Credit Risk Simulation

Counterparty credit risk (CCR) is the risk of loss that will be incurred in the event of default by a counterparty. It will be incurred in the event of default by a counterparty. Only over-the-counter (OTC) derivatives and financial security transactions (e.g., repo) are subject to counterparty risk.

If one party of a contract defaults, the non-defaulting party will find a similar contract with another counterparty in the market to replace the default one. That is why counterparty credit risk sometimes is referred as replacement risk. The replacement risk is the MTM value of a counterparty portfolio at the time of the counterparty default.

Counterparty credit risk refers to the risk that a counterparty to a bilateral financial derivative contract may fail to fulfill its contractual obligation causing financial loss to the non-defaulting party.

To calculate credit exposure or replacement cost in future times, one needs to simulate market evolutions. Simulation must be conducted under the real-world measure.

Simulate yield curve or zero curve represented by yield rates or zero rates rather than swap curve represented by futures and swap rates.

Reference:

https://finpricing.com/lib/IrCurveIntroduction.html