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Resolution No. 29/21

of the Management Board of KDPW_CCP S.A.

dated 12 October 2021

amending the Detailed Rules of the OTC Clearing System

Pursuant to § 3 subpara. 2, 4 and 8 of the Rules of Transaction Clearing (non-organised trading) and § 19 subpara. 2 of the Statute of KDPW_CCP S.A., the Management Board of KDPW_CCP S.A. resolves as follows:

§ 1

The Detailed Rules of the OTC Clearing System, attached to Resolution No. 21/16 of the Management Board of KDPW_CCP S.A. dated 17 August 2016 (as amended), shall be amended as follows:

1/ Appendix 1 to the Detailed Rules of the OTC Clearing System shall be replaced by Appendix 1 hereto;
2/ Appendix 6 to the Detailed Rules of the OTC Clearing System shall be replaced by Appendix 2 hereto.

§ 2

1. If transactions in Overnight Index Swaps denominated in EUR for which EONIA is the reference rate are accepted in the OTC clearing system before the coming into force of this Resolution:
1/ they shall be cleared under the Detailed Rules of the OTC Clearing System in the wording applicable before the coming into force of this Resolution until the date when the European Money Market Institute (EMMI) stops publishing EONIA (exclusive);
2/ they shall be cleared under the Detailed Rules of the OTC Clearing System in the wording applicable after the coming into force of this Resolution as of the date when the European Money Market Institute (EMMI) stops publishing EONIA (inclusive), i.e., in the same way as transactions in Overnight Index Swaps denominated in EUR for which ESTR is the reference rate.
2. KDPW_CCP shall make a one-time correction of the variation margin referred to in § 1 subpara. 6a of the Rules of Transaction Clearing (non-organised trading), determined for each transaction with margin (TZD), or the settlement amount referred to in § 1 subpara. 16a, determined for each transaction with settlement (TZR), respectively, for transactions referred to in § 1 point 2 above.

3. The correction referred to in subpara. 2 above shall be equal to the difference between the transaction valuation at EONIA and the transaction valuation at ESTR as at the last date of publication of EONIA by the European Money Market Institute (EMMI). The correction shall be settled in cash on the business day following the date when EONIA is published for the last time.

§ 3

This Resolution shall come into force two weeks after its publication by KDPW_CCP S.A.

Maciej Trybuchowski
President
of the Management Board

Sławomir Panasiuk
Vice-President
of the Management Board

Appendix 1 to the Resolution No. 29/21
of KDPW_CCP S.A. the Management Board dated 12 October 2021

Appendix 1 to the Detailed Rules of the OTC Clearing System

This Appendix sets out the characteristics of derivatives accepted for clearing by KDPW_CCP. The payment dates, the reference rate arrangements, the start and end dates of interest periods are defined according to the convention set in the terms of the transaction. Furthermore, the terms of the transaction may specify the amount of additional cash payments at specific dates.

The other terms of the transaction, including the terms of valuation, are set according to the Clearing Rules and the Detailed Rules of the OTC Clearing System.

I. Forward Rate Agreement (FRA)

Currency	**PLN**	**EUR**
Nominal value	Fixed	
Trade date	Any business day	
Start date/Settlement date	Any day	
End date	No later than novation date + spot + 24M	No later than novation date + spot + 36M
Reference rate	WIBOR: 1M, 3M, or 6M	EURIBOR: 1M, 3M, or 6M

II. Interest Rate Swap (IRS)

Currency	**PLN**	**EUR**
Nominal value	Fixed or floating	
Trade date	Any business day	
Start date	Any day	
Maturity	No later than novation date +spot+ 20Y	No later than novation date + spot + 50Y
Floating rate margin	Fixed or floating	
Reference rate	WIBOR: 1M, 3M, or 6M	EURIBOR: 1M, 3M, or 6M

III. Overnight Index Swap (OIS)

Currency	**PLN**	**EUR**
OIS rate	Fixed	
Nominal value	Fixed	
Trade date	Any business day	
Start date	Any day	
Maturity	No later than novation date + spot + 1Y	No later than novation date + spot + 30Y
Reference rate	POLONIA	ESTR

