Assignment 4

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FINM 36702: Portfolio Credit Risk: Modeling and Estimation

Due: 18:00 (CT) April 20 2023

1: EL, ELGD, EcLGD

- EL:

$$\begin{aligned}\mathbb{E}[Loss] &= \sum_{states} \mathbb{P}\{state\} \times cPD_{state} \times cLGD_{state} \\ &= 0.40 \times 0.02 \times 0.10 \\ &+0.30 \times 0.04 \times 0.30 \\ &+0.20 \times 0.06 \times 0.50 \\ &+0.10 \times 0.08 \times 0.70 \\ &= 0.016\end{aligned}$$

- ELGD:

$$ELGD = \frac{EL}{PD}$$

Here,

$$\begin{aligned}\mathbb{P}\{D\} &= \sum_{states} \mathbb{P}\{D \mid state\} \times \mathbb{P}\{state\} \\ &= 0.02 \times 0.40 + 0.04 \times 0.30 + 0.06 \times 0.20 + 0.08 \times 0.10 \\ &= 0.04\end{aligned}$$

Therefore,

$$ELGD = \frac{EL}{PD} = \frac{0.016}{0.04} = 0.4$$

- EcLGD:

$$\begin{aligned}\mathbb{E}[Loss \mid D] &= \sum_{states} \mathbb{P}\{state\} \times cLGD_{state} \\ &= 0.40 \times 0.10 + 0.30 \times 0.30 + 0.20 \times 0.50 + 0.10 \times 0.70 \\ &= 0.30\end{aligned}$$

2: