

## Chapter 6

### Rates and FX Guarantee Resources

#### 6.1 Rates and FX Guarantee Resources

The Rates and FX Guarantee Resources comprise the Rates and FX Guarantee Fund, Rates and FX Assessments and OTC Clear Contribution. The amounts and type(s) of Collateral delivered by a Clearing Member as its Rates and FX Contribution will be recorded by OTC Clear in the GF Account relating to such Clearing Member.

##### 6.1.1 Rates and FX Guarantee Fund

The CM Funded Contribution Amount for each Clearing Member will be determined by OTC Clear on each Rates and FX Contribution Determination Date, being an amount equal to the greater of:

- (i) HK\$ 25 million or equivalent (after applying Collateral Haircuts on Collateral), being the Rates and FX Minimum Contribution Amount; and
- (ii) the product of:
  - (a) 110% of the highest Max EUL value amongst the Max EUL values determined on each OTC Clear Clearing Day falling within the GF Calculation Period relating to such Rates and FX Contribution Determination Date (Max EUL is defined and determined pursuant to section 6.1.1(6), as modified by section 6.1.1(8) if Client Clearing Services are provided by one or more Clearing Members on any days falling within the GF Calculation Period relating to such Rates and FX Contribution Determination Date); and
  - (b) the average of the relative pro-rata percentage shares relating to such Clearing Member determined in respect of each day falling within the GF Calculation Period relating to such Rates and FX Contribution Determination Date, where:

**“GF Calculation Period”** means, with respect to a Rates and FX Contribution Determination Date occurring on the first or second OTC Clear Business Day of a calendar month pursuant to Clearing Rule 1503(1), each day falling within the immediately preceding calendar month which is a OTC Clear Clearing Day and a Northbound Clearing Day which is not a OTC Clear Clearing Day; and with respect to a Rates and FX Contribution Determination Date occurring on any other day pursuant to Clearing Rule 1503(2) or 1503(3), each OTC Clear Clearing Day and each Northbound Clearing Day which is not a OTC Clear Clearing Day falling within the calendar month in which such Rates and FX Contribution Determination Date falls up to (but excluding) such Rates and FX Contribution Determination Date.

While the resizing of the CM Funded Contribution Amount for each Clearing Member will only be performed on each Rates and FX Contribution Determination Date as defined in, and pursuant to, Clearing Rule 1503, OTC Clear will perform, for risk monitoring purposes, stress testing and calculation of the relevant pro-rata percentage share and the Daily GF Value with Reserve in respect of each Clearing Member on each OTC Clear Clearing Day and each Northbound Clearing Day which is not a OTC Clear Clearing Day.

Below is an illustrative example to show how the relative pro-rata percentage share and the Daily GF Value with Reserve are determined for each Clearing Member on OTC Clear Clearing Day “X”:

<b>Clearing Member / Special Clearing House Participant</b>	<b>Position Account STV<sup>(2a)</sup></b>	<b>Position Account Stress Add-on<sup>(2b)</sup></b>	<b>Margin Balance <sup>(3)</sup></b>	<b>Expected Uncollateralized Loss<sup>(4)</sup></b>	<b>Relative pro-rata percentage share<sup>(5)</sup></b>	<b>Daily GF Value<sup>(6)</sup></b>	<b>Daily GF Value with Reserve<sup>(7)</sup></b>
Clearing Member A	1,000	80	630	450	25.00%	125.00	137.50
Clearing Member B	300	20	120	200	11.11%	55.56	61.11
Clearing Member C	500	50	300	250	13.89%	69.44	76.39
Clearing Member D	800	100	400	500	27.78%	138.89	152.78
Clearing Member E	600	60	460	200	11.11%	55.56	61.11
Clearing Member F	400	20	220	200	11.11%	55.56	61.11
Special Clearing House Participant	420	30	180	270	Not Applicable	Not Applicable	Not Applicable
<b>Total (Excluding Special Clearing House Participant)</b>				<b>1,800</b>	<b>100%</b>	<b>500</b>	<b>550</b>

## (1) Assumptions

There are six Clearing Members A, B, C, D, E, F and the Special Clearing House Participant, and none of the six Clearing Members engages in Client Clearing Services. As such, in this illustrative example, in respect of each Clearing Member and the Special Clearing House Participant, OTC Clear will perform the calculations set out in parameters (2a), (2b), (3) and (4) below on such Clearing Member's and Special Clearing House Participant's House Position Account.

Parameter (8) below explains how the Expected Uncollateralized Loss with respect to a Clearing Member may be different in case a Clearing Member engages in Client Clearing Services.

