

## DEFAULT FUND (CEEGEX / HUDEX/Gas KGA) calculation method

### Calculation algorithm

We determine the default fund (CEEGEX / HUDEX/Gas) algorithm with taking into consideration the following objectives:

- It should cover with high reliability the risks arising from the stress tests.
- We apply uniform parameters to both the derivative and the spot markets (any new market in the future).
- As members will not be able to calculate in advance their contribution to the default fund, when possible there should not be sudden large changes in neither direction, avoiding procyclical effects.
- It should react relatively quickly to stress test risks and should not penalize too long for the effect of a past stress risk of larger scale.
- The stress test algorithm, in line with the requirements of EMIR, ensures that the default fund is sufficient to cover the largest risk presuming default or the risk presuming the second and third default if the sum of these is larger.

The minimum size of the default fund is calculated as the followings:

$$DF = \max \left\{ \max_{[t, t-t_{63}]} (x_i); \min \left[ \max_{[t, t-t_{63}]} (x_i) * p.k.; DF_{(CM-1)} * p2 \right]; \mu(x_i)_{[t, t-t_{63}]} + \alpha \sigma(x_i)_{[t, t-t_{63}]}; DF_{(CM-1)} * p1 \right\}$$

Where:

- $DF$ : The result of the calculation which determines the necessary size of the default fund
- $DF_{(CM-1)}$ : the actual value of the guarantee fund, the day before the calculation is conducted
- $t$ : the last trading day before the current calculation
- $t_{63}$ : the 63<sup>rd</sup> trading day before the day of the current calculation
- $x_i$ : the result of the daily stress tests, the amount of the default of the clearing member to which it has the largest exposures or of the second and third largest clearing members, if the sum of their exposures is larger
- $\mu$ : expected value (calculated as arithmetic mean)
- $\sigma$ : standard deviation

Other parameters:  $\alpha$ ;  $p1$ ;  $p2$  and  $p.k.$  values are published in the effective DF announcement on KELER CCP's website.

We determined the parameters with the help of fitting analysis, their values are to be regularly reviewed and can be modified in the future.

## Distribution method

The default fund calculated in line with the above algorithm is to be distributed among members in proportion of risk.

Considering the alternatives, the risk proportionate distribution was made based on normal (size of initial margin) risk as follows: it is to be checked what percentage of all the collected initial margin of the previous month for the derivative market is provided by the clearing members one by one. For each member we get a number that means the part of the entire initial margin collected in the previous month that was paid by the member concerned. For each member this quotient is multiplied by the value of the default fund calculated based on the algorithm, thus we arrive at the individual contribution of each member.

If this contribution is less than EUR 15,000 (the minimum contribution to the fund), the contribution amount is to be rounded to EUR 15,000.

Summarized in a formula:

Rate of contribution per member<sup>1</sup>:

$$DF_{CM_i} = \text{roundup}(\max\{DF * w_{CM_i}; DF_{Min}\}; -3)$$

where

$$w_{CM_i} = \frac{IM_{CM_i}}{\sum IM_{CM}}$$

Signs:

- $DF_{CM_i}$ : the amount of the contribution of the single members, rounded up
- $DF_{Min}$ : minimum contribution to the default fund contribution
- $DF$ : the necessary size of the default fund
- $w_{CM_i}$ : the members' contribution rate
- $IM_{CM_i}$ : the sum of the single clearing member's initial margin requirement in the previous month
- $\sum IM_{CM}$ : the sum of every clearing members' initial margin requirement in the previous month before the calculation with regards to the derivative market

Parameters:

- The minimum contribution to the default fund is EUR 15,000.

Remarks:

- KELER CCP's contribution to the default fund is the prevailing minimum contribution parameter.
- The prevailing minimum size of the fund with regards to the market is the multiplication of the minimum contribution parameter and the number of the clearing members.

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<sup>1</sup>  $\sum DF_{CM_i} > DF$ , because of the rounding up method, the clearing members who pays the minimum contribution, and because of KELER CCP also pays the minimum contribution.