	15,208	8,968	17,708	2,265	-	1,239	25,036
7	14,536	6,692	11,764	1,152	-	885	19,881
8	13,891	4,442	5,864	391	-	561	15,729
9	13,272	2,212	-	-	-	265	13,458

with PS

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# R/I Counterparty default risk

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- Non-life myth: SII catches only effects of proportional reinsurance
- Scenario based approach can in principle catch any effect of reinsurance on the cash-flows in the scenarios, but ...
- are model offices calculating cash-flows sufficiently granular?
- probably not ...
- Another myth: It is o.k. not to model reinsurance, ...
  - In best estimate reinsurance comes at a cost -> ASM lower
  - So it is not clear that not modelling reinsurance is „conservative“
  - Why do you buy reinsurance if you don't include it in quantitative risk management?

# SCR Risk Mitigation: Principles

Article 101 Calculation of the Solvency Capital Requirement

Account for risk mitigation in the module where risk profile is changed.

Don't forget the acquired risks.

Article 105 Calculation of the Basic Solvency Requirement

Acquired risks are capitalized in a separate risk module:

Counterparty default risk

The counterparty default risk module shall cover risk-mitigating contracts, such as reinsurance arrangements, securitisations and derivatives, and receivables from intermediaries, as well as any other credit exposures which are not covered in the spread risk sub-module.

For each counterparty, the counterparty default risk module shall take account of the overall counterparty risk exposure of the insurance or reinsurance undertaking concerned to that counterparty, irrespective of the legal form of its contractual obligations to that undertaking.

# Gross accounting

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- Best estimate liability is gross of reinsurance
- Recoverables from reinsurance are accounted as „assets“
  - Expected losses from default reduce the recoverables

## Article 80

### Recoverables from reinsurance contracts and special purpose vehicles

The calculation by insurance and reinsurance undertakings of amounts recoverable from reinsurance contracts and special purpose vehicles shall comply with Articles 75 to 79.

When calculating amounts recoverable from reinsurance contracts and special purpose vehicles, insurance and reinsurance undertakings shall take account of the time difference between recoveries and direct payments.

The result from that calculation shall be adjusted to take account of expected losses due to default of the counterparty. That adjustment shall be based on an assessment of the probability of default of the counterparty and the average loss resulting therefrom (loss-given-default).

