

Insurance Solvency Capital Requirement (SCR): focus on pandemic risk

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An insurance company's Basic SCR has 5 main components

$$SCR = \sqrt{\sum_{i=1}^5 corr(i, j) \cdot SCR_i \cdot SCR_j}$$

where:

$i = 1$ for default risk

$i = 2$ for market risk

$i = 3$ for life underwriting risk

$i = 4$ for health underwriting risk

$i = 5$ for non-life underwriting risk

Inside each segment of risk, SCR is calculated taking the possible risks and their correlation coefficients into account.

For health:

$$SCR = \sqrt{\sum_{i=1}^3 corr(i, j) \cdot SCR_i \cdot SCR_j}$$

where:

$i = 1$ for SLT risk

$i = 2$ for non SLT risk

$i = 3$ for catastrophe

The table below provides the correlation coefficients:

	Underwriting in non SLT health	Underwriting in SLT health	Catastrophe in health
Underwriting in non SLT health	1	0,5	0,25
Underwriting in SLT health	0,5	1	0,25
Catastrophe in health	0,25	0,25	1

The calculation of the SCR, for catastrophe is based on the formula below:

$$SCR = \sqrt{SCR_{ma} + SCR_{ac} + SCR_p}$$

where

ma = mass accident

ac = accident concentration

p = pandemic

The pandemic SCR (SCR_p) is the equity shortage that would result from the sudden loss, the calculation of which is based on the following formula, without deducting the recoverable amounts thanks to reinsurance programs and securitization vehicles:

$$L_p = 0,000075 \cdot E + 0,4 \sum_c N_c \cdot M_c$$

Where:

$$E = \sum_i E_i$$

With:

- E_i = Best estimate of amount of benefits to be paid to an policy holder i in case of lasting and definitive work disability that has been triggered by the pandemic
- i = number of policy holders that include an income protection, other than insurance commitments regarding workers' compensation

Moreover:

- N_c = Number of policy holders, in the country c , that have an insurance cover (other than insurance commitments regarding workers' compensation) for medical treatment relative to an infectious disease
- M_c = Average amount to be paid by the insurance company per policy holder in case of pandemic

With

$$M_c = \sum_i H_h \cdot CH_{(h,c)}$$

- H_h = policy holders' ratio who use the h health treatment. The ratio per h health treatment is provided in the table below:

h	H_h
Hospitalization	1%
Doctor consultation	20%
No requested formal health treatment	79%
Total	100%

- $CH_{(h,c)}$ = best estimate of the amount to be paid by the insurance company paid (other than insurance commitments regarding workers' compensation) to a policy holder in the country c when using the h health treatment, in case of pandemic.