

Resolution No. 23/17
of the KDPW_CCP S.A. Management Board
dated 28 August 2017
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 KDPW_CCP S.A. Management Board resolves as follows:

§ 1

Appendix 6 to the Detailed Rules of the OTC Clearing System attached to Resolution No. 21/16 of the KDPW_CCP S.A. Management Board dated 17 August 2016 shall be replaced by Appendix of this Resolution.

§ 2

This Resolution shall come into force on 11 September 2017.

Dr Iwona Sroka
President
of the Management Board

Sławomir Panasiuk
Vice President
of the Management Board

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

- 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:

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

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

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.

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

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

where:

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

$r_{t_{refix_j}, index}$ the index rate observed on day t_{refix_j}

$index$ rate index for a given floating leg

$r_{j,\alpha}$ is the rate at date j for curve α , 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, EONIA 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.

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

where:

r_{OIS} - set fixed rate of the contract

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

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

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

where:

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

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

$r_{i,index}$	- 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 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:

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

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:

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

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
$\text{MarketPrice}(t)$	-	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:

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

2.8 Valuation of sell transactions

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

where:

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

3. Determining the yield curve

Yield curve generation is an essential step in the valuation of interest rate products. The curve represents the relationship between the interest rate and time for a specific currency.

Yield curves are implied from market observable interest rate instruments (input rates).

The yield curve is made up of a term structure of observable input interest rates of different maturities r_t and the resultant zero coupon discount factors df_t implied by the input rates at time t .

Each term structure groups input rates with a common asset, tenor and currency but of different maturities.

Discount factors are derived from the CASH, FRA, IRS and OIS observable input rates using the bootstrapping method. Discount factors between intermediary points are derived using the loglinear interpolation method.

3.1 Definitions

df_t	- is the discount factor at time t
r_t	- is the input rate with maturity at time t
$t(d1, d2)$	- is the year fraction between date $d1$ and $d2$

3.2 Curve bootstrapping

Discount factors are implied from input rates iteratively in order of maturity. The initial discount factor is derived first for the shortest maturity. Each next discount factor is derived from previously established values.

3.3 Curve generation for Cash and FRA inputs

3.3.1 Calculation of initial discount factor

The first step of curve generation is to derive the initial discount factor df_{on} . It is derived from the overnight rate r_{on} as follows:

$$df_{on} = \frac{1}{1 + r_{on}t(0, on)}$$

3.3.2 Calculation of remaining discount factors

The remaining discount factors are calculated in order of maturity (from the shortest to the longest) as follows:

$$df_{mat(i)} = \left(\frac{1}{1 + r_i t(\text{eff}(i), \text{mat}(i))} \right) df_{\text{eff}(i)}$$

where:

$\text{eff}(i)$ - is the effective date of instrument i

$\text{mat}(i)$ - is the maturity date of instrument i

If $df_{\text{eff}(i)}$ is unknown, it is interpolated from the two nearest discount factors.

3.4 Curve generation for IRS inputs

The system supports two methods to derive the discount factor df_t , from an input swap rate r_t :

FIXEDLEG – the final fixed coupon is derived from all known fixed coupons for the swap

FLOATLEG – the final floating coupon is derived from all known fixed coupons and floating coupons for the swap.

3.4.1 FIXEDLEG method

The final fixed cash flow is derived from all previous known fixed cash flows as follows:

For each input rate $r_{s(N,t)}$, the zero coupon rate for period t must be derived:

r_s - is the input rate for swap s

N - is the number of coupons paid annually

t - is the tenor in years

In order to derive this rate, the theoretical price of a bond is calculated as the present value of the cash flows to be received in the future. As the par rate is used the present value of the future coupon payments and the nominal amount is equal to 1.

$$1 = \frac{(r_{s(N,t)} t(\text{eff}(1), \text{mat}(1)) df_1) + (r_{s(N,t)} t(\text{eff}(2), \text{mat}(2)) df_2) + \dots + (1 + r_{s(N,t)} t(\text{eff}(n), \text{mat}(n))) df_n}{df_{\text{eff}(s)}}$$

where:

$df_{\text{eff}(s)}$ - is the discount factor on the effective date of swap s

$\text{eff}(n)$ - is the effective date of coupon n

$\text{mat}(n)$ - is the maturity date of coupon n

This can be rearranged as:

$$df_n = \frac{1 - \frac{r_{s(N,t)}}{df_{\text{eff}(s)}} \sum_{i=1}^{n-1} t(\text{eff}(i), \text{mat}(i)) df_i}{(1 + r_{s(N,t)} t(\text{eff}(n), \text{mat}(n)))} df_{\text{eff}(s)}$$

This enables us to solve for df_n from the known fixed coupons.