# Valuing Risk Mitigation

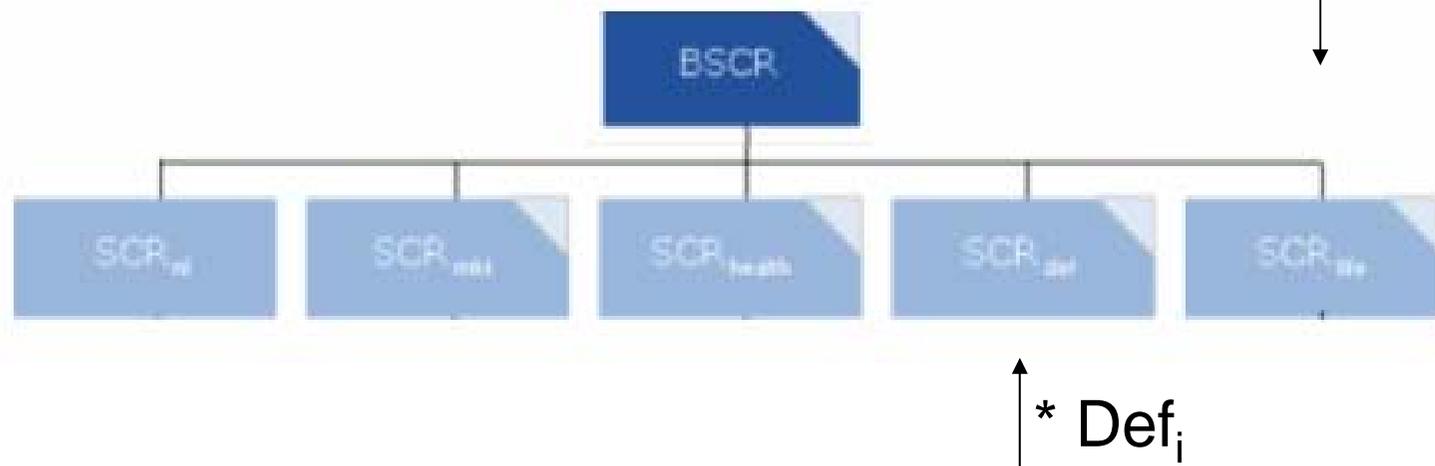
## Two calculations

1. Cashflows include payments to and from reinsurer

$SCR_{U/W}^{Net}$

2. Cashflows do not include payments to and from reinsurer

$SCR_{U/W}^{Gross}$

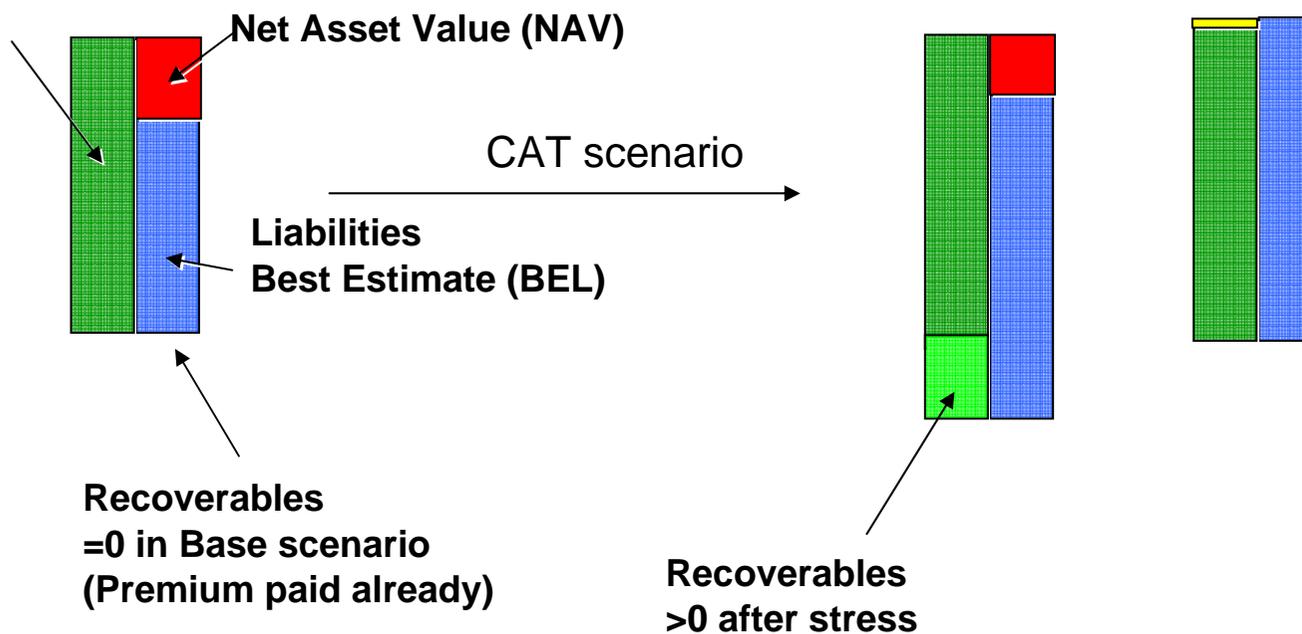


TS.X.A.3 In relation to a counterparty of reinsurance contracts (or an SPV), the loss given default is defined as follows:

$$LGD = 50\% \max (\text{Recoverables} + SCR_{U/W}^{gross} - SCR_{U/W}^{net} - \text{Collateral}; 0),$$

