

A nighttime cityscape with a prominent tower, likely the Tokyo Skytree, illuminated against a dark blue sky. The tower's top section is brightly lit with green and yellow lights. The city lights below are blurred, creating a bokeh effect. A green curved shape is visible in the top left corner.

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SETTLEMENT RISK CALCULATIONS

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SETTLEMENT RISK CALCULATIONS

Each credit check option will include the following credit checks on order entry against the taker risk entity:

- A)** Limit check against all realized (unsettled) positions, assuming the new order would be filled
- B)** Limit check against all realized (unsettled) positions **plus all open (not realized, not settled)** orders, assuming all open and the new order would be filled

In the current setup, the same limit value will be used for check A) and B). Please advise if these limits should be different.

On an order match, the checks A) and B) will be performed against the taker entity as well as the provider entity. **Each option** includes 2 credit checks on order entry and 4 credit checks on order match.

If taker and provider deal across PBs, then an additional cross PB credit check needs to be executed and the number of credit checks doubles. On an order match, this will trigger **8 credit checks per option**.

1. Option: **NOP (Net Open Position)**

Calculation:

- 1)** For each currency and each value date a netted position is calculated.
- 2)** NOP is the sum of all (USD equivalent) short positions (no netting across value dates)

$$\text{NOP} = \sum(\text{USD equivalent netted short position for each value date})$$

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Purpose:

Quantifies all deliveries of the counterparty (CP) to the PB
Assuming CP does not deliver their promised funds, the NOP will be the amount missing in PBs account.

Potential trading issue:

Assume limit is 100M.

- At T, CP buys 100M EUR/USD settling T+2.
- At T+1 (when settlement value changes to T+3), the CP cannot flatten the 100M EUR/USD position, as he needs to wait the funds to settle at T+2.

Reason: Assume the sell of 100M would be allowed on T+1. Then the following deliveries are expected from CP:

- 100M USD settling on T+2
- 100M (USD equivalent) EUR settling on T+3

Assuming CP does not follow through with his deliveries, the PB would not receive 200M (USD equivalents).

2. Option: GROSS**Calculation:**

$$\text{GROSS} = \left(\frac{1}{2}\right) * \left[\sum(\text{all USD equivalent sell quantities}) + \sum(\text{all USD equivalent buy quantities}) \right]$$

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3. Option: **DSL_VD** (Daily Settlement Limit per Value Date)

Calculation:

- 1) For each currency and each value date a netted position is calculated.
- 2) For each value date, the DSL_VD is the sum of all (USD equivalent) short positions that are settling on that value date, e.g.,

$$DSL_VD(T+2) = \sum(\text{USD equivalent netted short position for value date T+2})$$

Purpose:

Quantifies all deliveries of the counterparty (CP) for each value date

Potential risk impact:

If the DSL_VD limit is set to, say, 100M. The **overall delivery risk** from that CP can be a multiple of that limit, depending on how many value dates have not yet settled.

Less conservative than NOP

Potential trading issue from NOP remains:

Assume limit is 100M.

- At T, CP buys 100M EUR/USD for settling in T+2
- At T+1 (when settlement value changes to T+3), the CP buys another 100M EUR/USD.
- At T+2 (when settlement value changes to T+4), he cannot flatten his position, as he is not able to sell 200M EUR/USD. The maximum he can sell is 100M (reaching his DSL_VD for T+4)

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4. Option: **NET** (Overall net position)

Calculation:

- 1) For each currency an overall netted position is calculated (ignoring value dates)
- 2) The NET position is the sum of all USD equivalent short positions (deliverables)

$$\text{NET} = \sum(\text{USD equivalent netted short positions})$$

Potential risk impact:

Net position can change as funds settle. For example:

- Assume limit is 100M
- At T, CP buys 100M (settling at T+2)
- At T+1 CP sells 100M (settling T+3)
- At T+2 CP sells 100M (settling T+4)
- These trades will go through, as the net exposure will never be above 100M.
- At T+3, however, the NET exposure is now 200M as the buy of 100M (done at T) settled at EOD of T+2. → This will result in a credit limit breach.

5. Option: **GROSS_VD** (Gross daily limit)

Calculation:

- 1) Similar to GROSS, but by value date instead of all unsettled transactions

$$\text{GROSS_VD}(T+2) = (\frac{1}{2}) * [\sum(\text{all USD equivalent sell quantities with value date T+2}) + \sum(\text{all USD equivalent buy quantities with value date T+2})]$$

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6. Option: CCY limit Shorts

Calculation:

- 1) For each currency and each value date a netted position is calculated.
- 2) CCY_short is the sum of all (USD equivalent) short positions for a specific currency (no netting across value dates)

$$\text{CCY_short (CCY1)} = \sum(\text{USD equivalent short position for each value date for CCY1})$$

Purpose:

Quantifies the overall delivery risk in a specific currency against a CP

7. Option: CCY daily limit Shorts

Calculation:

- 1) For each currency and each value date a netted position is calculated.
- 2) For each value date, the CCY_short_VD is the sum of all (USD equivalent) \ short positions that are settling on that value date for a specific currency, e.g.,

$$\text{CCY_short_VD(T+2, CCY1)} = \sum(\text{USD equivalent netted short position for value date T+2 for CCY1})$$

Purpose:

Quantifies all deliveries of the CP for each value date for a specific currency

Potential risk impact:

Same as with DSL_VD. The actual overall delivery risk is not captured in this metric.

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