IV. Basis Swap

Currency	**PLN**	**EUR**
Nominal value	Fixed or floating	
Trade date	Any business day	
Start date	Any day	
Maturity/End date	No later than: novation date +spot +20Y	No later than: novation date +spot +50Y
Reference rate	WIBOR: 1M, 3M, or 6M	EURIBOR: 1M, 3M, or 6M
Floating rate margin	Fixed or floating	

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Appendix 2 to the Resolution No. 29/21
of the KDPW_CCP S.A. Management Board dated 12 October 2021

Appendix 6 to the Detailed Rules of the OTC Clearing System

MARGIN CALCULATION METHODOLOGY AND DERIVATIVES, REPO AND SELL TRANSACTIONS VALUATION METHODOLOGY

1. Overview

This Appendix presents the valuation formulas for interest rate derivatives and repo transactions implemented in the kdpw_otc system, as well as the calculation algorithms used to determine the yield curve and to calculate historically simulated value at risk.

2. Valuation formulas for different types of financial instruments

2.1 Definitions

The valuation of a transaction is performed in the currency of the contract.

The definitions of symbols used in the valuation formulas are presented below.

$r_{t,Z}$	is the rate for curve Z at date t
df_t	is the discount factor for a discount curve at date t
$df_{Z,t}$	is the discount factor at date t for curve Z consistent with the instrument tenor
znak	is the counterparty sign, possible values: 1 or -1
N	is the contract nominal amount
r_{FRA}	is the FRA rate
$t(d_1, d_2)$	is the year fraction between date d_1 and d_2, calculated according to the relevant convention
eff	is the instrument effective date or coupon start date
mat	is the instrument maturity date or coupon end date

2.2 FRA valuation

FRAs are agreements where the counterparties determine the interest rate to be used at a future date for a specific amount in the transaction currency for a determined period. The FRA value is determined differently before and after the reference rate is set.

The value is determined as follows:

- before the reference rate is set:

$$PV_{FRA} = znak\ N \left[df_{eff} - \left(1 + r_{FRA}\, t(eff, mat)\right) df_{eff}\, \frac{df_{Z,mat}}{df_{Z,eff}} \right]$$

- after the reference rate is set:

$$PV_{FRA} = znak \frac{(r_{fixing} - r_{FRA}) N\ t\ (eff, mat)}{1 + r_{fixing}\ t(eff, mat)}\ df_{eff}$$

2.3 IRS valuation

Interest Rate Swaps is an agreement to exchange interest rate periodic and are made up of two interest cash flows. One counterparty pays interest calculated at a fixed interest rate (fixed leg) and receives interest calculated at a floating rate (floating leg); the other counterparty does the opposite. The contract value is the difference between the valuation of the received leg and the valuation of the paid leg. The valuation of each IRS leg is presented below.

- Fixed leg valuation:

$$PV_{fixed}(t) = \sum_{j:mat(j)>t}^{M_{fixed}} r_{IRS,j}\ N_j\ t(eff(j), mat(j))\ df_j$$

where:

M_{fixed} - is the number of interest periods of the fixed leg
N_j - nominal amount of the contract in interest period *j*
$r_{IRS,j}$ - contractual IRS rate in interest period *j*

- Floating leg valuation:

$$PV_{float}(t) = \sum_{j:mat(j)>t}^{M_{float}} N_j \left(r_j + m_j\right) t\ (eff(j), mat(j))\ df_j$$

$$r_j = \begin{cases} r_{t_{;refix_j}, index} & t_{refix_j} \le t \\ r_{j,\alpha} & t_{refix_j} > t \end{cases}$$

where:

$r_{j,\alpha}$ - is the rate at date *j* for curve α, where *j* = 0 (first coupon cash flow) the rate may be set explicitly without an input rate
$r_{t_{;refix_j}, index}$ - observed index rate on day t_{refix_j}
M_{float} - is the number of interest periods of the floating leg
m_j - is the additive margin (spread) in interest period *j*

