ISFA – QS & SL

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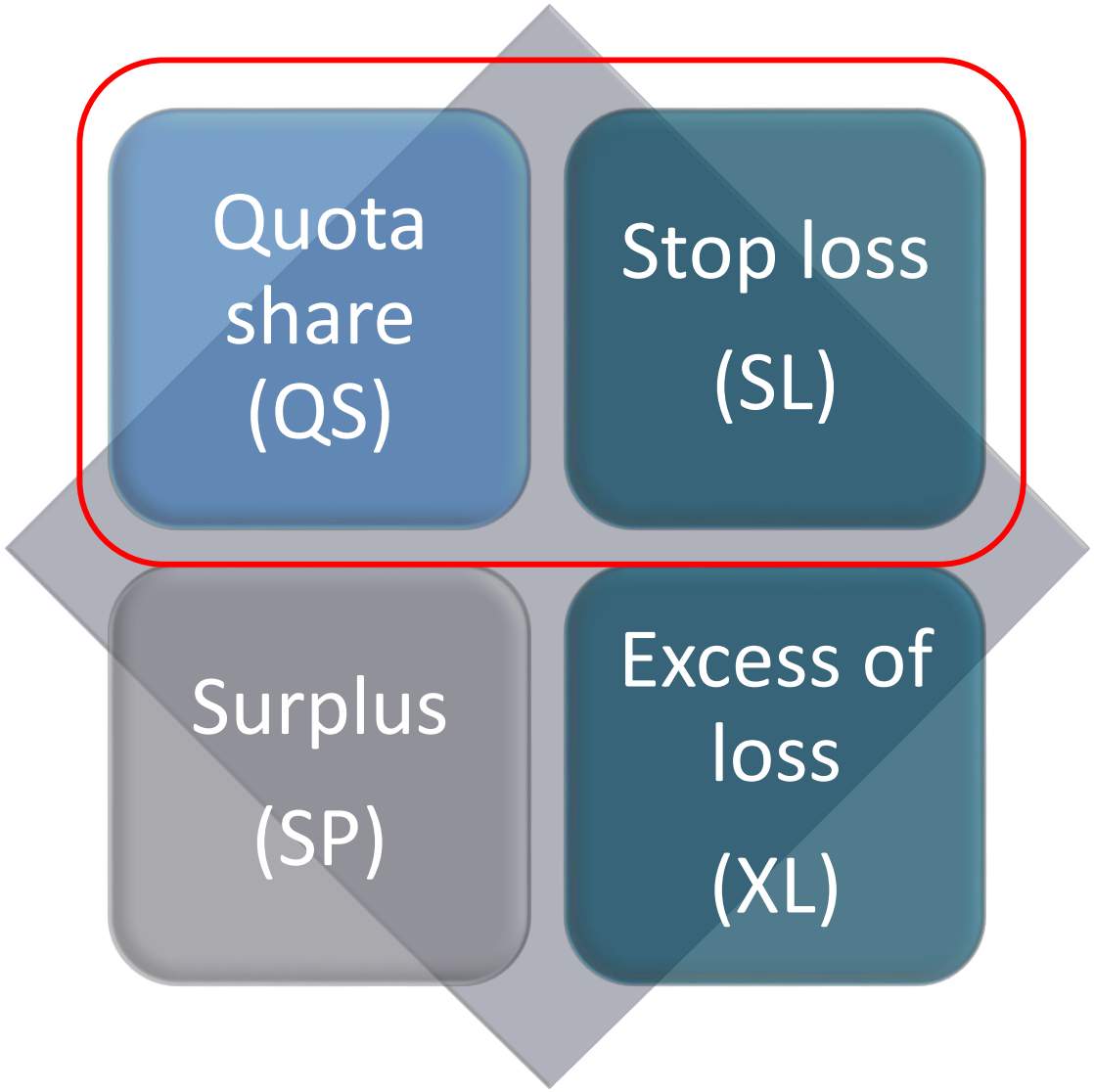
Traditional reinsurance