## (2a) Position Account STV

In respect of each Clearing Member and the Special Clearing House Participant and an OTC Clear Clearing Day and a Northbound Clearing Day which is not a OTC Clear Clearing Day, OTC Clear will determine, at the End-of-Day Cut Off Time on such day:

- (i) the net present value of each Position Account of each Clearing Member and the Special Clearing House Participant (the “**Base NPV**”); and
- (ii) the net present value of each Position Account of each Clearing Member and the Special Clearing House Participant under each stress scenario prescribed by the stress test model prescribed by OTC Clear as described further in section 6.3. The stress test value derived for 6.3 (each a “**Stress NPV**”).

In respect of each Position Account of a Clearing Member and the Special Clearing House Participant on an OTC Clear Clearing Day and on a Northbound Clearing Day which is not a OTC Clear Clearing Day, the absolute value of the largest decrease in net present value (determined by comparing each Stress NPV against the Base NPV) for that Position Account on that day is referred to as the “**Position Account STV**”.

(2b) Position Account Stress Add-on

In respect of each Clearing Member or Special Clearing House Participant and an OTC Clear Clearing Day and a Northbound Clearing Day which is not a OTC Clear Clearing Day, OTC Clear will determine, at the End-of-Day Cut Off Time on such day:

- (i) the net present value of each Position Account and Collateral Account of each Clearing Member and the Special Clearing House Participant (the “**Base XNPV**”); and
- (ii) the net present value of each Position Account and Collateral Account of each Clearing Member and the Special Clearing House Participant, under each stress scenario prescribed by the stress test model prescribed by OTC Clear as described further in section 6.3. The stress test value derived for section 6.3 (the “**Stress XNPV**”);

in respect of a Clearing Member, its Collateral Account means the Margin Balance excluding the value of any Excess Margin;

in respect of the Special Clearing House Participant, its Collateral Account means the aggregate of the cash Collateral standing to the credit of the Hong Kong Collateral Account and the amount standing to the credit of the PRC Collateral Account, excluding any Excess Inter-CCP SHCH Margin and any excess collateral posted by OTC Clear.

In respect of each Position Account and Collateral Account on an OTC Clear Clearing Day and a Northbound Clearing Day which is not a OTC Clear Clearing Day, the absolute value of the largest decrease in net present value (determined by comparing each Stress XNPV against the Base XNPV) for that Position Account on that day is referred to as the “**Position and Collateral Account STV**”.

Unless a Clearing Member has opted to utilize its Excess Margin to reduce the Expected Uncollateralized Loss in respect of any of its Position Accounts in accordance with Clearing Rule 1218A, Excess Margin shall be excluded in the calculation of Stress XNPV and Position and Collateral Account STV. For the avoidance of doubt, if such Clearing Member has submitted a Withdrawal/Porting Notice or a Non-cash Collateral Withdrawal/Porting Notice, the amount set out in such notice shall be excluded from such calculation from the date of such notice.

In respect of each Position Account on an OTC Clear Clearing Day or a Northbound Clearing Day, the increase in the largest net present value (determined by comparing Position and Collateral Account STV against the Position Account STV) for that Position Account after taking Collateral Account into account on that day is referred to as the “**Collateral Stress Add-on**”.

In addition to the Collateral Stress Add-on, OTC Clear may apply other stress add-ons, including but not limited to those relating to the risk parameters under Clearing Procedures 4.2.3, 4.5.2(vii), 4.5.2(viii) and 4.5.3, at the End of Day Cut Off Time on each OTC Clear Clearing Day and each Northbound Clearing Day which is not a OTC Clear Clearing Day. The aggregate of any Collateral Stress Add-on and such other stress add-ons in respect of each Position Account of a Clearing Member shall be regarded as the “**Position Account Stress Add-on**”.

(3) Margin Balance (for the purpose of Rates and FX Guarantee Fund calculation)

With respect to a Clearing Member, OTC Clear shall exclude from the Margin Balance any additional Collateral provided under Clearing Rule 1510 and any Additional Margin provided to cure any exceedance of or reduce utilisation of a Notional Exchange Risk Limit and it is assumed that there is no Excess Margin with respect to the Clearing Member’s House Position Account.

With respect to the Special Clearing House Participant, such balance refers to the aggregate of the cash Collateral standing to the credit of the Hong Kong Collateral Account and the amount standing to the credit of the PRC Collateral Account, excluding any Excess Inter-CCP SHCH Margin, any excess collateral posted by OTC Clear and any IM Add-on as defined in section 11.6 of these Clearing Procedures.