3.4.2 FLOATLEG method

The FLOATLEG approach derives the final floating coupon from a combination of all known fixed and floating coupons. The fixed coupons are derived from the discount curve, and the floating coupons are derived from a combination of the discount curve and the forward curve.

The FLOATLEG bootstrap approach uses the following methodology.

For a par swap, the NPV of the fixed leg equals the NPV of the floating leg.

$$\sum_{i=1}^{n_{fixed}} r_s(N, t) df_{i,D} t(eff(i), mat(i)) = \sum_{i=1}^{n_{float}} r_i df_{i,D} t(eff(i), mat(i))$$

where:

r_i is the forward rate for floating coupon i

$df_{i,D}$ is the discount factor from discounting curve D for end day of coupon i

Rearranging the above enables us to solve for the forward rate of the final floating coupon:

$$\begin{aligned} r_{n_{float}} df_{n_{float},D} t(eff(n_{float}), mat(n_{float})) \\ = \sum_{i=1}^{n_{fixed}} r_{s(N,t)} df_{i,D} t(eff(i), mat(i)) - \sum_{i=1}^{n_{float}-1} r_i df_{i,D} t(eff(i), mat(i)) \end{aligned}$$

The final discount factor can be derived from the implied forward rate as follows:

$$df_{n_{float},F} = \frac{df_{n_{float}-1,F}}{r_{n_{float}} t(eff(n_{float}), mat(n_{float})) + 1}$$

where:

$df_{n_{float},F}$ - is the discount factor from curve F for end date of coupon n_{float}

The discount factors $df_{n,D}$ are derived from the discount curve D using the FIXEDLEG method described in section 3.4.1. The discount factors $df_{n,F}$ for curve F are derived iteratively using the above approach.

3.4.3 Swap rate interpolation

When the curve is bootstrapped, discount factors for more than one cash flow may be unknown. Interpolation is required in order to derive the unknown cash flows. KDPW_CCP determines the unknown swap rates through cubic spline interpolation.

3.5 Interpolation methods

KDPW_CCP system derives missing discount factors using the loglinear interpolation method.

3.6 Exceptions

In certain cases, curve inputs are not available due to lack of liquidity or for other reasons. Bootstrapping issues can also occur during the yield curve calculation process. This section describes common exceptions and how they are handled by the KDPW_CCP system.

3.6.1 First curve input effective date later than business date

If the first curve input effective date is after the business date, then both the effective date discount factor df_{eff} and the maturity date discount factor df_{mat} are unknown.

In that case, KDPW_CCP approximates them as follows:

- First, an approximate discount factor $df_{\sim mat}$ is calculated:

$$df_{\sim mat} = \frac{1}{1 + (r_t t(0, mat))}$$

df_{eff} can then be interpolated:

$$df_{eff} = 1 - (1 - df_{\sim mat}) \frac{t(0, eff)}{t(0, mat)}$$

- Finally, df_{mat} can be derived in the same manner as other curve input points:

$$df_{mat} = \left(\frac{1}{(1 + (r_t t(eff, mat)))} \right) df_{eff}$$

3.6.2 Second curve input effective date later than business date

If the effective date of the second curve input is later than the business date, both $df_{eff(2)}$ and $df_{mat(2)}$ will be unknown for this curve input (unless the effective date for this curve input is the same as the maturity date of the first curve input).

Approximation is required to derive either $df_{eff(2)}$ or $df_{mat(2)}$. The KDPW_CCP system extrapolates $df_{\sim eff(2)}$ from the first discount factor as follows:

$$df_{\sim eff(2)} = 1 - (1 - df_{mat(1)}) \frac{t(0, eff(2))}{t(0, mat(1))}$$

$df_{mat(2)}$ can then be derived in the same manner as other curve input points using $df_{\sim eff(2)}$.

