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Appendix 1: Explanatory Notes on Delta 01 Risk Limit Set Up

Firstly, the delta_01 refers to the change in Net Present Value (NPV) of the IRS or CCS position when yield curve(s) is shocked by 1 basis point.

Secondly, the denominated limit currency will be **in USD**.

Thirdly, the limit can apply to the following products:

- IRS product : USD, EUR, CNH, HKD; or
- NDIRS product : CNY, KRW, INR, TWD, THB, MYR; or
- CCS product : USD/CNH, USD/HKD; or
- All Interest Rate products clearable via OTC Clear.

Finally, as delta_01 calculated by OCASS can be a positive or a negative value the risk limit specified by Clearing Members represents the maximum and minimum delta_01 limit. For example if a Clearing Member specifies 5 million delta_01 limit, then actual delta_01 for all of the Clearing Member’s product cannot exceed **+5 million** or fall behind **-5 million** USD respectively. In OCASS²:

- Clearing members’ receive-fixed rate position(s) will have positive delta_01;
- Clearing members’ pay-fixed rate position(s) will have negative delta_01;

How Delta 01 risk limit works

Assume Clearing Member XYZ specifies a risk limit as follows and has no trade in the portfolio. If XYZ submits the two USD IRS trades:

- Trade 1 – 1Y maturity and receive fix with delta_01 of 0.25 million USD
- Trade 2 – 6.5Y maturity and paying fix with delta_01 of -0.75 million USD

Table 1

Product	Risk limit (in million USD)	Used (in million USD)
USD IRS	5	-0.5

Figure in the table is for illustration purpose only.

- Delta_01 of trade 1 and 2 will be aggregated together and compare the amount with risk limit.

With the information in table 1, once the limit utilization (i.e. used divided by Risk limit reaches 100%) equal to or exceeds ± 5 million USD, for each subsequent trade³:

² Assume the position is a par trade. However please note that the delta_01 will change subject to market data and/or trade terms.

³ See 4.6.2 and 4.6.3, Chapter 4 –Margin and Valuation of OTC Clearing Hong Kong Limited Clearing Procedures.

³ See 4.6.2 and 4.6.3, Chapter 4 –Margin and Valuation of OTC Clearing Hong Kong Limited Clearing Procedures.

- The trade will not pass limit check if it cannot reduce the limit utilization (below 100%).
- The trade will pass limit check if it can reduce limit utilization (below 100%).

Assume one year of time has passed and portfolio change as follow i.e. trade 1 has been matured and trade 2 is only one trades in member XYZ's portfolio, then OCASS will show the information below⁴:

Table 2

Product	Risk limit (in million USD)	Used (in million USD)
USD IRS	5	-0.75

Figure in the table is for illustration purpose only.

As trade 1 becomes matured, the delta_01 of trade 1 will be zero, while remaining maturity of trade 2 is 5.5 years so the trade is still in the bucket. Please note that the Delta_01 for trades may change according to various market factors such as rates movement, remaining maturity, etc.

⁴ Assume no decay in delta_01 for easier understanding.

Appendix 2: Explanatory Notes on FX delta Risk Limit Set Up

Firstly, the FX_delta refers to the change in Net Present Value (NPV) of the Non Deliverable Forward (NDF) or Cross Currency Swap (CCS) position when the forward curve is shocked in parallel by 1 pip⁵ (0.0001).

Secondly, the denominated limit currency will be **in USD**.

Thirdly, the limit can be specified for each NDF or CCS product or in aggregate, which means:

- By each NDF product : USD/CNY, USD/KRW, USD/INR, USD/TWD; or
- By each CCS product : USD/CNH, USD/HKD; or
- All FX products clearable via OTC Clear.

