

Appendix 2

Algorithm of updating clearing members' contributions to the main resource of the guarantee fund of the settlement of transactions concluded in the alternative trading system organised by the Warsaw Stock Exchange

Symbols:

i - clearing member's index;

s - individual securities code (ISIN);

t - unsettled transaction index (including suspended transactions);

N - number of participants whose contributions are updated.

Data:

$K_{i,s,t}$ number of securities with ISIN code "s" purchased in purchase transaction "t" where participant "i" is the clearing member, as at the date of the update;

$S_{i,s,t}$ number of securities with ISIN code "s" sold in sale transaction "t" where participant "i" is the clearing member, as at the date of the update;

PR_s settlement price of securities with ISIN code "s", as at the date of the update;

(The settlement price equals the last closing price. In the event of corporate actions, the settlement price is adjusted for such corporate actions.)

$PT_{i,s,t}$ price of transaction "t" in securities with ISIN code "s" concluded by clearing member "i";

ExR_s NBP's average exchange rate of the currency in which securities with ISIN code "s" are listed, as at the date of the update; for PLN, $ExR = 1$;

M_i last updated contribution of clearing member "i".

Variables:

$W_{i,s}$	balance of the value of purchase and sale transactions in securities with ISIN code “s” where participant “i” is the clearing member;
WRI	mark-to-market value of clearing member “i”;
$WROZ_{i,s}$	settlement value calculated for the net balance of transactions in securities with ISIN code “s” where participant “i” is the clearing member;
$WREF_{i,s}$	transaction reference value calculated for the net balance of transactions in securities with ISIN code “s” where participant “i” is the clearing member;
WW_i	initial calculated contribution of clearing member “i”, as at the date of the update;
W_i	calculated contribution of clearing member “i”, as at the date of the update;
WO_i	actual contribution of clearing member “i”, as at the date of the update.

Parameters:

R_s	percentage risk parameter of the price change of securities with ISIN code “s” determined by the National Depository on each day when the contribution is updated, and provided for informational purposes to clearing members following the end of the session, or the end of the trading day.
W_{min}	minimum contribution to the fund ($W_{min} = \text{PLN } 20,000$);
Q (percentage)	threshold parameter of the gap between the calculated contribution to the fund and the contribution under the last update requiring a change of the contribution to a separate part of the fund ($Q = 10\%$).

Calculation of clearing members' contributions to the main resource of the guarantee fund of the settlement of transactions concluded in the alternative trading system organised by the Warsaw Stock Exchange

1 **Calculation of the balance of the value of purchase and sale transactions in securities with individual ISIN codes where participant "i" is the clearing member:**

$$W_{i,s} = \left| \sum_t (K_{i,s,t} - S_{i,s,t}) \right| \times PR_s$$

2 **Calculation of the mark-to-market of clearing member "i":**

$$WR_i = \max \left(\sum_s (WROZ_{i,s} - WREF_{i,s}) \times ExR_s; 0 \right)$$

where:

$$WROZ_{i,s} = \sum_t (K_{i,s,t} - S_{i,s,t}) \times PT_{i,s,t}$$

$$WREF_{i,s} = \sum_t (K_{i,s,t} - S_{i,s,t}) \times PR_s$$

3 **Initial calculation of the contribution of clearing member "i", as at the date of the update:**

$$WW_i = \sum_s (W_{i,s} \times R_s \times ExR_s) + WR_i$$

4 **Calculation of the contribution of clearing member "i" to the fund, as at the date of the update:**

$$W_i = \begin{cases} WW_i & \text{if } WW_i > W_{min} \\ W_{min} & \text{if } WW_i \leq W_{min} \end{cases}$$

5 **Calculation of the updated contribution *WO* of clearing member "i":**

a. If $|W_i - M_i| \leq M_i \times Q$, then $W_{O_i} = M_i$

b. If $|W_i - M_i| > M_i \times Q$, then $W_{O_i} = W_i$