2.4 Basis Swap valuation

Basis Swaps are a type of interest rate swaps for which both parties pay interest at a different floating rate. The contract value is the difference between the valuation of the received leg and the valuation of the paid leg. The valuation of each leg is presented below.

$$PV_A(t) = \sum_{j:mat(j)>t}^{T} N_j\left(r_{j,A} + m_{A,j}\right) t(eff(j), mat(j))\ df_j$$

$$PV_B(t) = \sum_{j:mat(j)>t}^{T} N_j\left(r_{j,B} + m_{B,j}\right) t\left(eff(j), mat(j)\right)\ df_j$$

where:

$$r_j = \begin{cases} r_{t_{refix_j},index} & t_{refix_j} \le t \\ r_{j,\propto} & t_{refix_j} > t \end{cases}$$

$r_{t_{refix_j},index}$	- the index rate observed on day t_{refix_j}
$index$	- rate index for a given floating leg
$r_{j,\propto}$	- is the rate at date *j* for curve $\propto$, where *j* = 0 it is the rate which may be determined for the first cash flow
T	- is the number of interest periods
$m_{A,j}, m_{B,i}$	- is the additive margin (spread) in the interest period

2.5 OIS valuation

OIS are fixed to floating interest rate swaps where the floating leg is indexed to the overnight rate (POLONIA rate in Poland, ESTR in EUR currency). OIS swap two cash flows: a fixed leg which is a one-off cash flow of interest set at a fixed rate determined in the contract for a specific nominal amount, and a floating leg which is a one-off cash flow of interest compounded over every day set at an overnight rate for a specific nominal amount. The settlement amount is the absolute value of the difference between the two legs. The valuation of each leg is presented below.

$$PV_{fixed} = \sum_{j:mat(j)>t}^{T} N\, r_{OIS}\, t(eff(j), mat(j))\, df_j$$

where:

r_{OIS} - set fixed rate of the contract

$$PV_{float}(t) = NR'\, t\ (eff, mat) df_{mat}$$

$$R' = int(R * 10^4 + 0{,}5)/10^4$$

$$R = \left(\prod_{i=1}^{T}(1 + r_i\, t(eff(i), mat(i))) - 1\right)/t\ (eff, mat)$$

where:

T - is the number of interest periods in the term of the contract,

$$r_i = \begin{cases} r_{i,index} + s & i \le t \\ r_{i,OIS} + s & i > t \end{cases}$$

$r_{i,index}$ - observed the index rate at day i

$r_{i,OIS}$ - OIS curve rate at the start date of interest period i

s - is the additive margin (spread)

R - is the effective interest rate

R' - is the effective interest rate, for PLN instruments rounded off to four decimal places

2.6 Valuation of additional cash flows

If there are additional cash flows under the terms of the transaction, their valuation is determined as follows:

$$NPV_{fee} = \sum_{i=1}^{k} znak\ F_i df_i$$

where:

k	-	number of additional cash flows
F_i	-	amount of *i*-th cash flow
$znak$	-	1 if the additional cash flow is to be received or -1 if the additional cash flow is to be paid

2.7 Valuation of repo transactions

The contract value before the settlement of the first leg is calculated as follows:

$$PV = znak\ (N_{Bonds}\ MarketPrice\,(t) df_{spot} - GrossAmount1\ df_{t1}) - znak\ (N_{Bonds}\ MarketPrice\,(t) df_{spot} - GrossAmount2\ df_{t2})$$

where:

N_{Bonds}	- is the transaction volume
$t1$	- is the settlement date of the first leg
$t2$	- is the settlement date of the second leg
$GrossAmount1$	- is the settlement amount of the first leg
$GrossAmount2$	- is the settlement amount of the second leg
$MarketPrice\,(t)$	- is the settlement price of bonds on day t (including interest accrued since the last coupon payment date)
df_{spot}	- discount factor from day t+2 to current date
df_{t2}	- discount factor from day t2 to current date
$znak$	- constant equal to -1 for the repo counterparty and 1 for the reverse repo counterparty