# Example: CAT Cover

Market value  
Assets (MVA)



$$SCR_{U/W}^{net} = \text{Red} - \text{Red} = \text{Orange}$$

$$SCR_{U/W}^{gross} = \text{Red} + \text{Yellow} = \text{Orange}$$

## Example: CAT Cover

$$\text{SCR}_{U/W}^{\text{net}} = \text{Red Bar} - \text{Red Bar} = \text{Small Orange Bar}$$
$$\text{SCR}_{U/W}^{\text{gross}} = \text{Red Bar} + \text{Small Yellow Bar} = \text{Large Orange Bar}$$

- in CAT module  $\text{SCR}_{U/W}^{\text{net}}$  enters calculation of  $\text{SCR}_{\text{life}}$  for cedant
- $50\% * (\text{SCR}_{U/W}^{\text{gross}} - \text{SCR}_{U/W}^{\text{net}})$  multiplied with the rating-dependent default rate of the reinsurer enters the calculation of counterparty default risk of the cedant

# Theory of magical Potions: Default Rate

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- Ingredients
  - Probability of Default of single reinsurer -> PD(Rating)
  - Herfindahl index, measuring concentration in reinsurance program
  - Implicit Correlation
  - Value at Risk and Tail Value at Risk of the Vasicek distribution

# Practicing Potions

- Per 1,000,000 EUR of SCR or/and (Receivables – Collateral) transferred one needs as SCR for counterparty default risk:

Rating	1	2	3	4	5	10	25	50	infinity
AAA	1,000	44	129	180	210	264	291	299	306
AA	5,000	728	1,282	1,500	1,604	1,752	1,802	1,813	1,820
A	25,000	8,509	9,930	10,138	10,138	9,907	9,648	9,545	9,434
BBB	120,000	59,613	53,569	50,143	48,030	43,746	41,166	40,308	39,452
Solvency II	250,000	122,518	103,240	94,589	89,653	80,283	74,948	73,213	71,499
BB	500,000	239,476	197,428	179,620	169,701	151,282	141,006	137,694	134,436
B	500,000	456,433	415,185	392,898	379,286	351,831	335,327	329,833	324,345
CCC	500,000	499,852	498,532	496,791	495,233	490,698	486,938	485,494	483,952

?!

- Note: In the Vasicek model, R (abused here as concentration measure) is a correlation measure describing the relationship between default of one of the infinitely many loans in the portfolio and the changes in a normal distributed (market) index Y