(4) Expected Uncollateralized Loss

On each OTC Clear Clearing Day, OTC Clear will then determine the Position Account EUL for each Position Account of each Clearing Member and the Position Account EUL for the House Position Account of the Special Clearing House Participant, where:

“**Position Account EUL**” means, with respect to:

- (i) a Position Account of a Clearing Member and an OTC Clear Clearing Day and a Northbound Clearing Day which is not a OTC Clear Clearing Day, an amount equal to (A) the Position Account STV plus (B) Position Account Stress Add-on less (C) the Margin Balance (excluding (i) any Excess Margin, unless a Clearing Member has opted to utilize its Excess Margin to reduce the Expected Uncollateralized Loss in respect of any of its Position Accounts in accordance with Clearing Rule 1218A, in which case Excess Margin shall be included\*, (ii) any additional Collateral provided under Clearing Rule 1510 and (iii) any Additional Margin provided to cure any exceedance of or reduce utilisation of a Notional Exchange Risk Limit) recorded to the Collateral Account relating to such Position Account, each determined as of the End-of-Day Cut Off Time on such day; or
- (ii) the House Position Account of the Special Clearing House Participant and an OTC Clear Clearing Day and a Northbound Clearing Day which is not a OTC Clear Clearing Day, an amount equal to (A) the Position Account STV plus (B) Position Account Stress Add-on less (C) the aggregate of the cash Collateral standing to the credit of the Hong Kong Collateral Account and the amount standing to the credit of the PRC Collateral Account, excluding any Excess Inter-CCP SHCH

---

\* For the avoidance of doubt, if such Clearing Member has submitted a Withdrawal/ Porting Notice or a Non-cash Collateral Withdrawal/ Porting Notice, the amount set out in such notice shall be excluded from the Margin Balance from the date of such notice.

Margin, any excess collateral posted by OTC Clear and any IM Add-on as defined in section 11.6 of these Clearing Procedures, each determined as of the End-of-Day Cut Off Time on such day.

In this illustrative example where none of the Clearing Members engages in Client Clearing Services, the “**Expected Uncollateralized Loss**” for each such Clearing Member is the Position Account EUL relating to its House Position Account. If a Clearing Member engages in Client Clearing Services, the “**Expected Uncollateralized Loss**” for such Clearing Member is the sum of the Position Account EUL relating to its House Position Account and the aggregate of the Position Account EULs with positive values relating to all such Clearing Member’s Client Accounts.

(5) Relative pro-rata percentage share

The “**relative pro-rata percentage share**” means, with respect to a Clearing Member and an OTC Clear Clearing Day and a Northbound Clearing Day which is not a OTC Clear Clearing Day, the Expected Uncollateralized Loss with respect to such Clearing Member on such day divided by the total Expected Uncollateralized Loss with respect to all Clearing Members on such day. In the illustrative example, since the total Expected Uncollateralized Loss for all six Clearing Members is 1,800, the relative pro-rata percentage share of each Clearing Member will be a percentage equal to such Clearing Member’s Expected Uncollateralized Loss divided by the total Expected Uncollateralized Loss of 1,800. In the case of Clearing Member A, its relative pro-rata percentage share is 25% (being 450/1800) on OTC Clear Clearing Day “X”. For avoidance of doubt, the relative pro-rata percentage share for the Special Clearing House Participant is not illustrated as the Special Clearing House Participant is exempted from Rates and FX Contribution.

(6) Daily GF Value

In respect of each Clearing Member and an OTC Clear Clearing Day and a Northbound Clearing Day which is not a OTC Clear Clearing Day, OTC Clear will determine the “**Daily GF Value**” for such Clearing Member on such day to be the product of the Max EUL and the relative pro-rata percentage share on such day, where “**Max EUL**” means, on any given day, an amount equal to the greater of:

- (i) the largest Expected Uncollateralized Loss amount amongst all the Expected Uncollateralized Loss amounts calculated with respect to all Clearing Members and the Special Clearing House Participant under the same stress scenario within the GF Calculation Period; and
- (ii) the largest Expected Uncollateralized Loss amount amongst all the Expected Uncollateralized Loss amounts calculated with respect to all Clearing Members under the same stress scenario within the GF Calculation Period, with the following modifications:
  - (a) the Expected Uncollateralized Loss amount of all Clearing Members who are Affiliates of one another shall be aggregated with the Expected Uncollateralized Loss amount of the largest Affiliate; and
  - (b) the selection of the largest Expected Uncollateralized Loss amount is made on a revised pool excluding the Expected Uncollateralized Loss amounts determined in respect of the smaller Affiliated Clearing Members.

For avoidance of doubt, the Daily GF Value for the Special Clearing House Participant is not illustrated as the Special Clearing House Participant is exempted from Rates and FX Contribution.

