

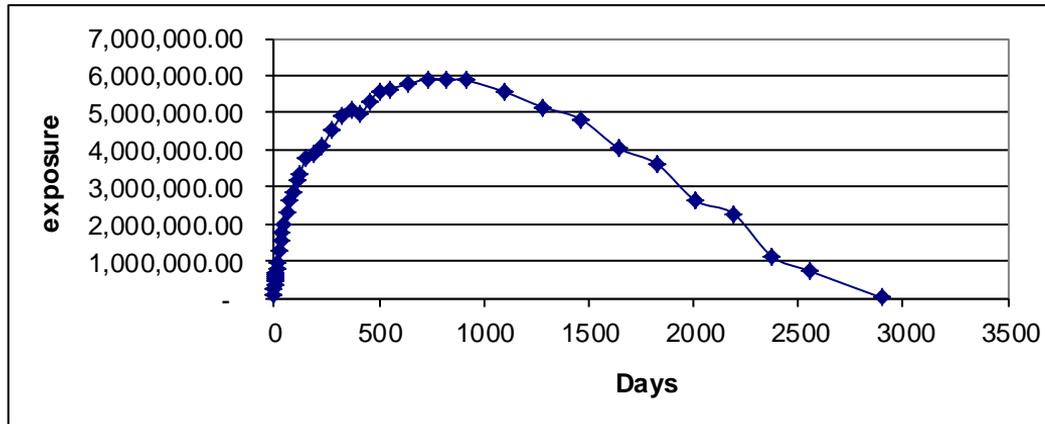
Counterparty Risk

Counterparty Credit Risk (CCR) Definition

- ◆ Counterparty credit risk refers to the risk that a counterparty to a transaction could fail to fulfill its contractual obligation causing financial loss to the non-defaulting party.
- ◆ Counterparty credit risk is bilateral. Both parties could default.
- ◆ 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 to as replacement risk.

Counterparty Credit Risk Measures

- ◆ Credit exposure (CE) is the cost of replacing a contract at default. The credit exposure of a typical interest rate swap is shown below



Counterparty Credit Risk Measures (Cont')

- ◆ Potential future exposure (PFE): the credit exposure at a specified quantile on a future date.
- ◆ Expected exposure (EE): the average (expected) credit exposure on a future target date.
- ◆ Expected positive exposure (EPE): the weighted average of EE.
- ◆ Effective EE is equal to the maximum of EE before time t .
- ◆ Effective EPE is the weighted average of Effective EE.

Master Agreement

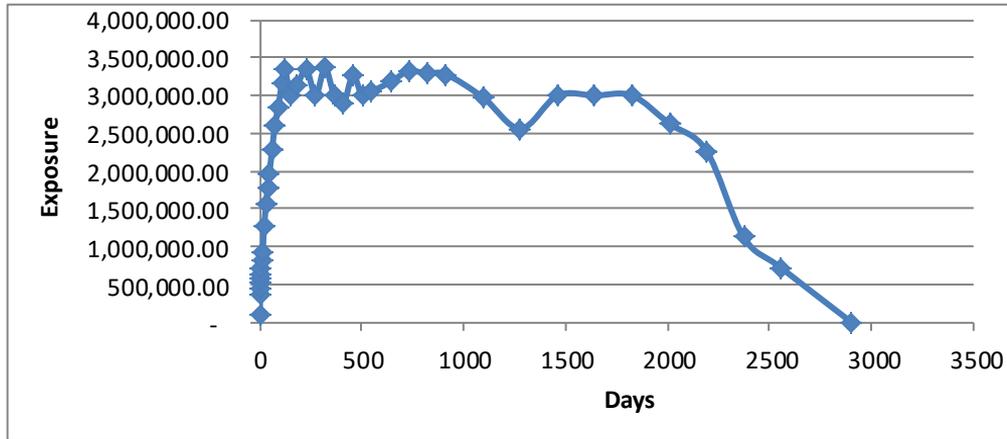
- ◆ Master agreement is a document agreed between two parties, which applies to all transactions between them.
- ◆ Close out and netting agreement is part of the Master Agreement.
- ◆ If two trades can be netted, the credit exposure is
$$E(t) = \max(V_1(t) + V_2(t), 0)$$
- ◆ If two trade cannot be netted (called non-netting), the credit exposure is
$$E(t) = \max(V_1(t), 0) + \max(V_2(t), 0)$$

