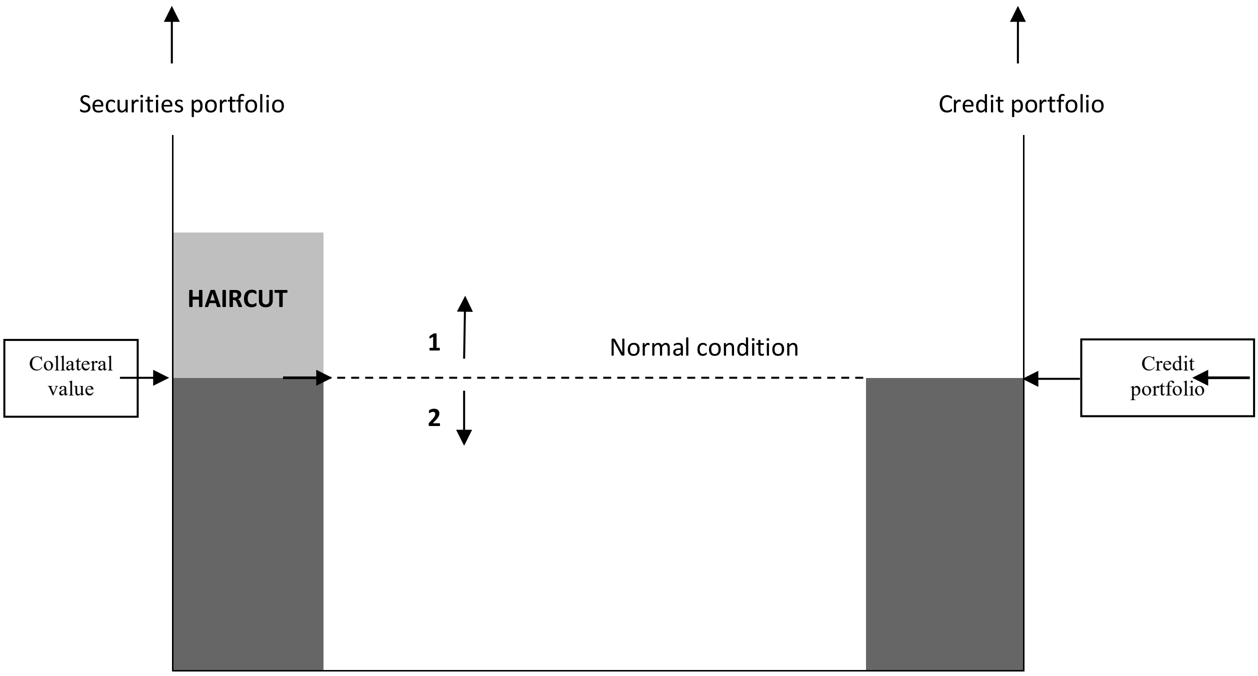
Budapest, 3 October 2022

Description of the Collateral Management System of the MNB

In its collateral management system the MNB prescribes that the collateral portfolio determined in the Terms and Conditions for the Operations of the Central Bank in Forint and Foreign Currency Markets and the collateral provided under the Funding For Growth Scheme (hereinafter collectively: stock of collateral) provided by the direct participant – calculated in accordance with this notice should secure all of the MNB's aggregated receivables arising from the direct participant's collateralised loans (loan portfolio) (combined collateral valuation). Accordingly, the collateral for intraday credits, instant credits and instant additional loans, overnight collateralised loans and other collateralised loans is constituted by an aggregated stock of collateral. The methodology of assessment of acceptable securities is defined by the MNB.

The collateral value of the stock of collateral and the size of the loan portfolio are revalued daily (daily collateral valuation). At the end of the day (after the closing of VIBER and the utilisation of the set of monetary instruments, the MNB compares the value of the loan portfolio *with the collateral value* of the stock of collateral. Additional collateral, as defined in the 'Terms and Conditions for the Operations of the Central Bank in Forint and Foreign Currency Markets', is requested (margin call) if the collateral value falls below the re-valued credit balances (Figure 1).

