Appendix 5 to the KDPW_CCP Detailed Rules of Transaction Clearing

Calculating Wrong Way Risk Add-ons

I Definitions and scope

The Wrong Way Risk (WWR) add-ons are a part of the initial margin requirement, securing the risk of a clearing member’s exposure in own instruments, which is highly correlated with the member’s credit risk.

WWR add-ons are calculated for the following positions of clearing members:

- positions in own shares and bonds of a member or companies of the member’s group;
- positions in futures on own shares of a member or companies of the member’s group;
- positions in options on own shares of a member or companies of the member’s group.

WWR add-ons are calculated at the level of clearing accounts, separately for cash positions and derivatives positions. WWR add-ons are calculated on an on-going basis during clearing sessions and in the End-of-Day process.

WWR add-ons for cash positions are calculated assuming a decrease of the value of eligible shares and bonds. WWR add-ons for derivatives positions are calculated assuming a decrease of the value of the underlying. The percentage price decrease is a parameter set and published by KDPW_CCP.

II Calculating WWR add-ons for cash market positions

\[
D_{WWR}^{a,u,k,cash} = \max \left( 0; \sum_{i} NP_{a,u,k,i} \times c_{i} \times h - \sum_{i} |NP_{a,u,k,i}| \times c_{i} \times MD_{i} \times x_{cc(i)} \right)
\]

where:

- \(D_{WWR}^{a,u,k,cash}\) – WWR add-on in clearing account \(k\) of clearing member \(u\) for cash instruments generating WWR, in complex \(a\),
- \(NP_{a,u,k,i}\) – net position balance in instrument \(i\) generating WWR, equal to the difference between buy and sell balances, in clearing account \(k\) of clearing member \(u\), in complex \(a\),
- \(c_{i}\) – reference price of instrument \(i\),
- \(MD_{i}\) – modified duration of instrument \(i\) (only for debt instruments),
- \(x_{cc(i)}\) – normal parameter of specific risk for class \(cc\) of instrument \(i\),
- \(h\) – instrument price decrease cap, defined at instrument type code level (equity, debt), published by KDPW_CCP.

III Calculating WWR add-ons for derivatives market positions
\[ DWWR_{a,u,k,deri} = \max \left( 0; -\sum_{i \in cc(WWR)} CRR_{WWR_{a,u,k,i}} - \sum_{i \in cc(WWR)} PNO_{WWR_{a,u,k,i}} \right) + \sum_{cc \neq cc(WWR)} DZW_{a,u,k,cc} - \sum_{cc \neq cc(WWR)} PNO_{a,u,k,cc} - DSPAN_{a,u,k,deri} \]

where:

- \( DWWR_{a,u,k,deri} \) – WWR add-on in clearing account \( k \) of clearing member \( u \) for derivatives generating WWR, in complex \( a \),
- \( i \) – derivatives identified by ISIN,
- \( cc(WWR) \) – class of derivatives generating WWR of clearing member \( u \),
- \( cc \) – derivatives class code,
- \( DZW_{a,u,k,cc} \) – margin for risk of instrument value change for account \( k \) in PLN for class \( cc \) (scenario risk deposit, intra-class spread deposit, inter-class credit),
- \( PNO_{a,u,k,cc} \) – net option value in class \( cc \),
- \( DSPAN_{a,u,k,deri} \) – SPAN® margin for account \( k \) of clearing member \( u \), on the derivatives market,
- \( CRR_{WWR_{a,u,k,i}} \) – potential loss on futures due to WWR calculated according to the following formula:
  \[ CRR_{WWR_{a,u,k,i}} = -NP_{a,u,k,i} \times c_i \times h \times m_i \]
- \( NP_{a,u,k,i} \) – net position in instrument \( i \), equal to long position-short position in clearing account \( k \) of clearing member \( u \),
- \( c_i \) – reference price of futures \( i \),
- \( m_i \) – multiplier of futures \( i \),
- \( h \) – instrument price decrease cap, defined at instrument type code level (equity, debt), published by KDPW_CCP;
- \( PNO_{WWR_{a,u,k,i}} \) – net option value due to WWR:
  - for put option \( i \):
    \[ PNO_{WWR_{a,u,k,i}} = NP_{a,i,k} \times \max(KW_i - S_i(1-h); 0) \times m_i \]
  - for call option \( i \):
    \[ PNO_{WWR_{a,u,k,i}} = NP_{a,i,k} \times \max(S_i(1-h) - KW_i; 0) \times m_i \]
- \( KW_i \) – strike price of option \( i \),
- \( S_i \) – reference price of the underlying of option \( i \).
IV Calculating WWR add-ons per clearing account

\[ DWWR_{a,u,k} = DWWR_{a,u,k,\text{cash}} + DWWR_{a,u,k,\text{deri}} \]