Finally, as FX_delta calculated by OCASS can be a positive or a negative value the risk limit specified by Clearing Members represents the upper and lower bound of FX_delta limit. For example if a Clearing Member sets FX_delta limit to 2 million for all products, then actual FX_delta for all of the Clearing Member's product cannot exceed **+2 million** or fall behind **-2 million** USD respectively. In OCASS:

- Clearing members' long primary currency i.e. USD position(s) will have positive FX_delta;
- Clearing members' short primary currency i.e. USD position(s) will have negative FX_delta;

How FX_delta risk limit works

Assume Clearing Member XYZ specifies a risk limit as follows and has no trade in the portfolio. If XYZ submits the two USD/CNY NDF trades:

- Trade 1 – 3M maturity long USD position with FX_delta of 0.1 million USD
- Trade 2 – 1Y maturity short USD position with FX_delta of -0.3 million USD

Table 3

Product	Risk limit (in million USD)	Used (in million USD)
USD/CNY NDF	5	-0.2

Figure in the table is for illustration purpose only.

- FX_delta of trade 1 and 2 will be aggregated and compare the amount with risk limit.

With the information in table 3, once the limit utilization (i.e. used divided by Risk limit reaches 100%) equals to or exceeds ± 5 million USD, for each subsequent trade⁶:

⁵ It is an acronym for Percentage in Point.

⁶ See 4.6.2 and 4.6.3, Chapter 4 –Margin and Valuation of OTC Clearing Hong Kong Limited Clearing Procedures.

- The trade won't pass limit check if it cannot reduce the limit utilization (below 100%).
- The trade will pass limit check if it can reduce limit utilization (below 100%).

Assume three months of time has passed and portfolio change as follow i.e. trade 1 has been matured and trade 2 are only one trades in member XYZ's portfolio, then OCASS will show the information below⁷:

Table 4

Product	Risk limit (in million USD)	Used(in million USD)
USD/CNY NDF	5	-0.3

Figure in the table is for illustration purpose only.

As trade 1 becomes matured, the FX_delta of trade 1 will be zero, while remaining maturity of trade 2 is 9 months so the trade is still in the bucket. Please note that the FX_delta for trades will change according to various market factors such as spot/forward rates movement, remaining maturity, etc.

⁷ Assume no decay in FX_delta for easier understanding.

Appendix 3: Risk Limit Level Assessment

The following steps show how OTC Clearing Hong Kong Limited assesses Clearing Member's risk limit level with its Tier 1 Capital.

Consider the following situation:

Clearing Member: CM A

Clearing Member Tier 1 Capital: 50 billion HKD

Tolerated Exposure by OTC Clearing (Tier 1 Capital * 20%)⁸: 10 billion HKD (1.2747 billion USD)

Tolerated Delta_01 risk limit level⁹:

$$\begin{aligned} \text{Delta}_01 \text{ limit} &= \text{CM's Tier 1 Capital} * 20\% \times \text{Delta}_01 \text{ factor}^{10} \\ &= 1.2747 \text{ billion USD} \times 0.41\% \\ &= 5.26 \text{ million USD} \end{aligned}$$

Tolerated FX_Delta risk limit level¹¹:

$$\begin{aligned} \text{FX}_\text{Delta} \text{ limit} &= \text{CM's Tier 1 Capital} * 10\% \times \text{FX}_\text{Delta} \text{ factor}^{12} \\ &= 1.27 \text{ billion USD} \times 0.005\% \\ &= 0.06 \text{ million USD} \end{aligned}$$

⁸ Initial Tolerance is a soft limit, higher level subject to further review by OTC Clearing Hong Kong Limited

⁹ The assumption of calculations for Delta_01 risk limit base on USD IRS and USDCNH CCS products.

¹⁰ Delta_01 factor is an internal factor used by OTC Clearing Hong Kong Limited and subject to change.

¹¹ The assumption of calculations for FX-Delta risk limit base on USDCNH CCS products.

¹² FX_Delta factor is an internal factor used by OTC Clearing Hong Kong Limited and subject to change.