Insurance Solvency Capital Requirement (SCR): focus on credit insurance and bonding risks

Olivier Levyne (April 2020)

An insurance company's Basic SCR has 5 main components

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

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 non-life:

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

where:

i = 1 for premiums and reserves in non-life

i = 2 for catastrophe in non-life

i = 3 for lapse

The table below provides the correlation coefficients:

	Premium and reserve	Catastrophe	Lapse
Premium and reserve	1	0,25	0
Catastrophe	0,25	1	0
Lapse	0	0	1

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

$$SCR = \sqrt{\left(SCR_{natCAT} + SCR_{npproperty}\right)^2 + SCR_{mmCAT}^2 + SCR_{CATother}^2}$$

where

natCAT = natural catastrophe

nnproperty = non proportional casualty reinsurance

mmCAT =man made catastrophe

CATother = other catastrophes

For man-made catastrophe:

$$SCR_{mmCAT} = \sqrt{\sum_{i=1}^{6} SCR_i^2}$$

With:

i = 1 for motor civil responsibility

i = 2 for marine

i = 3 for airline

i = 4 for fire

i = 5 for civil responsibility

i = 6 for insurance credit and bonding

For insurance credit and bonding:

$$SCR_{credit} = \sqrt{SCR_{default}^2 + SCR_{recession}^2}$$

With:

$SCR_{default}$= 10% of the insured amount, relative to insurance credit and bonding

$SCR_{recession}$ = 100% of earned premiums, insurance credit and bonding, during the 12 next months