The contract value after the settlement of the first leg is calculated as follows:

$$PV = -znak(N_{Bonds}\ MarketPrice\,(t) df_{spot} - GrossAmount2 df_{t2})$$

2.8 Valuation of sell transactions

$$PV = znak\left(N_{Bonds}\, MarketPrice(t) df_{spot} - GrossAmount\, df_t\right)$$

where:

$znak$	- constant equal to -1 for the seller and 1 for the buyer
$GrossAmount$	- sell transaction settlement amount
df_t	- discount factor from day t to current date

3. Calculating the required initial margin

The required initial margin is equal to the value of HVaR (i.e. VaR calculated using historic scenarios) for a given account while applying the following parameters:

- holding period
- confidence level
- decay rate
- number of historical events (time horizon)
- method used to calculate rates for VaR scenarios

3.1 Overview

KDPW_CCP performs a Value at Risk (HVaR) calculation. The model calculates a potential Profit / Loss (PL) based on historical market movements within the set time horizon. Statistical analysis of the P&L sample space is then used.

Calculation of margins (and other risk measures, if any) is a three-step process:

- generate scenarios from the market history;
- price the portfolio using each of the generated historical scenarios;
- calculate quantile values.

3.2 Scenario generation

The HVaR model generates market scenarios based on historical market movements over a specified date range, from today to a specified date in the past.

Scenarios are generated in the date range:

$(t - N)$ do (t)

where:

t	- is the current business day
N	- is the number of the historical observation period

Each scenario *i* is defined as the vector of *n* market inputs that impact the value of the portfolio.

For interest rates, KDPW_CCP calculates δ_i using the additive movement which includes scaling of the portfolio holding period:

$$\delta_i = r_t + \sqrt{l}(r_{i+1} - r_i)$$

and for fx rates it uses the multiplicative movement:

$$\delta_i = \max\left(0, r_t\left(1 + \left(\frac{r_{i+1}}{r_i} - 1\right)\sqrt{l}\right)\right.$$

3.3 Valuation under scenarios

The portfolio is valued as at today's business date for each scenario using the historical market inputs.

This results in the following vector *V* of potential loss:

$$V = \begin{bmatrix} \sum_{c=1}^{Y}(MtM_{1,c} - MtM_{t,c})ExR_{1,c} \\ \sum_{c=1}^{Y}(MtM_{2,c} - MtM_{t,c})ExR_{2,c} \\ \dots \\ \sum_{c=1}^{Y}(MtM_{N,c} - MtM_{t,c})ExR_{N,c} \end{bmatrix}$$

where:

N	-is the number of scenarios,
$\mathrm{MtM_{i,c}}$	- is the hypothetical value of the portfolio of transactions in currency *c* in scenario *i* in the range 1 to N,
$\mathrm{MtM_{t,c}}$	- is the mark to market of the portfolio of transactions in currency *c*,
$ExR_{i,c}$	- is the fx rate under scenario *i*, used to convert the value of the portfolio in currency *c* to PLN.

Given a portfolio of *m* trades, the potential PV_i is calculated in PLN as:

$$MtM_{i,c} = \sum_{j=1}^{m} f(T_{j,c}, s_{i,c})$$

where:

f	- is the function which returns the valuation of transaction T_j in currency *c* in scenario s_i
$T_{j,c}$	- is the j-th trade in currency *c* in the portfolio
$s_{i,c}$	- is scenario *i* for currency *c*

3.4 Calculating the margin

In its statistical analysis of a sample of potential Profit / Loss values, KDPW_CCP assumes that scenarios used in the portfolio valuation are assigned equal weights (each scenario has equal probability).

When calculating percentiles, vector values are ordered from lowest (largest loss) to highest (largest profit). Given *N* ranked valued from the sector *V*, the rank *x* L for target percentile *P* is calculated as:

$$x = \frac{P}{100}(N-1)+1$$

Then splitting *x* into its integer *k* and decimal component *d*, such that $x = k + d$, we calculate the percentile value P (v_P) as:

$$v_P = \begin{cases} v_1, & x = 1 \\ v_N, & x = N \\ v_k + d(v_{k+1} - v_k), & 1 < x < N \end{cases}$$

The value V_p is the required level of initial margin.