# Theory of magical Potions: Default Rate Sources

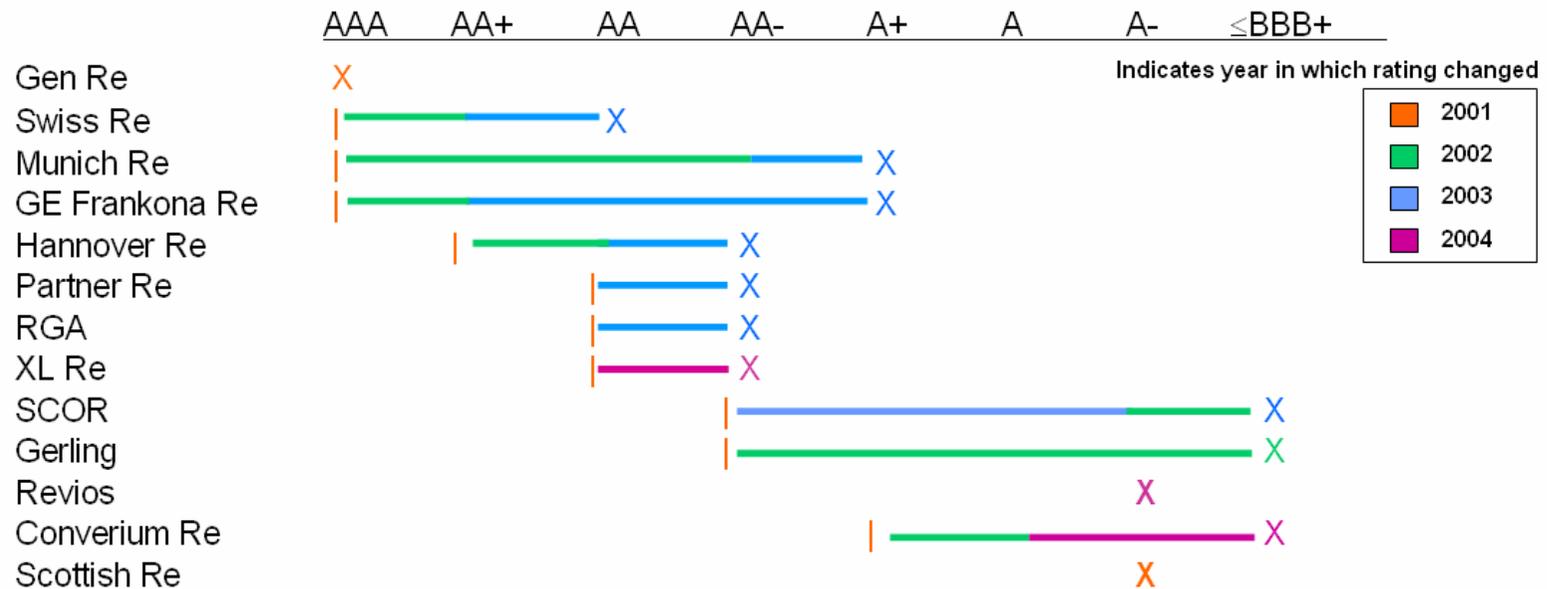
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- „Reinsurance Credit Risk“, Dr. Rainer Sachs, Integrated Risk Management, Munich Re Group, January 29, 2007
- „Limiting loan loss probability distribution“, O. Vasicek, Tech. Report, KMV, 1991
  - Assumptions for use met???
- „Uses and Abuses of Bond Default Rates“, Kealhofer et. al., Tech. Report, KMV 1998
  - How reliable is the rating as an indicator of default?
  - What about one-year rating transition probabilities?

=> market for alternative models, borrowed from banking

# One-year development of rating

## S&P Rating Changes



**Inclusion in a model increases difference in capital needed for AAA compared to AA counterparties!**

Ratings as of November 4, 2004. Changes since September 11, 2001.



Paul Brett and Darshan Singh, Credit Risk and Reinsurers

# Recap: R/I Counterparty default risk

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- Current model in the Technical Specifications needs some more consideration/new approach, but this will probably be done in 201x
- Principles however are robust:
  - Calculate SCR with and without R/I contracts
  - SCR with R/I contracts is risk capital for life underwriting risk
  - SCR relief compared to situation without contract is basis for default risk (A)
  - + current recoverables – collateral (B)
- (A + B) has to be multiplied with some default probability taking into account
  - Correlation between different companies defaults - > Current Model fails
  - My view: The one-year development of ratings has to be considered also

## Example: 50% Quota Share

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- Start a new company (=tranche of business) with
  - 10,000 policies sold (term insurance),
  - 10,000 as an average sum insured,
  - Pricing qx of 0.3%
  - Best Estimate qx of 0.25%
  - Lapse Rate is 4% per year
  - Yearly Expenses are 6% \* Premium
  - Acquisition Commission is 10% of the FY Premium

## SCR all scenarios, all years, gross

Year	Mortality		Lapse			Expense	SCR
	CAT	Up	Mass	Up	Down		
0	150,305	177,298	61,058	17,232	-	18,267	<b>246,623</b>
1	143,895	158,378	53,901	13,980	-	15,827	<b>230,560</b>
2	137,755	139,808	46,865	11,033	-	13,526	<b>211,386</b>
3	131,876	121,555	39,938	8,400	-	11,362	<b>184,095</b>
4	126,246	103,586	33,108	6,095	-	9,334	<b>166,887</b>
5	120,853	85,869	26,363	4,129	-	7,442	<b>150,763</b>
6	115,689	68,373	19,692	2,519	-	5,684	<b>135,938</b>
7	110,744	51,069	13,082	1,281	-	4,060	<b>122,719</b>
8	106,007	33,925	6,522	435	-	2,571	<b>111,524</b>
9	101,471	16,912	-	-	-	1,218	<b>102,877</b>

What happens if a 50% quota is ceded?