(7) Daily GF Value with Reserve

The “**Daily GF Value with Reserve**” in respect of a Clearing Member will be calculated on each OTC Clear Clearing Day and on each Northbound Clearing Day which is not a OTC Clear Clearing Day by multiplying the Daily GF Value of such Clearing Member determined on such day by 110%. In the case of Clearing Member A, its Daily GF Value with Reserve is 137.5 (being 125 X 110%) on OTC Clear Clearing Day “X”.

(8) Client Clearing Services

With respect to any Clearing Member who engages in Client Clearing Services:

- (i) OTC Clear will determine the Position Account STV, Position Account Stress Add-on, Margin Balance and Position Account EUL for each Client Position Account of such Clearing Member in exactly the same manner as described in parameters (2a), (2b), (3) and (4) above;
- (ii) the “**Expected Uncollateralized Loss**” for such Clearing Member shall be the sum of:
  - (a) the Position Account EUL relating to its House Position Account; and
  - (b) the aggregate of the Position Account EULs with positive values relating to all Clearing Member’s Client Accounts.

#### 6.1.2 Rates and FX Assessments

On any given OTC Clear Clearing Day and Northbound Clearing Day which is not a OTC Clear Clearing Day, the maximum CM Unfunded Contribution Amount of each Clearing Member will be two times (i.e. 2x) the value of its CM Funded Contribution Amount calculated on the last Rates and FX Contribution Determination Date pursuant to Clearing Rule 1503. The CM Unfunded Contribution Amount for each Clearing Member will be resized at the same time the CM Funded Contribution Amount for such Clearing Member is resized pursuant to Clearing Rule 1503. For risk monitoring purposes, OTC Clear will also calculate an estimated Rates and FX Assessments amount on each OTC Clear Clearing Day and each Northbound Clearing Day which is not a OTC Clear Clearing Day based on the aggregate of the Daily GF Value with Reserve calculated in respect of each Clearing Member on such day. Based on the figures in the illustrative example, the estimated maximum proportionate share of the Rates and FX Assessments for each Clearing Member on OTC Clear Clearing Day “X” will be as follows:

Clearing Member	Daily GF Value with Reserve	Proportionate Share of the Rates and FX Assessments
A	137.50	275.00
B	61.11	122.22
C	76.39	152.78
D	152.78	305.56
E	61.11	122.22

Clearing Member	Daily GF Value with Reserve	Proportionate Share of the Rates and FX Assessments
F	61.11	122.22
<b>Total</b>	<b>550</b>	<b>1,100</b>

Pursuant to Clearing Rule 1506, each Clearing Member must satisfy its CM Unfunded Contribution Amount in cash.

## 6.2 Excess Margin and CM Funded Contribution Amount

Pursuant to section 6.1.1(4), with respect to each Clearing Member, its Margin Balance (excluding (i) any Excess Margin, unless a Clearing Member has opted to utilize its Excess Margin to reduce the Expected Uncollateralized Loss in respect of any of its Position Accounts in accordance with Clearing Rule 1218A, in which case Excess Margin shall be included<sup>\*</sup>, (ii) any additional Collateral provided under Clearing Rule 1510 and (iii) any Additional Margin provided to cure any exceedance of or reduce utilisation of a Notional Exchange Risk Limit) will be used to determine its Position Account EUL and its relative pro rata percentage share and such Excess Margin (if any) will be taken into account by OTC Clear to reduce the CM Funded Contribution Amount applicable to that Clearing Member.

Assuming that, applying the calculations referred to in parameter (2a) above, the House Position Account of Clearing Member A gives the highest Position Account STV, and assuming further that Clearing Member A has opted to utilize its Excess Margin to reduce the Expected Uncollateralized Loss in respect of any of its Position Accounts and now has Excess Margin of 150 provided to reduce the Expected Uncollateralized Loss on top of its Initial Margin recorded to the Collateral Account relating to the House Position Account, using the figures in the above illustrative example, the Margin Balance of Clearing Member A will be increased from 630 to 780.

Based on the same calculation methodology described in section 6.1, Clearing Member A's relative pro-rata percentage share and Daily GF Value on OTC Clear Clearing Day "X" will be reduced as shown in the table below:

Clearing Member / Special Clearing House Participant	Position Account STV	Position Account Stress Add-on	Margin Balance <sup>*#</sup>	Expected Uncollateralized Loss	Relative pro-rata percentage share	Daily GF Value	Daily GF Value with Reserve
Clearing Member A	1,000	<b>80</b>	630 → 780	300	18.18%	90.91	100.00
Clearing Member B	300	<b>20</b>	120	200	12.12%	60.61	66.67
Clearing Member C	500	<b>50</b>	300	250	15.15%	75.76	83.33

<sup>\*</sup> For the avoidance of doubt, if such Clearing Member has submitted a Withdrawal/ Porting Notice or a Non-cash Collateral Withdrawal/ Porting Notice, the amount set out in such notice shall be excluded from the Margin Balance from the date of such notice.