3.6.3 Multiple curve inputs mature on the same date

If multiple curve input points have the same maturity date, KDPW_CCP chooses one curve input only. Precedence is given to CASH rates over FRAs, and FRAs over Swaps.

4. 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

4.1 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.

4.2 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:

$$(t - N) \text{ do } (t)$$

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:

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

4.3 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,
- MtM_{i,c} - is the hypothetical value of the portfolio of transactions in currency *c* in scenario *i* in the range 1 to N,
- 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*

4.4 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 *n* 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.

5. Definition of projection curves and discount curves

5.1 Projection curves

5.1.1 1M curve

	PLN	EUR
1M	WIBOR	EURIBOR
2M	FRA 1x2	IRS 2m1s
3M	FRA 2x3	IRS 3m1s
6M	IRS 6m1s	IRS 6m1s
9M		IRS 9m1s
1Y	IRS 1y1s	IRS 1y1s
2Y	IRS 2y1s	IRS 2y1s
3Y	IRS 3y1s	IRS 3y1s
4Y		IRS 4y1s
5Y		IRS 5y1s
6Y		IRS 6y1s
7Y		IRS 7y1s
8Y		IRS 8y1s
9Y		IRS 9y1s
10Y		IRS 10y1s
12Y		IRS 12y1s
15Y		IRS 15y1s
20Y		IRS 20y1s
30Y		IRS 30y1s
50Y		IRS 50y1s

5.1.2 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	FRA 15x18/IRS 18m3s
21M	FRA 18x21	FRA 18x21
2Y	FRA 21x24	FRA 21x24/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
30Y		IRS 30y3s
40Y		IRS 40y3s
50Y		IRS 50y3s

5.1.3. 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
18M	FRA 12x18	FRA 12x18
2Y	FRA 18x24	FRA 18x24
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
30Y		IRS 30y6s
40Y		IRS 40y6s
50Y		IRS 50y6s

5.1.4 OIS curve

	PLN	EUR
O/N	POLONIA (index)	EONIA
1W	OIS 1W	OIS 1W
2W	OIS 2W	OIS 2W
3W	OIS 3W	OIS 3W
1M	OIS 1M	OIS 1M
3M	OIS 3M	OIS 3M
6M	OIS 6M	OIS 6M
9M	OIS 9M	OIS 9M
1Y	OIS 1Y	OIS 1Y

15M		OIS 15M
18M		OIS 18M
21M		OIS 21M
2Y		OIS 2 Y
3Y		OIS 3Y
4Y		OIS 4Y
5Y		OIS 5Y
6Y		OIS 6Y
7Y		OIS 7Y
8Y		OIS 8Y
9Y		OIS 9Y
10Y		OIS 10Y
15Y		OIS 15Y
20Y		OIS 20Y
30Y		OIS30Y
50Y		OIS 50Y

5.2 Discount rate curves

5.2.1 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

5.2.2 EUR curve

The EUR discount curve is the OIS EUR curve described in point 5.1.4.

6. Sources of market data

Sources of market data for respective types of data include:

- 1) WIBOR (index) – fixing organised by ACI Polska – the Polish Financial Markets Association,
- 2) POLONIA (index) - fixing organised by ACI Polska – the Polish Financial Markets Association,
- 3) FRA, IRS, OIS (PLN) - fixing organised by ACI Polska – the Polish Financial Markets Association and, if not published, other available quotation rates,
- 4) EURIBOR (index) – European Money Market Institute,
- 5) EONIA (index) - European Money Market Institute,
- 6) FRA, IRS, OIS (EUR) – based on quotes of contributors.

Market data will be downloaded from the Thomson Reuters or Bloomberg news service.

In determining market value, KDPW_CCP uses in the first place data available from the Bloomberg service. If on a given day R when valuation is performed the quality of the data from the Bloomberg service is low in the opinion of KDPW_CCP or their availability is limited, KDPW_CCP acting to ensure the safety of transaction clearing may:

- 1) use data provided by Thomson Reuters in whole or in part, or
- 2) determine relevant rates taking into account market data provided by both services.