## SCR U/W net, SCR counterparty default

### SCR U/W that remains with cedant

AAA	AA	A	BBB	BB	B	CCC
123,314	123,324	123,373	123,607	124,791	130,759	160,810
115,282	115,292	115,338	115,557	116,663	122,243	150,337
105,695	105,704	105,746	105,947	106,962	112,077	137,835
92,049	92,057	92,094	92,268	93,152	97,607	120,039
83,445	83,452	83,485	83,644	84,445	88,483	108,819
75,383	75,389	75,419	75,562	76,286	79,934	98,305
67,970	67,976	68,003	68,132	68,784	72,074	88,638
61,360	61,365	61,390	61,507	62,096	65,065	80,019
55,763	55,767	55,790	55,896	56,431	59,130	72,719
51,440	51,444	51,464	51,562	52,056	54,546	67,081

### SCR cedant has to set up for counterparty default

123	616	3,081	14,762	60,916	57,932	42,906
115	576	2,881	13,800	56,948	54,159	40,112
106	528	2,641	12,653	52,212	49,655	36,776
92	460	2,300	11,019	45,471	43,244	32,028
83	417	2,085	9,989	41,221	39,202	29,034
75	377	1,884	9,024	37,238	35,414	26,229
68	340	1,698	8,137	33,577	31,932	23,650
61	307	1,533	7,345	30,311	28,827	21,350
56	279	1,393	6,675	27,546	26,197	19,402
51	257	1,285	6,158	25,411	24,166	17,898

# Overall effectiveness

## Aggregation of SCR u/w and SCR counterparty default

AAA	AA	A	BBB	BB	B	CCC
123,345	123,479	124,179	128,098	151,936	155,697	176,496
115,311	115,437	116,091	119,755	142,040	145,557	165,001
105,722	105,837	106,437	109,796	130,228	133,452	151,279
92,072	92,173	92,695	95,620	113,415	116,222	131,748
83,466	83,557	84,031	86,682	102,813	105,359	119,433
75,402	75,484	75,912	78,307	92,880	95,179	107,894
67,987	68,061	68,447	70,607	83,746	85,820	97,284
61,376	61,443	61,791	63,741	75,603	77,474	87,824
55,777	55,838	56,154	57,926	68,706	70,407	79,812
51,453	51,509	51,801	53,435	63,379	64,948	73,624