4. Definition of projection curves and discount curves

4.1 Projection curves

4.1.1 1M curve

	PLN	**EUR**
1M	WIBOR	EURIBOR
2M	FRA 1x2	IRS 2m1s
3M	FRA 2x3	IRS 3m1s
4M		IRS 4m1s
5M		IRS 5m1s
6M	IRS 6m1s	IRS 6m1s
7M		IRS 7m1s
8M		IRS 8m1s
9M		IRS 9m1s
10M		IRS 10m1s
11M		IRS 11m1s
1Y	IRS 1y1s	IRS 1y1s
2Y	IRS 2y1s	IRS 2y1s
3Y	IRS 3y1s	IRS 3y1s
4Y	IRS 4y1s	IRS 4y1s

5Y	IRS 5y1s	IRS 5y1s
6Y	IRS 6y1s	IRS 6y1s
7Y	IRS 7y1s	IRS 7y1s
8Y	IRS 8y1s	IRS 8y1s
9Y	IRS 9y1s	IRS 9y1s
10Y	IRS 10y1s	IRS 10y1s
12Y	IRS 12y1s	IRS 12y1s
15Y	IRS 15y1s	IRS 15y1s
20Y	IRS 20y1s	IRS 20y1s
25Y		IRS 25y1s
30Y		IRS 30y1s
40Y		IRS 40y1s
50Y		IRS 50y1s

4.1.2 3M curve

	PLN	**EUR**
3M	WIBOR	EURIBOR
4M	FRA 1x4	FRA 1x4
5M	FRA 2x5	FRA 2x5
6M	FRA 3x6	FRA 3x6
7M	FRA 4x7	FRA 4x7
8M	FRA 5x8	FRA 5x8
9M	FRA 6x9	FRA 6x9
10M	FRA 7x10	FRA 7x10
11M	FRA 8x11	FRA 8x11
1Y	FRA 9x12	FRA 9x12
15M	FRA 12x15	FRA 12x15
18M	FRA 15x18	
21M	FRA 18x21	
2Y	FRA 21x24, IRS 2y3s	IRS 2y3s
3Y	IRS 3y3s	IRS 3y3s

4Y	IRS 4y3s	IRS 4y3s
5Y	IRS 5y3s	IRS 5y3s
6Y	IRS 6y3s	IRS 6y3s
7Y	IRS 7y3s	IRS 7y3s
8Y	IRS 8y3s	IRS 8y3s
9Y	IRS 9y3s	IRS 9y3s
10Y	IRS 10y3s	IRS 10y3s
12Y	IRS 12y3s	IRS 12y3s
15Y	IRS 15y3s	IRS 15y3s
20Y	IRS 20y3s	IRS 20y3s
25Y		IRS 25y3s
30Y		IRS 30y3s
40Y		IRS 40y3s
50Y		IRS 50y3s

4.1.3. 6M curve

	PLN	**EUR**
6M	WIBOR	EURIBOR
7M	FRA 1x7	FRA 1x7
8M	FRA 2x8	FRA 2x8
9M	FRA 3x9	FRA 3x9
10M	FRA 4x10	FRA 4x10
11M	FRA 5x11	FRA 5x11
1Y	FRA 6x12	FRA 6x12
15M		FRA 9x15
18M	FRA 12x18	FRA 12x18
2Y	FRA 18x24	IRS 2y6s
3Y	IRS 3y6s	IRS 3y6s
4Y	IRS 4y6s	IRS 4y6s
5Y	IRS 5y6s	IRS 5y6s
6Y	IRS 6y6s	IRS 6y6s
7Y	IRS 7y6s	IRS 7y6s
8Y	IRS 8y6s	IRS 8y6s

9Y	IRS 9y6s	IRS 9y6s
10Y	IRS 10y6s	IRS 10y6s
12Y	IRS 12y6s	IRS 12y6s
15Y	IRS 15y6s	IRS 15y6s
20Y	IRS 20y6s	IRS 20y6s
25Y		IRS 25y6s
30Y		IRS 30y6s
40Y		IRS 40y6s
50Y		IRS 50y6s