Figure 1: ***Daily collateral management system***



1.	Excess coverage (termination of such may be initiated by the direct participant)
2.	Under-coverage: additional collateral request

Description of the collateral management system

Number of collaterals: J (where j=from 1 to J, and the value of j collateral at t time: $C_{j,t}$), which need to be offered by a direct participant to secure I number of active transactions (final liquidity provided for at least one day, including O/N and longer-term credits, but not intraday ones) (where i=from 1 to I, and the value of i-th transaction at t time is $L_{i,t}$). Prescribed correlation between the value of the loan portfolio and the value of the stock of collateral:

$$\sum_{i=1}^{I} L_{i,t} \leq \sum_{j=1}^{J} (1-h_j)*C_{j,t}$$ [hereinafter: equation (1)]

where: C_j is the initial price of the j-th asset calculated in accordance with the MNB's valuation methods (based on market price, yield curve or, in the case of large corporate receivables, its nominal value)

L_i is the value of the i-th central bank credit extended for at least one day, calculated with accrued interest

h_j is the haircut applied for the j-th collateral (percent)

Let us assume that τ is the time passed between re-valuations. For the MNB, τ=1 day and revaluation always takes place at the end of the day (after the closing of VIBER and the utilisation of the set of monetary instruments). At time $t+\tau$ additional collateral is requested on the basis of the difference calculated in the following manner ($M_{t+\tau}$):

$$M_{t+\tau} = \sum_{i=1}^{I} L_{i,t+\tau} - \sum_{j=1}^{J} (1-h_j)*C_{j,t+\tau} \qquad (2)$$

This shows that the MNB re-values the credits as well in the meantime, and calculates the accrued interest.
Additional collateral is requested if the above difference has a positive value.

In systems **based on pooled collateral valuation**:

- additional collateral is requested if $M_{t+\tau} > 0$
- the termination of the collateral nature i.e. the cancellation of the security right in favour of the MNB (either by terminating the blocking of securities in favour of the MNB – by releasing the blocking – or by terminating the lien on receivables from large corporations), may take place if $M_{t+\tau} < 0$.

The termination of the security right in favour of the MNB on securities and receivables from large corporations is not automated and requires the involvement of the direct participant. The direct participant may initiate the unblocking of securities pledged in favour of the MNB at KELER as well as the release of receivables from large corporations pledged in favour of the MNB; however, the unblocking and release of the lien may only be carried out with the consent of the MNB. The MNB shall only authorise the release of securities to the extent that ensures the maintenance of correlation (1) (during the day – under continuous availability – adjusted for intraday credit). Similarly, if collateral is requested, the MNB requires an amount to be pledged additionally which is required to render equation (1) valid again.

Highest intraday loan amount in systems using pooled collateral valuation (if positive)

$$L = \sum_{j=1}^{J} (1-h_j)*C_{j,t+\tau} - \sum_{i=1}^{I} L_{i,t+\tau} \qquad (3)[1]$$

where: L intraday credit line

The first part of the above formula is called the *collateral value* of the pledged securities portfolio.

[1] If the direct participant has no secured loan, the intraday credit limit is identical with the collateral value of pledged assets:

$$L = \sum_{j=1}^{J} (1-h_j)*C_{j,t+\tau}$$

End-of-day revaluation

By the deadline announced in Annexes 2 and 2/a hereto, direct participants shall be notified of their intraday credit line – broken down by instant credit line and IG1 credit line – and of the ICS facility (**ICS facility notice**). The MNB quantifies the values included in the ICS facility notice also taking into consideration the revalued loans (the system accrues interest) and the revaluation of the collaterals (values are already stated at the new, updated prices for the next value date and stocks).

If the notification prescribes a minimum balance for the direct participant, the direct participant shall provide additional collateral, in line with the MNB's separate call to this effect. The direct participant's right to dispose over the bank account is limited by setting a minimum balance to the extent that ensures that the sum of the bank account balance and the collateral value of the stock of collateral does not fall below the value of the loan portfolio (fulfilment of the minimum value requirement).

