

A few other notes

- most up to date ratings can be found easily online, and they should be applicable
- what risk is associated with each rating: obtained figures, but cannot verify yet, as SII Summary Doc only contains two examples: AAA or not rated
- found out technical provisions to match total (needed as part of operational risk) - intend to go through operational today
 - 'Provision unearned premium',
 - 'Provision Claims outstanding',
 - 'Coin share provision for IBNR Net',
 - 'Coin share claims outstanding',
 - 'IBNR - Gross Amount',
 - 'Provision for IBNR - Net',

Counterparty

Type 1

Counterparties: reinsurers, banks, derivatives.

Data referred to is from SII Summary Doc.

- Table 1 columns: Reinsurer, Rating, Exposure, Risk Mitigation Effect, Collateral
 - Don't have this information up to date
- Table 2 columns: Bank, Rating, Level, Selected, Value (includes 'JSS - Forward' derivative contract)
 - Only have banks and values up to date

Want to calculate loss given default (LGD) for each counterparty. Differently for each.

1. **Reinsurers'** LGD: $LGD = \max[50\% * (\text{recoverables} + 50\% * RM) - F * \text{collateral}, 0]$,
 - recoverables is the Exposure column from table 1
 - RM is the Risk Mitigation Effect column from table 1
 - collateral is the Collateral column from table 1 (which is 0 for all)
 - F is factor for economic effect
2. **Derivative (and Banks?)** LGD: $LGD = \max[90\% * (\text{derivative} + RM_{fin}) - F * \text{collateral}, 0]$
 - derivative is Value from table 2
 - RM_{fin} is risk mitigation effect: for bank is 0?
 - collateral is risk adjusted value of collateral (0 if like reinsurers)
 - F is factor for economic effect

Question: Which exactly is the forward contract? JSS forward? Too small (184k). "Derivative" in Version Control Excel is 13.9M.

From Currency

40000 - SCR with forward

3515000 - SCR for unhedged currency

3475000 - difference from having forward, so risk mitigation effect

The detailed Future LGD uses a risk mitigation of 1.36M

Type 2

$scr_overdue = 0.9 \text{ overdue_debts}$

$scr_standard = 0.15 \text{ standard_debts}$

$scr_type_2 = scr_overdue + scr_standard$

"periodical aging debtors study" - source of Type 2 exposures (don't have)

Need most recent overdue debts and standard debts.

8.9.1 Type 2 exposures consist of all credit exposures which are not covered in the spread risk sub-module, and which are not type 1 exposures, including the following:

- Receivables from intermediaries
- Policyholder debtors
- Mortgage loans which meet the requirements in Article 191(2) to (13)
- Deposits with ceding undertakings, where the number of single name exposures exceeds 15
- Commitments received by an insurance or reinsurance undertaking which have been called up but are unpaid as referred to in paragraph 2(d)

Non-life

Premium and Reserve

$$SCR = 3 \times \sigma \times V$$

$$\sigma = 0.0778$$

$$V = V_{\text{prem}} + V_{\text{res}}$$

$$V_{\text{prem}} = \max(P_s, \text{Plast}) + \text{FP}_{\text{existing}} + \text{FP}_{\text{future}}$$

- Plast: earned premiums in last year by segment (have access to this data)
- P_s : forecasted earned premiums in the next year
- $\text{FP}_{\text{existing}}$: portion of premiums earnings for books that are beyond 12 months (seems to be 0)
- $\text{FP}_{\text{future}}$: premiums earning beyond 12m for BBNI policies (seems to be 0)

$$V_{\text{res}} = Res_{\text{net},s} + Exp_s$$

- $Res_{\text{net},s}$: discounted net claims OS & IBNR excluding management loads, including Earned ENIDs and QS/Sliding scale commission adjustment for segment s (have IBNR, but not split

by segment)

- Exp_s : earned discounted share of expenses allocated to segment s based on proportionality

Need these for segments:

- Motor vehicle liability insurance
- Other motor insurance
- Assistance
- Miscellaneous financial loss

Catastrophe

Natural: only flooding (gross capital requirement of £866,000). Reinsurance mitigates 60%. Net natural catastrophe SCR is £346,000.

To arrive at the £866,000 gross flood capital requirement, MICL would have first calculated a Weighted Sum Insured for each geographical risk zone using $WSI = Q * W * SI$, combining total vehicle values (SI) with regulatory risk weights (W) and regional factors (Q). These WSIs would then be aggregated into a total potential loss (L_{region}) for each larger region using the correlation formula $L_{region} = \sqrt{\sum Corr(i,j) * WSI(i) * WSI(j)}$. This regional loss figure is then processed through **standardised scenarios** to determine the capital requirement for that specific region (SCR_{region}). The final step is to identify the single largest loss from any one region, $SCR_{gross} = \max(SCR_{region_1}, SCR_{region_2}, \dots)$, which yielded the £866,000.

Standardised scenarios: Commission Delegated Regulation (EU) 2015/35, Article 123

The regulation mandates the use of two distinct scenarios—Scenario A and Scenario B.

For each geographical region, the insurer must calculate the loss in its own funds that would result from two different sequences of events and then take the higher of the two losses.

Scenario A: The Two-Stage Flood Event: This scenario is designed to model a prolonged event, like a major river overflowing its banks, causing initial damage followed by a second wave of damage from continued water presence or a subsequent weather event.

- **Event 1:** An instantaneous loss equal to **65%** of the total calculated regional loss (L_{flood}).
- **Event 2:** A subsequent loss equal to **45%** of the total calculated regional loss (L_{flood}).

Scenario B: The Single Extreme Flood Event: This scenario is designed to model a more violent, single-impact event, such as a flash flood or a coastal storm surge. It represents a more concentrated and immediate catastrophe.

- **Event 1:** An instantaneous loss equal to **100%** of the total calculated regional loss (L_{flood}).
- **Event 2:** A subsequent loss equal to **10%** of the total calculated regional loss (L_{flood}).

The scenario that results in a larger financial loss for the company becomes the official Gross Solvency Capital Requirement

The only applicable man made risk is the motor vehicle liability sub-module. This is calculated based on the largest sum insured by postal code. The net capital requirement for man-made catastrophes is £440,000 (don't know how this was calculated)

$$\text{scr_cat} = \sqrt{\text{scr_nat_cat}^2 + \text{scr_mm_cat}^2} = £559,746$$