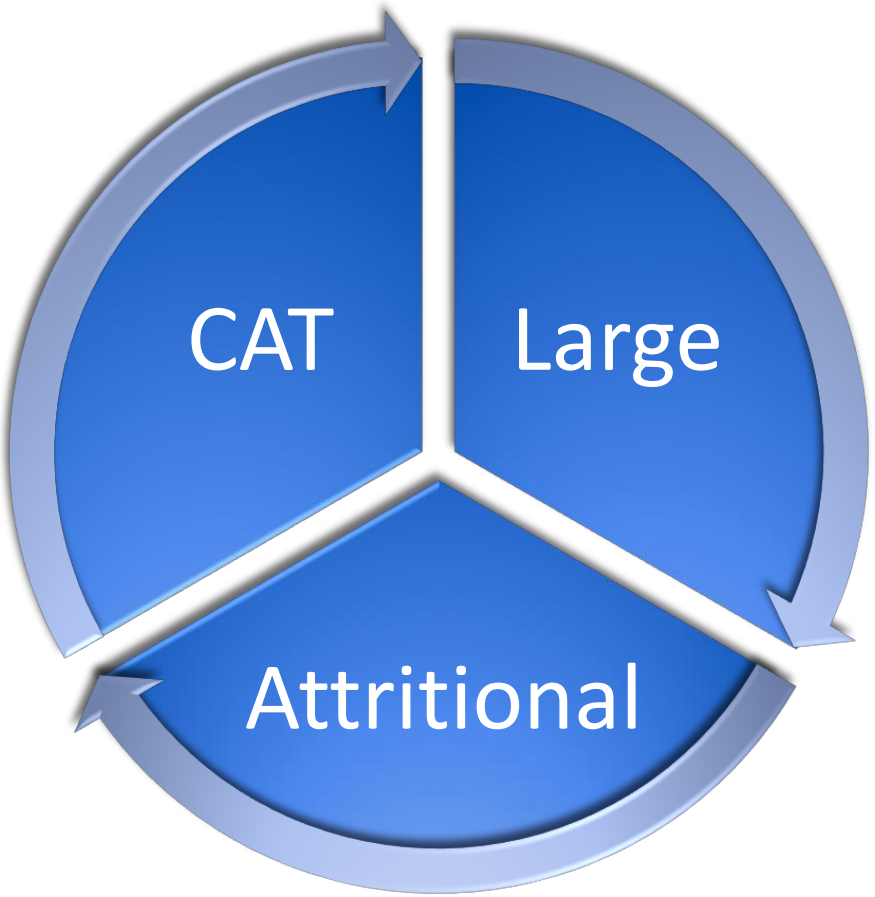


Need for the aggregated claims distribution

Aggregated distribution

- Often expressed as a loss ratio (LR)
- Modelled using CLA split
- Few data points!