Instant loan credit line

If necessary, MNB grants collateralized loans (instant loans) to its non-public sector ICS participants affected by the prohibition of monetary financing under the MNB Act to ensure prompt settlement. When setting the relevant instant credit line, the MNB reduces the value of the stock of collateral considering the IG1 credit line and the maximum fee for the instant credit. For the valuation of the stock of collateral, the MNB applies the acceptance values used in the collateral valuation.

$$Instant\ loan\ CL = Collateral\ value\ - IG1\ CL\ - maximuminstant\ loan\ fee$$

Calculation of the maximum instant loan fee

By taking into account the maximum instant loan fee, the amount of the loan fee is covered for 7 calendar days (maximum number of days) at the maximum utilization of the credit line. To calculate the maximum instant loan fee, (collateral value – IG1 credit line) shall be multiplied by (1 – instant discount).

$$maximum\ fee\ for\ the\ instant\ loan\ = (collateral\ value - IG1\ credit\ line) * (1 - \ instant\ discount)$$

The instant discount value is a function of several factors.

- Maturity: the number of days in the longest, potentially occurring continuous period of a bank holiday (public holiday), which is the maximum theoretical duration of the instant loan.
- Instant loan fee: see Notice

Instant discount value:

$$instant\ discount = \frac{1}{1 + instant\ loan\ fee * \frac{max.number\ of\ days}{360}}$$

The instant discount value shall be rounded down to four decimal places.

ICS fund notices

In the ICS fund notices, the MNB intends to provide all the information necessary for the direct participant to check the figures in its own records, or it can calculate the currently valid intraday credit limit itself, or ICS fund. The ICS fund notices contain the **following information**:

- ICS fund,

- closing balance of the bank account,
- IG1 credit line,
- minimum balance,
- instant loan credit line,
- overnight collateralised credit,
- collaterised credit over one day,
- expired forced credit and official transfer
- overdue central bank receivables,
- instant additional loan,
- blocked (maximum) instant loan fee.

Definitions

Terms not regulated in this definitions shall be governed by the provisions of the 'Terms and Conditions for the Operations of the Central Bank in Forint and Foreign Currency Markets'.

Stock of collateral: the aggregate portfolio of the collateral as set out in the 'Terms and Conditions for the Operations of the Central Bank in Forint and Foreign Currency markets' and the collateral provided within the framework of the Funding For Growth Scheme.

Haircut: a risk management tool used by the MNB for collateral valuation (expressed as a percentage of the initial price). It is (expressed as a percentage): 100% - acceptance ratio.

Minimum value: at least the minimum collateral value of the stock of collateral corresponding to the prevailing outstanding receivables of the MNB from the loan portfolio of the direct participant, which provides coverage for the MNB's loan receivables. When making a margin call, the MNB ask for providing collaterals corresponding to the coverage level and when releasing the blocking, the MNB authorises the release of the collateral only to the degree that ensures that the collateral value of the stock of collateral does not fall below this level.

Minimum value requirement: a condition that ensures the coverage of the MNB's outstanding receivables from the direct participant's loan portfolio, according to which the sum of the collateral value of the direct participant's stock of collateral and bank account balance may not fall below the value of the direct participant's loan portfolio.

Daily collateral valuation: The MNB performs the revaluation of the stock of collateral and the loan portfolio[2] on each working day. It compares the outstanding loan portfolio or portfolios with the collateral value of the stock of collateral (in this way also taking into account the haircut). If the collateral value of the direct participant's stock of collateral drops below the value of the revalued loan portfolio, additional collateral may be requested or the loan will be repaid. If the collateral value of the stock of collateral exceeds the aforementioned value, the direct participant is entitled to cancel the collateral nature up to the amount of the excess collateral.

[2] This means that at the beginning of the deal, the MNB will not ask for collateral for the interest, but revaluate the loan every day, and add the accrued interest to the nominal value.