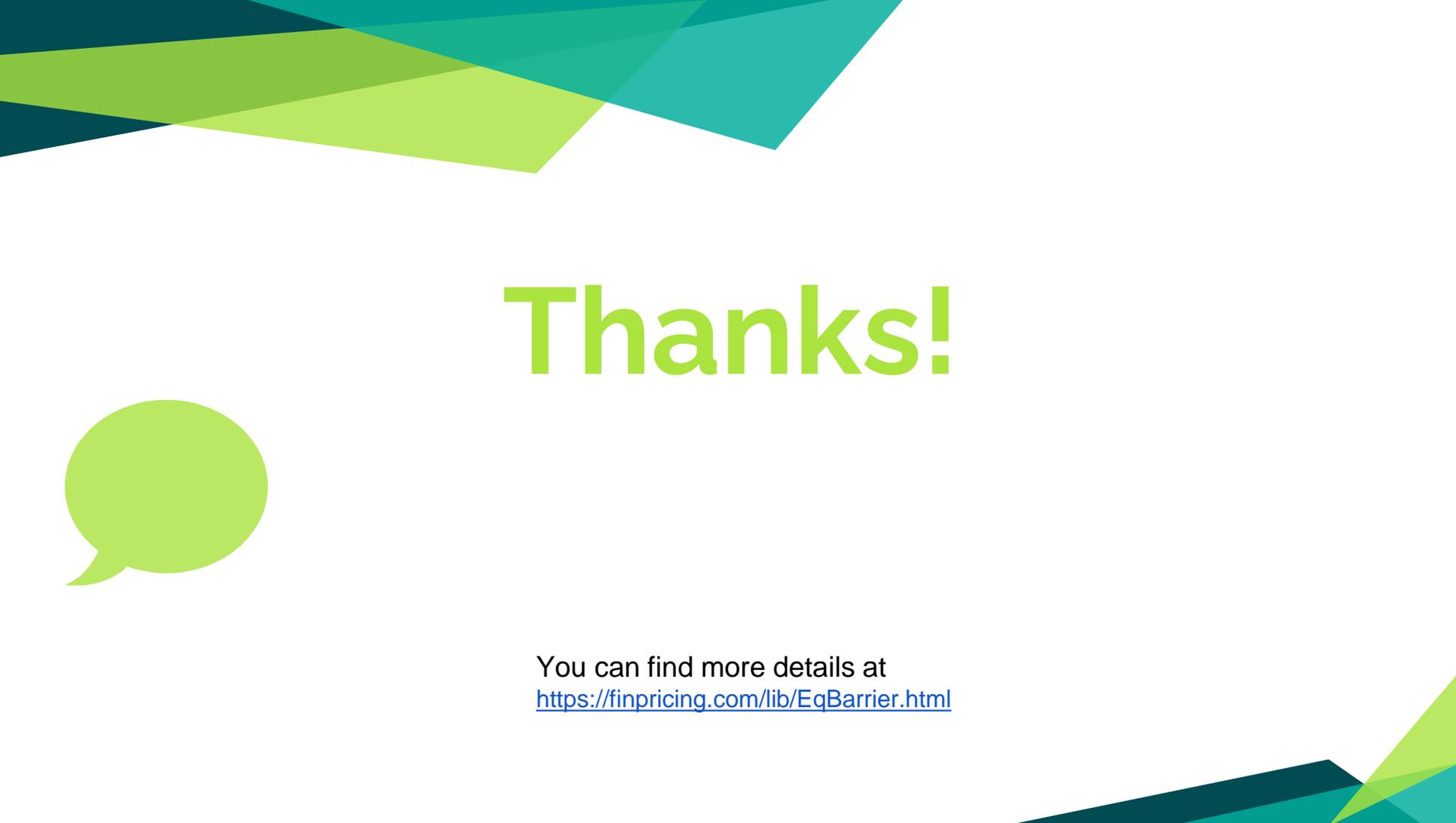
CSA Agreement

- ◆ Credit Support Annex (CSA) or Margin Agreement or Collateral Agreement is a legal document that regulates collateral posting.
- ◆ Trades under a CSA should be also under a netting agreement, but not vice versa.
- ◆ It defines a variety of terms related to collateral posting:
 - ◆ Threshold
 - ◆ Minimum transfer amount (MTA)
 - ◆ Independent amount (or initial margin or haircut)

CSA Agreement (Cont'd)

- ◆ The credit exposure of the interest rate swap after taking CSA into account can be illustrated as





Thanks!



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<https://finpricing.com/lib/EqBarrier.html>