Clearing Member / Special Clearing House Participant	Position Account STV	Position Account Stress Add-on	Margin Balance*#	Expected Uncollateralized Loss	Relative pro-rata percentage share	Daily GF Value	Daily GF Value with Reserve
Clearing Member D	800	100	400	500	30.30%	151.52	166.67
Clearing Member E	600	60	460	200	12.12%	60.61	66.67
Clearing Member F	400	20	220	200	12.12%	60.61	66.67
Total				1,650	100%	500	550

# In the illustrative example, Margin Balance excludes (i) any Excess Margin, unless a Clearing Member has opted to utilize its Excess Margin to reduce the Expected Uncollateralized Loss in respect of any of its Position Accounts in accordance with Clearing Rule 1218A, in which case Excess Margin shall be included; (ii) any additional Collateral provided under Clearing Rule 1510; and (iii) any Additional Margin provided to cure any exceedance of or reduce utilisation of a Notional Exchange Risk Limit.

The relative pro-rata percentage share calculated on OTC Clear Clearing Day "X" will be averaged with the relative pro-rata percentage share calculated on the OTC Clear Clearing Days and Northbound Clearing Days which are not OTC Clear Clearing Days in the relevant Calculation Period relating to the relevant Rates and FX Contribution Determination Date in determining the CM Funded Contribution Amount of Clearing Member A on such Rates and FX Contribution Determination Date.

#### 6.2A Where the Special Clearing House Participant is the highest Expected Uncollateralized Loss

Although the Special Clearing House Participant is exempted from Rates and FX Contribution, its Position Account STV, Position Account Stress Add-on and Expected Uncollateralized Loss is calculated and ranked for the purpose determining the highest Max EUL and consequently each Clearing Members' Daily GF Value with Reserve.

Illustrated in the table below is how each Clearing Members' Daily GF Value with Reserve will be affected where the Special Clearing House Participant has the highest Expected Uncollateralized Loss:

Clearing Member / Special Clearing House Participant	Position Account STV	Position Account Stress Add-on	Margin Balance	Expected Uncollateralized Loss	Relative pro-rata percentage share	Daily GF Value	Daily GF Value with Reserve
Clearing Member A	1,000	80	630	450	25.00%	150	165
Clearing Member B	300	20	120	200	11.11%	66.66	73.33
Clearing Member C	500	50	300	250	13.89%	83.34	91.67
Clearing Member D	800	100	400	500	27.78%	166.68	183.35



Clearing Member / Special Clearing House Participant	Position Account STV	Position Account Stress Add-on	Margin Balance	Expected Uncollateralized Loss	Relative pro-rata percentage share	Daily GF Value	Daily GF Value with Reserve
Clearing Member E	600	60	460	200	11.11%	66.66	73.33
Clearing Member F	400	20	220	200	11.11%	66.66	73.33
Special Clearing House Participant	900	100	400	600	Not Applicable	Not Applicable	Not Applicable
<b>Total (Excluding Special Clearing House Participant)</b>				<b>1,800</b>	<b>100%</b>	<b>600</b>	<b>660</b>

### 6.3 Stress Test

The stress test model prescribed by OTC Clear will be calibrated to cover multi-day profit and loss moves from extreme, but plausible historic market moves and hypothetical scenarios.

Stress testing will be done daily. Some features which will be embedded in the stress testing model include, but are not limited to, the following:

- (i) 1987 stock crash
- (ii) 1998 Asian financial crisis
- (iii) 2003 SARS
- (iv) 2008 global financial crisis (including the default of Lehman Brothers)

### 6.4 OTC Clear Contribution

OTC Clear has two tranches of capital reserves specifically designated to cover Rates and FX Loss suffered by it as a result of its provision of the Rates and FX Clearing Services.

OTC Clear First Contribution will initially have a value of HK\$ 150 million. OTC Clear Second Contribution will start with a value of HK\$ 6 million and be built up to a maximum value of HK\$ 650 million using the investment income generated from investing the Rates and FX Guarantee Resources in the form of cash, less any administrative costs, hedging costs, commitment fees for credit lines, bid-offer on currency conversion, and/or other investment related expenses.

Any amounts received by OTC Clear from a Clearing Member pursuant to Clearing Rule 1216A will form part of the OTC Clear Second Contribution.