

POLITECNICO DI MILANO



FINANCIAL ENGINEERING

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Financial Risk Laboratory 4. MC Simulation for CCR

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1 Results:

— **Q1:** Current MtM of the IRS —
Current MtM of the IRS: **0.00**

— **Q2 and Q3:** Derive numerically the EE profile and the Peak-PFE —

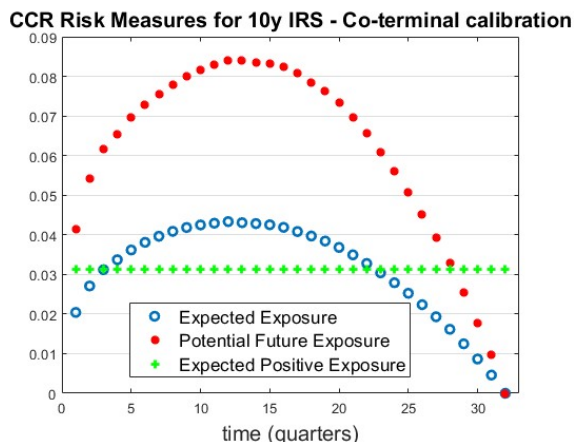


Figure 1: EE, Peak-PFE and EPE profile

— **Q4:** EPE of the IRS —
EPE as a percentage of the notional: **3.1%**

— **Q5:** Peak PFE of the IRS —
Peak PF as a percentage of the notional: **8.4%**

— **Q6:** IRS receiver —
Considering the IRS receiver with same cashflows we can notice that previous results change as follows:

- Current MtM of the IRS: 0.00 (clearly doesn't change in magnitude, just the sign)
- EPE as a percentage of the notional: 4.0%
- Peak PF as a percentage of the notional: 12.9%

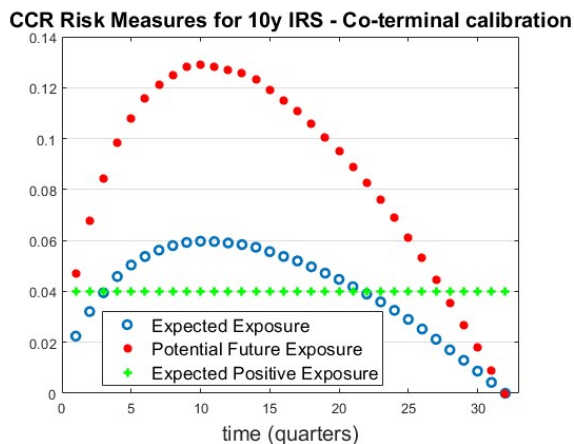


Figure 2: EE, Peak-PFE and EPE profile

Thus, by looking at the figure and at the results, we can conclude that the approximation of the EPE would not be very precise: the EE curves have a similar shape, but for example the first one peaks at 0.04 while the other peaks at 0.06 and therefore the EPE approximately changes by 33%. This agrees with the fact that the credit counterparty risk is not bilateral and therefore changing sides of the contract means to have a different risk.

— **Q7**: New risk measures changing previous parameters —

- Current MtM of the IRS: 0.27
- EPE as a percentage of the notional: 15.1%
- Peak PF as a percentage of the notional: 35.9%

EE profile and the Peak-PFE:

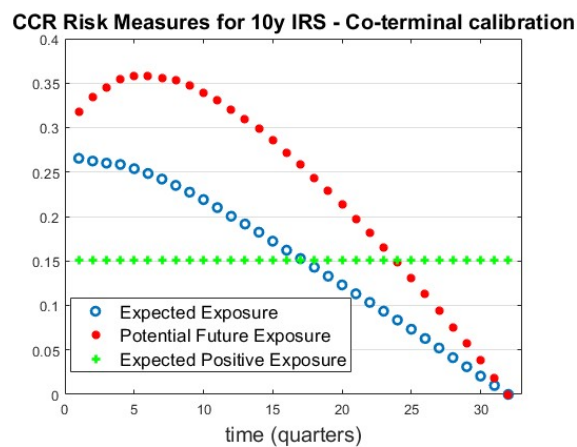


Figure 3: EE, Peak-PFE and EPE profile

Again, by looking at the figure and at the results, we can conclude that the approximation of the EPE of this IRS would not be precise at all: both the EE and the PFE curves have different shapes and the EPE changes by approximately 500%. The risk is in fact much higher in this case, so approximating with the previous estimates would be a mistake.