CLAims split



Log-Normal fitting procedure

Maximum likelihood

$$\hat{\mu} = \frac{\sum_{i=1}^{n} \ln(A_i)}{n}$$

$$\hat{\sigma}^2 = \frac{\sum_{i=1}^{n} (\ln(A_i) - \hat{\mu})^2}{n}$$

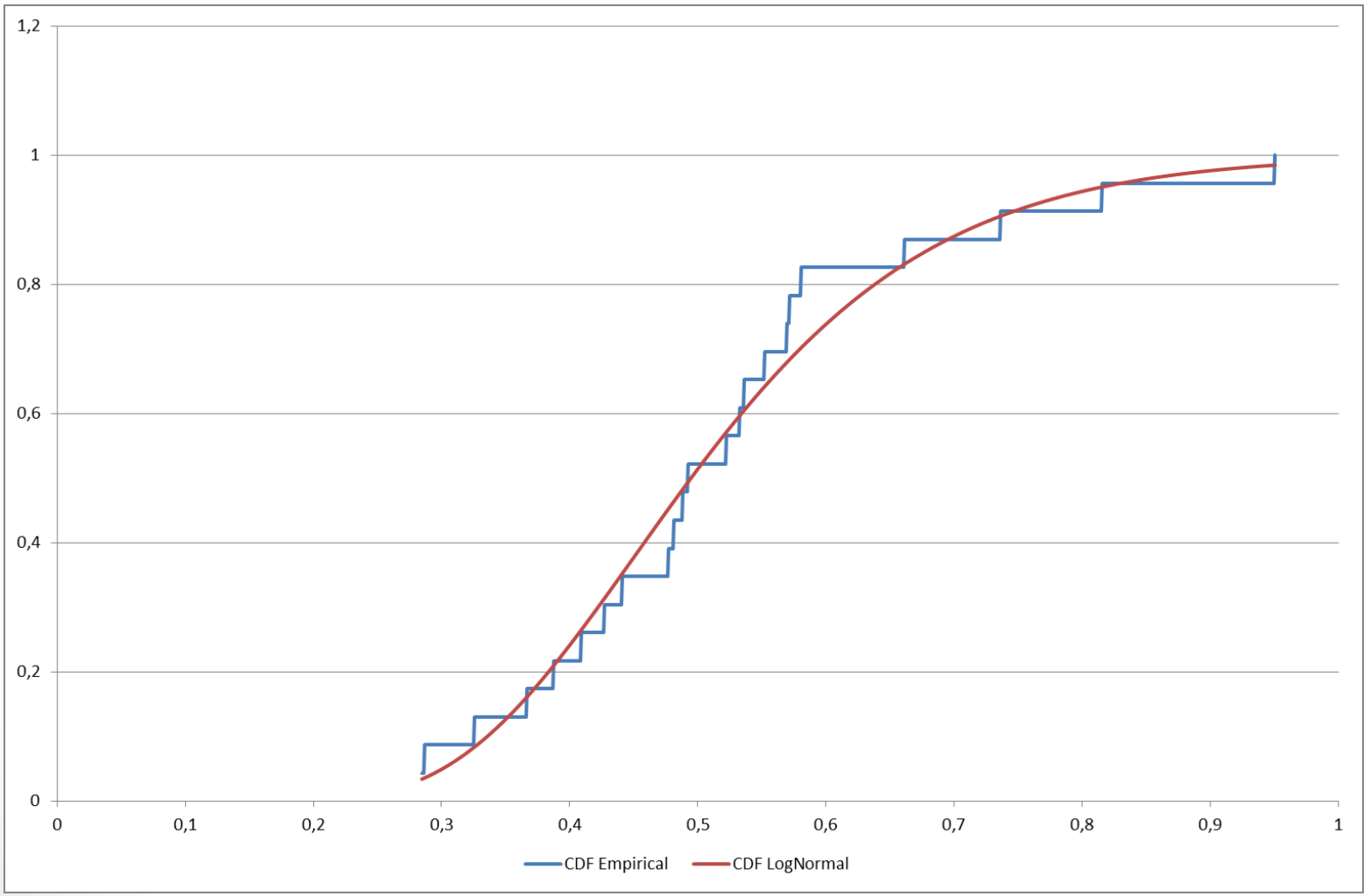
Attention: biais correction

Easy procedure in excel:

1. Calculate $\ln(A_i)$
2. Take the average for $\hat{\mu}$
3. Take the stdev.s for $\hat{\sigma}$

Log-Normal fitting procedure

Graph check:



Conclusion SL

- $P_R = E[S_R]$
  $= E[\min(C, \max(S - D, 0))]$
  $= \int_0^\infty \min(C, \max(0, S - D))\, dF_S$

- You'll have to aggregate 3 distributions to have the distribution of S (CLA)

Commission for QS

- Insurer has various fees/expenses … So does the reinsurer
- Given the parameters you're given, you'll have to determine:
  - For Insurers, the Minimum commission you can give to Reinsurers while not losing money
  - For Reinsurers, the Maximum commission you need to cover for your several fees, target Return on Equity …

➔ This will be helpful for the negociations to be held later

Questions ?