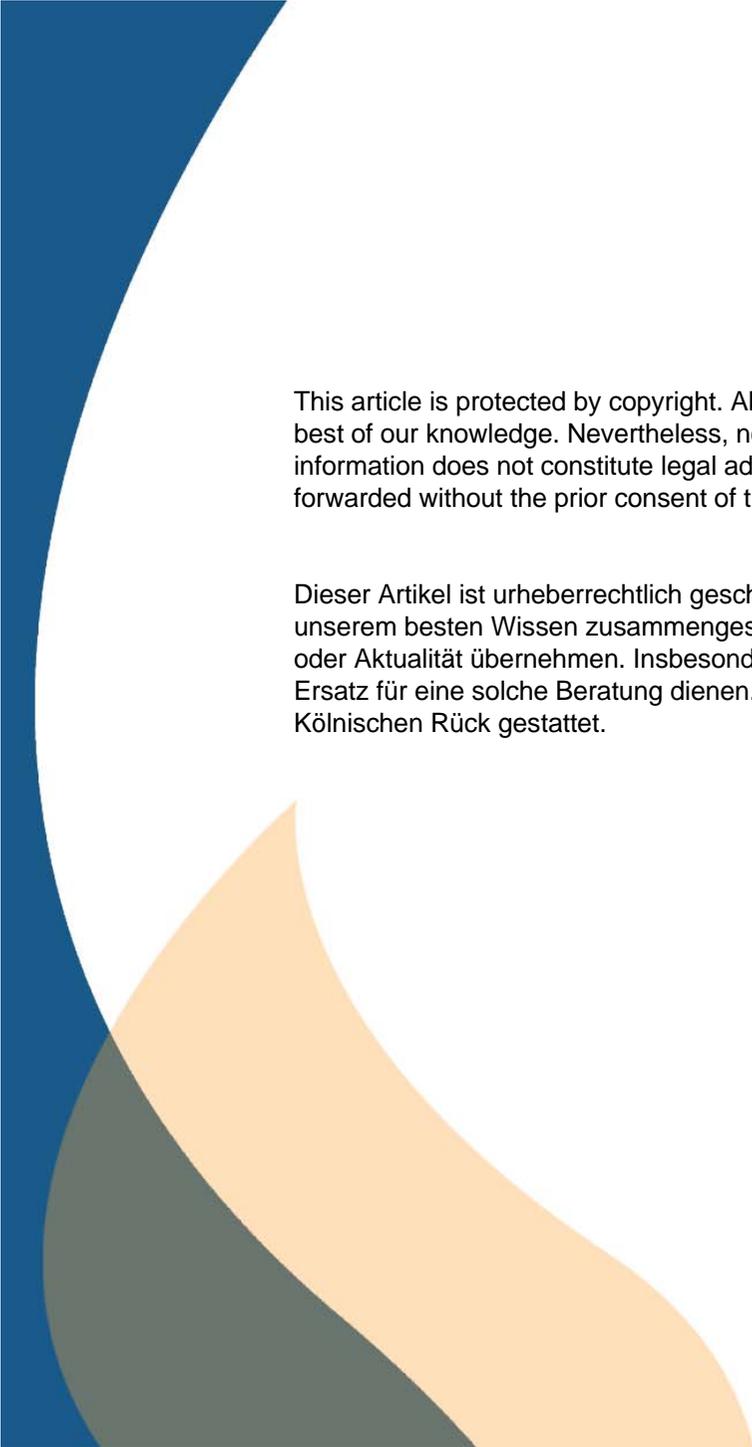
## SCR relief lost due to rating

0.027%	0.136%	0.704%	3.881%	23.213%	26.264%	43.130%
0.027%	0.136%	0.704%	3.881%	23.213%	26.264%	43.130%
0.027%	0.136%	0.704%	3.881%	23.213%	26.264%	43.130%
0.027%	0.136%	0.704%	3.881%	23.213%	26.264%	43.130%
0.027%	0.136%	0.704%	3.881%	23.213%	26.264%	43.130%
0.027%	0.136%	0.704%	3.881%	23.213%	26.264%	43.130%
0.027%	0.136%	0.704%	3.881%	23.213%	26.264%	43.130%
0.027%	0.136%	0.704%	3.881%	23.213%	26.264%	43.130%
0.027%	0.136%	0.704%	3.881%	23.213%	26.264%	43.130%
0.027%	0.136%	0.704%	3.881%	23.213%	26.264%	43.130%

# Agenda

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- The Solvency II Project: Reminder & Current State
- A Look at the Framework Directive
- Pillar 1
  - Central Idea SCR
  - QIS4 Technical Specifications
  - Some results from QIS3
  - Life underwriting risk
  - R/I Counterparty default risk



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# Solvency II: Reading List

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- Framework Directive Proposal COM(2008) 119 (All Pillars)
  - 365 pages
  - [http://ec.europa.eu/internal\\_market/insurance/docs/solvency/proposal\\_en.pdf](http://ec.europa.eu/internal_market/insurance/docs/solvency/proposal_en.pdf)
- QIS4 Technical Specifications MARKT/2505/08 (Pillar 1)
  - 286 pages
  - <http://www.ceiops.eu/media/docman/Technical%20Specifications%20QIS4.doc>
  - Accompanied by further documents: Excel Sheet for results, Q&A Document, Errata, Helper Tabs, Questionnaires
- Consultation papers 1 to 25 (relevant ones for Pillar 2 & 3)
  - Explain Framework Directive Principles
  - Starting point for Implementing Measures
  - <http://www.ceiops.eu/content/view/14/18/>



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