4.1.4 OIS curve

	PLN	**EUR ESTR**
O/N	POLONIA (index)	ESTR
1W	OIS 1W	ESTR 1W
2W	OIS 2W	ESTR 2W
3W	OIS 3W	ESTR 3W
1M	OIS 1M	ESTR 1M
2M		ESTR 2M
3M	OIS 3M	ESTR 3M
4M		ESTR 4M
5M		ESTR 5M
6M	OIS 6M	ESTR 6M
7M		ESTR 7M
8M		ESTR 8M
9M	OIS 9M	ESTR 9M
10M		ESTR 10M
11M		ESTR 11M
1Y	OIS 1Y	ESTR 1Y
15M		ESTR 15M
18M		ESTR 18M
21M		ESTR 21M
2Y		ESTR 2Y
3Y		ESTR 3Y

4Y		ESTR 4Y
5Y		ESTR 5Y
6Y		ESTR 6Y
7Y		ESTR 7Y
8Y		ESTR 8Y
9Y		ESTR 9Y
10Y		ESTR 10Y
11Y		ESTR 11Y
12Y		ESTR 12Y
15Y		ESTR 15Y
17Y		ESTR 17Y
20Y		ESTR 20Y
25Y		ESTR 25Y
30Y		ESTR 30Y
40Y		ESTR 40Y
50Y		ESTR 50Y

4.1.5 Discount rate curves

4.1.6 PLN curve

O/N	POLONIA (index)
1W	OIS 1W
2W	OIS 2W
3W	OIS 3W
1M	OIS 1M
3M	OIS 3M
6M	OIS 6M
9M	OIS 9M
1Y	OIS 1Y
2Y	IRS 2y1s
3Y	IRS 3y1s
4Y	IRS 4y3s

5Y	IRS 5y3s
6Y	IRS 6y3s
7Y	IRS 7y3s
8Y	IRS 8y3s
9Y	IRS 9y3s
10Y	IRS 10y3s
12Y	IRS 12y3s
15Y	IRS 15y3s
20Y	IRS 20y3s

4.1.7 EUR curve

The EUR discount curve is the OIS EUR ESTR curve described in point 4.1.4.

5 Sources of market data

Sources of market data for respective types of financial instruments and data include:

1. For instruments cleared in PLN:
1) WIBOR (index) – fixing organised by GPW Benchmark S.A.,
2) POLONIA (index) – fixing organised by the National Bank of Poland,
3) FRA, IRS, OIS (PLN) – market data from available news services and data from transactions sent for clearing to KDPW_CCP,

2. For instruments cleared in EUR:
1) EURIBOR (index) – fixing organised by the European Money Market Institute,[1]
2) ESTR (index) – fixing published by the European Central Bank,
3) FRA, IRS, OIS (EUR) – market data from available news services and data from transactions sent for clearing to KDPW_CCP.

Market data are sourced via the news service ICE Data Derivatives (main news service), Bloomberg or Thomson Reuters on the terms defined below.
In determining reference rates for interest rate derivatives referred to in point 1 (3) and point 2 (4), KDPW_CCP uses in the first place data available from the main news service.

[1] According to the agreement between KDPW_CCP S.A. and the European Money Market Institute (EMMI), please note that the transaction clearing service is not in any way sponsored, endorsed, sold, or promoted by EMMI, and EMMI has no obligations or liability in connection with the use of any such service. EURIBOR is compiled and calculated on behalf of EMMI. However, EMMI shall not be liable (whether in negligence or otherwise) to any person for any error in EURIBOR or use of the same, whether or not arising from the negligence of EMMI, and EMMI shall not be under any obligation to advise any person of any error therein.

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If data from the main news service are incomplete on any clearing day, their availability is limited or the adequacy of the data raises reasonable doubt in the opinion of KDPW_CCP (which impairs the quality of the data), then in order to ensure the safety of transaction clearing KDPW_CCP may determine reference rates based on data sourced from other available new services referred to above, in whole or in part. The principle defined in the preceding sentence shall apply accordingly to data available from the next selected news service.